Primary Clinical Care Manual

12th edition 2025

Royal Flying Doctor Service
QUEENSLAND SECTION

Queensland
Government

Criteria for early notification of trauma for interfacility transfer[1]

ALL trauma patients - do rapid assessment of **vital signs, injuries** and **mechanism of injury**

Vital signs

	Adult	Newborn < 2 weeks	Infant < 1 year	Child 1 – 8 years	Child 9 – 15 years
Respiratory rate/minute	< 10 or > 30	< 40 or > 60	< 20 or > 35	< 20 or > 35	< 15 or > 25
SpO_2 on room air	< 90%	< 95%	< 95%	< 95%	< 95%
Systolic BP mmHg	< 90	n/a	< 60	< 70	< 80
HR/minute	> 120	< 100 or > 170	< 90 or > 170	< 75 or > 130	< 65 or > 130
GCS	< 13	Altered LOC	Altered LOC	Altered LOC	Altered LOC

Specific injuries

- **All penetrating injuries**
  - head/neck/chest/abdomen/pelvis/axilla
- **Blunt injuries**
  - patients with significant injuries to a single region - head/neck/chest/abdomen/pelvis/axilla
  - patients with injuries involving 2 or more of the above body regions
- **Specific injuries**
  - positive FAST scan
  - suspected spinal cord injury or spinal fractures with neurological deficit
  - flail chest
  - burns: adult > 20% BSA (child > 10%)
  - suspected respiratory tract burns
  - serious crush injury - limbs, torso or pelvis
  - fractured pelvis
  - major compound fracture or open dislocation
  - multiple long bone fractures
  - limb amputation/life threatening injuries
  - major vascular injury

Mechanism of injury

- Motor vehicle accident
  - > 60 km/hour
  - pedestrian impact
  - cyclist struck by car
  - ejected, roll-over, prolonged extrication (> 30 minutes) or fatality in same vehicle
  - reverse over injuries to head, chest, abdomen, pelvis
  - high speed collision (train)
- Motorbike, quadbike, cyclist or scooter accident > 30 km/hour
- Fall from height > 3 metres
- Struck on head by falling object > 3 metres
- Axial load to head (diving)
- Large farm animal related injury
- Non-fatal drowning/immersion
- Handlebar abdominal injuries in children
- Hanging and attempted hanging
- Explosion or blast injuries

If ANY of the above are present PROMPTLY CALL

RSQ 1300 799 127

for management support, retrieval advice and destination decision

or your local/state trauma escalation service

If none of the above is present, follow usual local processes for assessment and transfer of the patient

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Comments and feedback

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Preface

From the editorial committee

Dear Colleague,

If you're opening this book because you have a sick patient in front of you, please remember:

DON'T PANIC.

This 12th edition of the Primary Clinical Care Manual comes to you with the accumulated wisdom of 191 reviewers, from professions across the arc of healthcare. It is the combined effort of clinicians in Queensland, NSW, Victoria, and the Northern Territory, incorporating members of the public and private health systems, the Royal Flying Doctor Service (Queensland Section), Queensland Ambulance Service, and the Australian Defence Force. Our editorial committee of 18 members also includes specific consumer and First Nations voices to ensure we put our patients at the centre of everything we do.

We cannot all be standing physically at the bedside with you, but we are standing with you nevertheless. Our combined wisdom and experience is set down in this book, and we have tried to make it as user friendly, relevant, and practical as possible to allow you to deliver care in your rural and remote setting.

Believe in yourself, and always remember you can ask for help, both in our book, but also in the healthcare community by calling a colleague, a major hospital, or the retrieval services.

Our editorial committee acknowledges that the efforts of our rural and remote health workforce are the most vital link in delivering health equity for communities across our country. As evidence, our team of reviewers and our editorial committee volunteers have put thousands of volunteer hours into revising and updating the 12th edition of the PCCM.

As the chair of the editorial committee, I want to specifically recognise the efforts of our editorial team, Sue Muirhead, Danielle Jess, and Tazz Harding. Without these three amazingly dedicated ladies the 12th edition would not now be in your hands.

I also want to thank our individual topic reviewers for their efforts in shaping this edition to reflect and support best practice approaches to more than 200 different health care topics.

To the editorial committee, I personally would like to extend my deepest and heartfelt thanks. Chairing those meetings, several hours every fortnight for 2 years has never felt anything but joyful. Seeing a group of such diverse experience work, present, debate and collaborate so professionally and with the shared common aim of supporting rural and remote practice has been something that has always filled my bucket up.

And finally to you, the reader, most probably a rural or remote clinician operating in a situation of lower resource, thank you to everything you do for our communities. It is a pleasure to commend this revised edition of the PCCM to you, and we wish you the very best in your endeavours.

On behalf of the PCCM editorial committee,

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Forewords

Queensland Health

Queensland Health is committed to a dynamic and responsive health system delivering world-class healthcare to all Queenslanders, regardless of location. Our vision empowers our workforce and healthcare consumers, ensuring access to quality care in all settings and across all life stages.

The 12th edition of the Primary Clinical Care Manual (PCCM) reflects this vision equipping clinicians in rural and remote care settings with high-quality, evidence-based Health Management Protocols and clinical care guidelines. The PCCM also supports the diverse expectation of rural and remote clinicians including those working under Extended Practice Authorities, such as Rural and Isolated Practice Registered Nurses, Sexual Health Program Nurses, Midwives, Aboriginal and Torres Strait Islander Health Practitioners and Health Workers, and Queensland Ambulance Service Isolated Practice Area Paramedics.

Meeting the Diverse Needs of Queenslanders

The PCCM adapts clinical guidelines (state, national, and international) to meet the unique needs and environment of rural and remote Queenslanders. This inclusive approach ensures the PCCM reflects our communities' diverse needs and promotes culturally safe healthcare. Furthermore, the PCCM champions person-centred care by ensuring all consumer voices, including First Nations peoples are heard.

Strengthening Healthcare Through Partnerships

This year marks over 25 years of partnership with the Royal Flying Doctor Service (Queensland Section) in delivering the PCCM. This collaboration has been fundamental in establishing the benchmark for clinical guidance for rural and remote Queensland clinicians, empowering them to practise to their optimal scope. The PCCM's expanded collaboration also includes the Queensland Ambulance Service, the Australian Defence Force, and the Department of Health and Human Services, Victoria.

Empowering the Rural Health Workforce

By supporting clinicians with extended authority to use medicines in defined rural hospitals and isolated practice areas, the PCCM ensures our workforce is empowered to support and effectively respond to the diverse needs of people in rural and remote areas.

I commend the 12th edition of the PCCM for its continued focus on rural and remote Queensland. Using it to guide clinical practice, we are working towards our vision of healthy rural and remote Queenslanders, now and into the future.

Dr Helen Brown
Deputy Director-General, Clinical Excellence Queensland
Queensland Health

Royal Flying Doctor Service (Queensland section)

Providing the furthest corner with the finest care is no easy feat and is not achieved in isolation.

The Royal Flying Doctor Service (Queensland Section) (RFDS) recognises that it is the individual contributions of many that forge strength in the essential health services provided to those that live, work and play in our great state.

The reality is that health service providers across regional, rural and remote communities will always face many challenges, none more emphasised than the 'tyranny of distance'.

With that we see the true value of the Primary Clinical Care Manual (PCCM) for clinicians across Queensland in helping to provide the same standard of care one might expect in a city environment.

The PCCM is a readily available, concise reference text in which treating clinicians can trust. Trust knowing that the advice is current, evidence based and reflective of best practice.

This edition of the PCCM is very much a shared success story. The RFDS acknowledges the generous sharing of time and expertise by clinical staff, from both Queensland Health and the RFDS, which is essential to the review and revision of each new edition of the manual.

Lee Poole
Executive General Manager
Nursing and Clinical Services
Royal Flying Doctor Service (Qld Section)

Queensland Ambulance Service

As the Medical Director of the Queensland Ambulance Service, I enthusiastically endorse the release of the 12th edition of the Primary Clinical Care Manual.

This clinical resource provides evidence-based clinical guidelines and best practice statements that support provision of healthcare in rural, remote, and isolated locations, by enabling evidence based extended scope of practice. Clinicians face unique geographical challenges and complexities when operating in these resource poor locations, with this resource providing a perfect platform to support quality care. This document unquestionably aids clinical decision-making and ensures patients receive timely, appropriate, and patient-centric care regardless of their location within Queensland.

I would like to acknowledge the work of the editors and editorial committee for producing such a high quality document and truly believe it will enhance the delivery of healthcare to the broader community.

Dr Stephen Rashford
ASM MBBS FACEM
Medical Director
Queensland Ambulance Service

Australian Defence Force

Australia is currently facing its most challenging strategic environment since the Second World War. The Sailors, Soldiers and Aviators of the Australian Defence Force (ADF) must be prepared to deploy to remote and austere environments, within Australia and overseas, in support of the defence of Australia and its national interests. Our military health practitioners have an extremely important role in supporting and sustaining these forces, providing them with high quality healthcare in some of the most challenging conditions in the world.

As Surgeon General of the Australian Defence Force, I fully support and endorse the use of the Primary Clinical Care Manual (PCCM). The current, evidence based protocols, as tailored for rural and remote settings, enables our health practitioners to operate safely and consistently in any environment, from barracks to bush and ship to shore. The PCCM is a valued resource that is integral to the contemporary training and practice of military health services.

I thank the editorial committee, ADF personnel and the broader health community, that have contributed to drafting and publishing the 12th edition of the Primary Clinical Care Manual.

It is with pleasure that I commend this publication to you.

Sonya Bennett AM
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Clinical networks, programs and organisations

- Qld Statewide Antimicrobial Stewardship Program
- Communicable Diseases Branch, Qld Health
- Deadly Ears Program
- Qld Paediatric Sepsis Program
- Qld Adult Sepsis Program
- Children's Resuscitation Emergency Drug Dosage (CREDD)
- QuMid - RSQ
- Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM)
- Qld Stroke Clinical Network
- Mental Health Act Administration Team
- Forensic Medicine Qld
- Child Protection Forensic Medical Service

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Introduction

The Primary Clinical Care Manual (PCCM) supports and enables rural, remote and isolated clinicians to provide evidence-based, quality and safe care for people living in these areas. The PCCM has been developed and reviewed according to principles of the National Health and Medical Research Council's guideline development

The PCCM and collaborative practice

- The PCCM promotes a collaborative approach to patient care. The collaborative practice relationship incorporates the dual notions of collaboration and delegation
- The defining characteristics of the collaborative practice relationship using the PCCM in the rural and isolated context are:
  - mutual respect and acknowledgement of each profession's role, scope of practice and unique contribution to health outcomes
  - clear protocols and guidelines for clinical decision making that comply with relevant legislation and are supported by the health facility and the health organisation
  - clearly defined levels of accountability with an acceptance that joint clinical decision making is an integral component of collaborative practice
  - a belief that the best health outcomes are achieved when well prepared health professionals work in collaboration and partnership in both practice and educational settings

Recognising and responding to acute deterioration

- The PCCM supports the use of Early Warning and Response System (EWARS) tools. In Qld, use appropriate **rural and remote** EWARS tools eg **Q-ADDS** - adult, **MEWT** - maternity, **CEWT** - paediatric, **NEWT** - neonatal (≤ 28 days old). If outside of Qld, use local EWARS tools

Endorsing the PCCM in Queensland

The PCCM is published 3rd yearly

The PCCM, and Health Management Protocols (HMPs) within, has been developed for rural and remote Hospital and Health Services (HHS) and non-Queensland Health organisations

It has been reviewed and endorsed by the PCCM Editorial committee, p. 4 - an inter-disciplinary team including medical officers, registered nurses, pharmacists, and other identified professional personnel with expertise in rural and remote healthcare

The HHS Chief Executive Officer (CEO), or CEO of a non-Queensland Health employing organisation, must approve the PCCM for use

Once approved, the PCCM (and Health Management Protocols within) apply to all rural hospitals and isolated practice areas within the HHS, (or non-Queensland health organisation as applicable)

Approval/endorsement is valid for 3 years

Authority to administer and supply medicines

- Authority for clinicians to administer and supply medicines is provided by the medicines and poisons law within the State or Territory of practice. Clinicians are advised to familiarise themselves with the relevant legislation, and adhere to local policies for using medicines
- The legislation provides definitions and conditions related to a person's authority to use medicines eg administer, supply/give a treatment dose, rural hospital, isolated practice area
- Schedules of medicines are as per the Standard for Uniform Scheduling of Medicines and Poisons
- Clinicians must practice within their individual scope and in accordance with conditions and circumstances of practice relevant to their authority

Supply in the PCCM means to **give a treatment dose** ie 'give 1 or more doses to be taken at a later time'
Administer means to 'give a single dose to take immediately'

Schedule 2 and Schedule 3 medicines (Qld)

- RNs are authorised to **administer** any S2 or S3 medicine without an order or supporting HMP. This includes S2 and S3 medicines not in the PCCM
- **RN supplying** - to supply an S2 or S3 medicine at a defined rural hospital or isolated practice area, an RN is required to obtain an order, plus meet requirements in Schedule 7, Part 3, Division 4 of the *Medicines and Poisons (Medicines) Regulation 2021*
- **RIPRN supplying** - RIPRNs are authorised to **administer and supply** any S2 or S3 medicine without an order or supporting HMP. This includes S2 and S3 medicines not in the PCCM

Clinicians with extended authority to use medicines

Queensland - extended practice authority (EPA)

- The PCCM contains Health Management Protocols to support the expanded practice of clinicians practicing under an 'extended practice authority' (EPA) in defined rural hospitals and isolated practice areas, including:
  - **Registered nurses:**
    - part A - the PCCM does not include RNs with authority under part A. This will be determined by their individual documented credentialed scope of practice
    - part B - **Rural and Isolated Practice Registered Nurse (RIPRN)**
    - part C - **Sexual or Reproductive Health (SRH)**
  - **Midwives (MID)**
  - **Aboriginal and Torres Strait Islander Health Practitioners (ATSIHP)**
  - **Authorised Indigenous Health Workers (IHW)**
  - **Qld Ambulance Service - Isolated Practice Area Paramedics (IPAP)**
- Refer to each EPA for conditions and circumstances of practice
- An RN, eg without RIPRN, must adhere to the medicines legislation in Qld

Victoria - RIPRNs

- The PCCM supports the practice of Rural and Isolated Practice Registered Nurses (RIPRN) in Victoria
- An RN, eg without RIPRN, must adhere to the medicines legislation in Victoria

Australian Defence Force (ADF)

- The PCCM supports practice of AHPRA registered health service personnel within the ADF
- For more information, refer to the Defence Health Manual and approved Service extended practice authorities to supply, carry and administer medications

Other States or Territories

- Clinicians are still able to use the PCCM if their employer authorises them to do so. Clinicians must be familiar with the relevant State/Territory medicines and poisons legislation and ensure they practice within their legal authority

Health Management Protocols and Clinical Care Guidelines

- Each topic in the PCCM is a Health Management Protocol (HMP) or a Clinical Care Guideline (CCG)
- HMPs support clinicians who are practicing with an extended practice authority in Qld. They are the same as a CCG, but also include a **drug (medicine) box** with details of the medicine authorised to be administered or supplied
- HMPs are easily identified with the letters HMP in the topic title. CCGs are all other topics

Example of a Health Management Protocol - **HMP in title**

HMP Anaphylaxis - adult/child

Example of a Clinical Care Guideline - **no HMP in title**

Drowning/submersion - adult/child

Drug (medicine) boxes

- Instructions advising authorities of clinicians, eg proceed or consult a medical officer (MO), nurse practitioner (NP), or endorsed midwife (EM), are **based on Qld authorisation to use medicines**
- Schedules of medicines (S2, S3, S4, S8) are noted in the top left corner
- **Do not contain all information for safe administration or supply of the medicine**
- **Clinicians should:**
  - refer to the *Australian Medicines Handbook* or other pharmacology resource prior to using medicines for information such as adverse effects, interactions and contraindications
  - be aware of contraindications and known side effects and advise the patient accordingly
  - source additional consumer medicine information (CMI) as relevant eg https://www.nps.org.au/medicine-finder
  - practice within their individual scope
  - consult MO, NP, EM or pharmacist as needed
  - adhere to local policies and medicine legislative requirements

Example 1 - unscheduled medicine

- Not related to an extended authority. An order may or may not be required

Qld clinicians are advised if they are required to obtain an order or are authorised to proceed without an order

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Unscheduled	**Thiamine**			
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	300 mg/3 mL	IM	**Adult** 300 mg	stat
Note: Give thiamine before administering glucose for hypoglycaemia. Giving glucose in thiamine deficiency may precipitate Wernicke encephalopathy				
Management of associated emergency: Consult MO/NP				

Example 2 - extended authority in Qld

- Always located within an HMP. Identifies which clinicians have extended authority and details if the clinician can proceed or requires an order

Qld clinicians who have extended authority identified here:
- **ATSIHP** - Aboriginal and Torres Strait Islander Health Practitioner
- **IHW** - Authorised Indigenous Health Worker
- **IPAP** - Isolated Practice Area Paramedic
- **MID** - Midwife
- **RIPRN** - Rural and Isolated Practice RN
- **SRH** - Sexual or Reproductive Health RN
- **IPN** - Immunisation Program RN

Qld clinicians are advised if they are required to obtain an order or are authorised to proceed without an order

S4	**Metronidazole**			**Extended authority** ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg, 400 mg	Oral	400 mg bd	7 days
Offer CMI: Avoid alcohol for 24 hours after taking. Take with food to reduce stomach upset. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Pregnancy: Safe to use. Give in divided doses if possible				
Management of associated emergency: Consult MO/NP				

Example 3 - prescribing guide

Must be ordered by an authorised prescriber.
Only to be administered by clinicians who are authorised to administer medicines on an order as per usual scope of practice eg RN, midwife

Prescribing guide identified

Unscheduled	**Calcium gluconate**			**Prescribing guide**
RIPRN and RN only. Must be ordered by an MO				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	2.2 mmol/10 mL	IV	**Adult** 30 mL **Child** 0.6 mL/kg (max. 30 mL)	stat Inject slowly over 5–10 minutes in a large peripheral vein
Offer CMI: To counteract/offset the effects of hydrofluoric acid				
Note: High-risk medicine and is rapidly fatal in overdose. Extravasation can cause tissue necrosis				
Contraindication: Subcut and IM route				
Management of associated emergency: Consult MO/NP				

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Patient assessment and transport

Patient presentation - adult and child

General principles[1]

- The first priority is to assess whether the patient is seriously ill + needs immediate management, or is less acutely sick giving time to get a full history
- Always ask open ended questions
- In children, pay particular attention to history from parent/carer where available

Rapid assessment

- **D**anger
- **R**esponse
- **S**end for help if unresponsive
- **A**irway - compromised
- **B**reathing - not breathing, significant respiratory distress
- **C**irculation - pulse absent, slow, rapid or profuse bleeding
- **D**isability - **A**lert, **V**oice, **P**ain, **U**nresponsive
- Rapid history, allergies, alerts
- Vital signs - RR, SpO_2, HR, BP, T - use appropriate Q-ADDS/CEWT/MEWT (Qld) or local EWARS
- Consider BGL

Is patient immediately at risk

Yes

Consult MO/NP as soon as circumstances allow

Perform immediate stabilising or life-saving measures. See
Basic life support, p. 44
Advanced life support, p. 46
or other topic relevant to urgent presentation

No

Note: if trauma related eg fall/hit by an object/motor vehicle accident, promptly assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
If meets criteria contact ✆ RSQ 1300 799 127
or RFDS 1300 697 337
If outside Qld, refer to local early notification process

Get history and do physical examination as relevant. See
History and physical examination - adult, p. 17
or History and physical examination - child, p. 464

Form a clinical impression

Select appropriate topic to guide further assessment and management

Adult presentation

History and physical examination - adult

Recommend

- If child, see History and physical examination - child, p. 464
- Always think **could it be Sepsis, p. 62** if signs of infection or history/evidence of fever or hypothermia
- For specific presentations, see:
  - Traumatic injuries, p. 131
  - Chest pain assessment, p. 100
  - Mental health emergency, p. 328
  - STI/BBV assessment, p. 430
- Ensure a culturally safe environment. As appropriate, be guided by local health workers
- Document your findings clearly, concisely and in logical sequence - use this section to assist
- Offer opportunistic health promotion, screening + brief intervention as appropriate.[1,2] See *Chronic Conditions Manual*

Background

- The history is the most powerful tool for identifying the likely diagnosis in most cases[1]
- Types of history:[2]
  - **emergency** - urgent, rapid collection of crucial information compiled concurrently with life-threatening measures. Take a comprehensive history once patient is stabilised
  - **focused/problem centred** - shorter and specific to the patient's current presenting concern
  - **complete** - comprehensive history of the patient's past and present health status. Usually done at initial visit in a non-emergency situation
  - **follow up** - evaluation of problem from preceding visit

Vital signs - adult approximate normal values[1-4]	
Respiratory rate **RR**	12–20 breaths/minute
Heart rate **HR**	60–100 beats/minute
Temperature **T** - oral, tympanic	35.5–37.5
Blood pressure **BP**	Systolic ‹ 130, diastolic ‹ 85
O_2 saturation **SpO_2**	≥ 94%
Conscious level - **A**lert, **V**oice, **P**ain, **U**nresponsive	Alert
Capillary refill time **CRT**	≤ 2 seconds
Blood glucose level[5] **BGL**	4.0–7.8

Step 1: Obtain history of the presenting concern/problem[1,6]

- Taking the history is the first step in making a diagnosis
- Use the history to guide the physical examination/further investigations
- An accurately acquired history will usually suggest the diagnosis. The physical examination and investigations should be used to confirm your diagnostic impression

History of the presenting concern/problem	
Presenting concern/ problem	• Ask what the problem is • Use open ended questioning
For each symptom ask about (as relevant)	• Ask about length of illness and details of each symptom(s). Use **SOCRATES** mnemonic • **Site** - where is the symptom - localised or diffuse • **Onset:** – gradual, rapid or sudden – continuous or intermittent – what were they doing when it started • **Character** eg if pain: – sharp, dull, burning, stabbing, cramp like, crushing, tingling • **Radiation** - (if localised) does it travel elsewhere • **Alleviating factors** - does anything make it better eg sitting up, medicine(s), analgesia • **Timing:** – when did it first begin, duration – have they had it before – any increase in severity • **Exacerbating factors** - does anything make it worse eg movement, exercise • **Severity:** – does it interfere with sleep or normal activities – if pain - mild, moderate or severe OR severity on scale of 1–10
Associated/other symptoms	• Ask specifically about **fever/rigors, pain, shortness of breath (SOB), diarrhoea, weight loss** • Eg nausea, vomiting, photophobia, headache, appetite, urine, bowels, energy
Treatment ± medicine(s) taken during this illness	• What, how much, when, how often, effectiveness

- Ask if there are any other concerns
- Consider possible differential diagnosis
- Subsequently use closed ended questions to confirm or refute your differential diagnoses

Step 2: Ask about past history[1,6]

- Review and update past history in medical record each visit. As appropriate, check *My Health Record* https://www.myhealthrecord.gov.au
- Consider past history that may assist with differential diagnosis this visit
- Always ask about allergies and medicines

Past history	
Past medical and surgical history	• Significant illnesses in the past • Ask about - diabetes, hypertension, angina and myocardial infarcts, epilepsy, asthma, mood or mental health problems • Previous hospital admissions, operations or injuries - where, when, why • Is patient immunocompromised eg: – diabetes, chronic kidney disease or hepatitis, alcoholism, no spleen, lupus, multiple sclerosis, rheumatoid arthritis, HIV, Down syndrome, corticosteroids, chemotherapy, immunosuppressants[7]
Family history	• Health problems in siblings and parents eg diabetes, hypertension, heart disease, stroke, epilepsy, asthma, cancer, mental health
Social history	• Usual GP + contact details if available • Job, living conditions, who else lives at home and what responsibilities do they have in the family. Means of communication for contact/follow up eg phone • Who their partner is or if they are in a relationship • Gender identification + pronouns eg her/him • Smoking/ever smoked - how many a day, ever tried giving up; vapes • Alcohol - what, how much/often. Express in standard drinks/day or week • Recreational drugs • Recent overseas travel (if infectious disease possible) - where/when • Diet, exercise • Risk factors + indicators for Domestic and family violence, p. 232
Medicines Also see Best possible medication history, p. 548	• Regular and prn medicines - prescribed/over-the-counter, complementary, alternative, bush medicines, vitamins, oral/other contraceptive (females): – generic name, dose, route, frequency – explore adherence and any barriers to taking medicines as prescribed – recently changed/course completed • If patient has medicines with them, check against medical record
Allergies **Adverse medication reactions**	• Allergies/reactions + type of reaction (anaphylaxis, skin reaction, other) to: – medicines – other eg honey bee stings, sticking plaster, food – is adrenaline (epinephrine) autoinjector used eg EpiPen® • Check medical record + document allergies/adverse reactions[8] • Check medical alert jewellery/accessories eg key ring, USB, shoe tag, anklet, watch, tattoo[9]
Immunisations	• Check if up-to-date, including COVID-19 vaccination status • Offer opportunistic Immunisations, p. 542 as appropriate
Opportunistic health checks (offer or refer as appropriate)	• Check if due for routine health checks eg STI/BBV check, p. 430, Cervical Screening Test, mammogram, bowel screening • See *Chronic Conditions Manual* for **adult health checks**

Step 3: Do physical examination[1,6]

- Most information will be gained from history taking. Use this information to guide examination
- **In an adult who is not sick**:
  - examine the relevant system first
  - proceed to further examination if required. Be guided by your findings
- **In a sick adult**:
  - examine the relevant system first followed by ALL other systems
- Use a systematic approach to physical examination

Physical examination - adult	
Vital signs	• RR, HR, BP, T, SpO_2 • Conscious state - GCS/AVPU, p. 550 • If indicated: – BGL – capillary refill time (≤ 2 seconds) • **Document on appropriate Q-ADDS (Qld) or local EWARS:** – if pregnant/postnatal, use appropriate Q-MEWT rural + remote – **calculate score. Act on score if indicated + consider screening for Sepsis, p. 62**
General appearance	• Do they look sick/not sick • Observe: – posture, mobility – any ↑ work of breathing (WOB), breathlessness – conjunctiva and nail beds - are they pale – lips, tongue and fingers - are they blue – general skin colour - pale/jaundiced – agitation, distressed – sweating – are they well nourished • Weight ± height, BMI and waist measurement
Hydration	• Eyes - normal or sunken • Mouth and tongue - wet or dry • Skin turgor - normal or reduced. Pinch skin - normal skin returns immediately on release (normal can be reduced in elderly) • Dry axillae • Recent weight loss/gain • Also see Hydration assessment - adult, p. 202

Physical examination - adult (continued)	
Skin	• Check the whole body in a sick patient: – consider removing clothing to underwear • Look for: – rashes - vesicular, macular, papular, petechiae, purpura – signs of infection - redness, swelling, tenderness, warmth – bruising, unexplained or unusual marks – general pigmentation - areas where skin is lighter or darker • Any skin lesions or sores: – colour, shape, size, location, distribution on body – non-blanching, erythema/redness – vesicles present – exudate eg clear, pus, bloody, malodorous – any family members/close contacts with similar lesions • Palpate/feel skin: – temperature, dryness/moisture, clamminess – any tender/enlarged lymph nodes in the neck, axillae or groin • See Rash, p. 286 as needed
Cardiovascular system	• Also see Chest pain assessment, p. 100 • Any: – pain/pressure in neck, chest, arms, or radiating pain – SOB on exertion – evidence of oedema, particularly feet, hands, face or sacrum • Check skin: – colour - pink, white, grey, mottling. Compare trunk with limbs – temperature - hot, warm, cool or cold. Compare trunk with limbs • Central perfusion - blanch skin over the sternum with your thumb for 5 seconds. Time how long it takes the colour to return in seconds • Peripheral perfusion - blanch the skin on a finger or toe for 5 seconds. Time how long it takes for the colour to return in seconds • Look for distended neck veins • If skilled listen to heart sounds - any murmur
Respiratory system	• Most information is gained from simple observation • Inspect anterior/posterior chest - equal chest expansion, abnormal chest movement, ↑WOB, use of accessory muscles, tracheal tug • Can they talk in full sentences, single words or unable to talk at all • Measure RR over 1 minute - note rhythm, depth and effort of breathing • Listen for extra noises - cough (loose, dry, muffled ± sputum), wheeze, stridor, hoarseness • Auscultate for air entry into both lung fields: – equal, adequate – any wheeze or crackles - on inspiration or expiration • Percuss lung fields - dull, resonant, hyper-resonant • Can they lie flat without breathlessness

Physical examination - adult (continued)	
Gastrointestinal/ reproductive system Consider cultural safety/sensitivity	• Inspect abdomen for scars, distension, hernias, bruising, masses • Auscultate bowel sounds in all 4 quadrants - present or absent • Palpate abdomen: – soft or firm – obvious masses – tender to touch. Identify abdominal quadrant and exact area – guarding or rigidity even when the patient is relaxed – rebound tenderness - press down and take your hand away very quickly, is pain greater when you do this • Change of bowel habits • Ask women: – date of last normal menstrual period – abnormal vaginal bleeding or discharge, itch • Do pregnancy test if reproductive age with abdominal pain • In men: – if relevant check the testes - any redness, swelling, tenderness, itch, lesions – ask about penile discharge • See Abdominal examination, p. 199 for detailed assessment
Nervous system	• Assess conscious state. See GCS/AVPU, p. 550 • Any dizziness, spinning, fainting, blackouts, problems with speech, vision, weakness in arm/leg, altered sensation, neck stiffness • Assess orientation to time, place and person. Ask: – name, date of birth, location, time, date, year • Check: – pupils - size, symmetry, reaction to light – for asymmetry of tone and power - compare each side of the face and limbs – if indicated, test touch and pain sensation - using cotton wool and the sharp end of the percussion hammer – test finger nose coordination and if possible observe the patient walking • See Dizziness/vertigo, p. 124 as needed
Musculoskeletal system	• Ask if any painful or stiff joints or muscular pain • Observe gait • Inspect joints for redness, swelling, warmth or lacerations over or near a joint • See Musculoskeletal injuries, p. 150 as needed
Eyes	• Check Visual acuity, p. 265 of each eye as indicated • Inspect: – eyes and surrounding structures - any redness, discharge or swelling – pupils - equal in size, regular in shape, reaction to light – eye movements • See Eye assessment, p. 263 for detailed assessment

Physical examination - adult (continued)	
Ears, nose and throat	**Ears** • Inspect/check: – pinna - any redness, swelling, nodules – behind the ear (mastoid) for redness, swelling, pain • Any obvious swelling or redness of the ear canal. If there is, looking with an otoscope will be painful • Using otoscope, inspect: – canal - any redness, swelling, discharge, foreign bodies (insects/objects) – eardrum - normal, redness, dullness, bulging/retraction, fluid, bubbles, perforations or discharge • See Ear assessment, p. 505 for detailed assessment **Nose** • Feel for facial swelling (sinuses), pain • Any discharge or obvious foreign body **Throat** • Inspect - lips, buccal mucosa, gums, palate, tongue, throat for: – colour changes, swelling, bleeding, pus, fissures – tonsils - redness, enlargement, pus – teeth and gums
Urine	• Check urine in all sick patients and if: – abdominal pain (+ do pregnancy test if reproductive age) – urinary symptoms – diabetes • Do urinalysis • Note colour - normal, dark or blood stained, cloudy

Step 4: Consider differential diagnosis

- If unsure, collaborate with MO/NP
- Always consider Sepsis, p. 62

Step 5: Select *Health Management Protocol* (HMP) or *Clinical Care Guideline* (CCG)

- To guide further assessment and management
- Document the page number of the HMP/CCG referred to in the medical record

Step 6: Order/collect pathology if indicated

- **RIPRN:**[10]
  - may order pathology as per the PCCM
  - name and signature of the MO, NP or RIPRN must be on pathology form or follow local protocol for electronic ordering
  - if RIPRN orders pathology, they are responsible for following up the result
  - consult MO/NP if results are abnormal/concerned about results
- Other clinical staff may be able to request pathology if there is a local agreement in place between the director of the clinical unit and Pathology Qld or local health service
- Write or record on electronic request 'copy of report to…' RFDS/other collaborative health provider on the pathology form as appropriate

- Point-of-care testing (PoCT) is available in some facilities eg i-STAT
- See Pathology Qld for:
  - pathology test list
  - rural and remote pathology request forms
- If outside Qld, refer to local pathology services

Step 7: Collaborate with MO/NP as needed

- Always consult MO/NP if you are unsure
- Have Q-ADDS/CEWT/MEWT score completed
- Use ISBAR, p. 25 to guide your communication
- Check your local facility guidelines to find out who to contact - during and after hours:
  - **if in doubt call the retrieval service in your State/Territory eg RSQ**

Qld contacts may include		
Local/on-site MO/NP	• **Check contact details/on call roster at your workplace or contact DON**	
RSQ **Retrieval Services Qld**	• 24 hour telehealth, coordination and emergency medical advice • For critically unwell, high acuity patients eg if local doctor not available, or if RSQ is your first point of contact • Early notifications eg trauma, STEMI • Neonatal, paediatric, adult + obstetric patients	**1300 799 127** Keep your video conferencing equipment switched on at all times. RSQ will make a video conference call. No need to use remote control https://qheps.health.qld.gov.au/rsq
RSQ **Telehealth**	• 24 hour, 7 days/week emergency clinical support + advice for rural and remote clinicians • Video conference consultations with clinicians eg clinical nurses, senior midwifery advisors, emergency NPs/physicians	**1300 799 127** https://qheps.health.qld.gov.au/rsq/rsqtelehealth
RFDS **Royal Flying Doctor Service (Qld Section)**	• 24 hours, 7 days/week statewide services to Qld Health rural + remote facilities where RFDS provide primary care, including: – phone + video clinical support by primary care/rural generalist and critical care physicians – emergency aeromedical retrieval	**1300 697 337** (1300MYRFDS)

- **If outside of Qld, my contacts are**:
  - .....
  - .....

Clinical consultation

Consulting with MO/NP/retrieval coordinator[1]

- Be clear and methodical
- Write your findings down first, time permitting
- **Advise early if you think the patient may need retrieval**
- Say what you think is wrong. Your assessment is important

I	**Identify** yourself **AND** identify name and spelling of receiving MO/NP • I am ... (your name and role) • I am calling from ... (location) • The best contact number for me is ...
S	**Situation and status - why are you calling** • I have a patient ... (name, age and gender) • Who is ... (stable/unstable/deteriorating/improving) • Any immediate clinical needs eg attend the hospital, urgent retrieval • I think the patient is/has ... (clinical impression/suspected diagnosis/unsure but worried) eg I have a critically unwell man with sepsis; I have a well female with diabetic foot ulcer • Most recent vital signs and Q-ADDS/MEWT/CEWT score, or local EWARS
B	**Background** • History of presenting problem, relevant past history • Evaluation - physical examination, findings, investigation findings • Allergies • Current medicines • I have ...(taken the following actions eg given O_2, inserted IVC, started IV sodium chloride 0.9%)
A	**Assessment and actions** • General appearance • Weight + additional observations • I am wanting ... (advice, orders, retrieval) • Level of urgency is ... • Agree on plan of action with MO/NP/retrieval coordinator
R	**Recommendations and read back** • Confirm: – shared understanding of what needs to happen - who is doing what and when – contact details - name, number to be called back on – follow up requirements and referrals – medication orders • Read back critical information • Identify parameters for review or escalation (any concerns - follow normal/local escalation pathway) • Identify any risks

Patient retrieval

1. Who to contact[1,2]

- Usually the MO/NP, or Director of Nursing (DON) if possible, will arrange retrieval if required
- Be guided by local facility policy as to which retrieval service to contact:
  - RSQ 1300 799 127
  - RFDS 1300 697 337 if the community is normally serviced by the RFDS (for advice and retrieval). RFDS will advise RSQ of retrieval requirement
- **If you think a patient may need retrieval, contact the relevant retrieval service EARLY**:
  - even if transport requirement not confirmed
  - this helps allocate resources
- Notify change of clinical condition of patient if worsening or improving:
  - flight priority can always be reassessed

2. Retrieval preparation[1,2]

Retrieval preparation	
Documentation	• Complete retrieval/**RFDS Aeromedical retrieval checklist** • Ensure documentation goes with the patient including: – pre-hospital documentation – discharge summary - medical/surgical letter from referring facility – observations forms, including all recent observations + current vital signs, neurological status, BGL, neurovascular – current medication chart, with prn analgesia + cardiac medications (as required) – IV fluid orders and fluid balance chart – ECGs, including ECG recorded on day of transfer – pathology results – x-rays - if digital radiology available, electronically transfer x-ray(s) to receiving facility – ARP/AHD - copy of current – optional - bariatric chart completed if › 120kg; PTSS forms
Handover location	• Handover location will be determined during the retrieval coordination process • If patient stabilised and prepared, handover at airport/airstrip may occur • Critical and unstable patients will be reviewed at the referring facility by the retrieval team prior to transport
Patient escort and baggage Space and weight restrictions apply	• If room, an escort may be carried at the discretion of the pilot: – name + weight of escort required • Maximum baggage allowance is 1 small bag ≤ 5 kg • Medical aids/additional baggage at the pilot's discretion • Confirm no cigarette lighters, vapes, spare batteries and aerosol cans in luggage • Inform family/carers of plans/expectations

General preparation		
Consideration	**Requirements**	**Rationale**
Allergies/ identification	• Apply ID bands if available	• Rapid correct identification
Weight, height + widest point	• If › 120 kg, measure width at widest point eg shoulder or hips as per **RSQ Bariatric sizing chart** (Qld) https://qheps.health.qld.gov.au/rsq/forms (Qld Health intranet only)	• Assists transport planning
Analgesia	• Give analgesia as clinically indicated prior to transfer • See Acute pain, p. 32	• Movement of the patient may exacerbate pain
Antiemetic	• Antiemetic essential if: – head, spinal, or penetrating eye injury • Consider for history of motion sickness or general nausea • Give 30 minutes prior to transfer • See Nausea and vomiting, p. 40	• Vomiting may exacerbate certain clinical conditions by raising ICP and intraocular pressure (IOP) • Puts airway at risk • Motion sickness common in aeromedical environment
IVC	• Ensure most patients have at least 1 IVC • IVC x 2 in critically ill/disturbed patients	• IV access may be difficult during flight due to space restrictions and turbulence
IDC	• Get patients to empty their bladder prior to transfer • Insert IDC if is/may be incontinent	• No toilet facilities on aircraft • Use of bedpans is avoided due to limitations of space and waste disposal
Infusions	• Prior to transfer prepare infusions using compatible equipment, if possible, when using RFDS or other retrieval services	• Time is saved if infusions are prepared prior to RFDS arrival
NGT/OGT	• Ensure NGT/OGT inserted in: – all ventilated patients – patients with bowel obstruction	• Allow for drainage of stomach contents and reduce risk of vomiting and aspiration
Nicotine patch	• Offer to patients who are smokers	• Patient comfort

Specific medical conditions		
Consideration	**Requirements**	**Rationale**
Mental illness/disturbed behaviour	• Reliable IV access. If possible IVC x 2 • A risk assessment will be completed by the retrieval service • Sedation and physical restraint may be required. Seek medical advice • Documentation of SAT score + any interventions/response	• For aviation safety, special requirements apply to transportation of patients showing signs of disturbed behaviour, or regarded as being a danger to themselves or others
Infectious conditions	• Always notify retrieval coordinator of: – infectious conditions ± precautions – if immunocompromised	• Facilitate decision-making regarding the aeromedical transport of infectious patients in order to minimise risk to other patients and staff • Limited ability to isolate patients in aircraft
Spinal injury	• Transport on vacuum mattress • Insert IDC • Insert NGT if have altered LOC	• To maintain stabilisation
Bowel obstruction	• Insert NGT - leave on free drainage or attach anti-reflux valve (do not spigot) • Give parenteral antiemetic and adequate analgesia prior to transfer	• Trapped gas will expand in volume at altitude and cause pain. NGT will allow gas to escape and reduce vomiting
Pneumothorax	• Ensure intercostal catheter in place • Connect to ambulatory chest drain system eg Rocket® • Suspected pneumothorax should be excluded, if possible, by appropriate imaging	• Trapped gas in the pleural cavity will expand at altitude and may result in respiratory compromise • Underwater seal drains are avoided due to the risk of retrograde flow during transfer
Penetrating eye injury	• Give antiemetic to all patients with proven or suspected eye injury • Patients may be transported at reduced cabin altitude	• Trapped gas in the globe will expand at altitude and potentially worsen the injury • Vomiting may also exacerbate injury by raising intraocular pressure

RFDS Aeromedical Retrieval Checklist

Royal Flying Doctor Service

Patient ID Label - Stick here	Diagnosis: _____ Referring Facility: _____ Receiving Facility: _____
☐ Patient ID Checked and Correct	

Next of Kin:
NOK Phone Number:

NOK notified of transfer Yes / No

Patient Transport Requirements – *to prepare, please consider the following:*

- ☐ Pt wearing comfortable clothing (hospital gown only if clinically required)
- ☐ Fear of flying: Yes/No
  Consider pre-flight medications.
- ☐ Behavioural Concerns: Yes/No
- ☐ Mobility:
  - walk up and down 6 stairs: Yes/No
  - requires stretcher: Yes/No
- ☐ Luggage less than 5kg
  - use RFDS patient bag for belongings
- ☐ Nil flammables or cigarette lighters permitted
- ☐ Empty all draining bags (e.g., IDC)
- ☐ Toileting prior to departure

IV access (as indicated)

IVC in situ - size & site_____

IVC in situ -size & site _____

Pre-Flight Medication Considered:

- ☐ Analgesia
- ☐ Antiemetic
- ☐ Sedative
- ☐ Other

Infectious Conditions e.g., MRSA, VRE

Yes/No

If yes, specify_____

Required Documentation

- ☐ Discharge summary - Medical/Surgical letter from referring Facility
- ☐ Observation Forms (including all recent observations)
- ☐ Current Observations (including Vital Signs, Neurological status, BGL, Neurovascular)
- ☐ Current Medication Chart (with PRN analgesia and cardiac medications, as required)
- ☐ IVT Orders & Fluid Balance Chart
- ☐ ECG's (including ECG recorded on day of transfer)
- ☐ Pathology Results
- ☐ ARP/AHD - Copy of Current
- ☐ Other: _____

Optional Documentation

- ☐ Bariatric Chart – complete if weight >120kg
- ☐ PTSS Forms

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Pain, nausea and vomiting

Acute pain

HMP Acute pain - adult/child

1. May present with

- Acute pain

2. Immediate management

- If chest pain, go to Chest pain assessment, p. 100
- If severe pain:
  - get rapid history + check for allergies
  - contact MO/NP urgently
  - **adult** - insert IVC + give IV morphine or fentanyl
  - if IVC delay - consider alternative routes eg IM/subcut, inhalation, intranasal
  - **child** - consider intranasal fentanyl. **Note:** must be skilled in the use of this. Use is off-label
- If severe pain + looks sick - screen for Sepsis, p. 62
- If sudden onset severe headache/'worst headache of life' - go to Headache, p. 122
- If abdominal pain still give analgesia. **Note:** will not mask physical signs/hinder diagnosis

3. Clinical assessment[1,2]

- The most useful diagnostic approach to acute pain is to take a detailed and systematic history
- Ask about:
  - **Site** - where is it
  - **Onset** - when did it start:
    - sudden or gradual
    - result of trauma/activity/cold/stress
  - **Characteristics** eg sharp, throbbing, aching, burning, stabbing
  - **Radiation** - does it spread anywhere else
  - **Associated symptoms** eg nausea, vomiting, sweating, fever
  - **Timing** - duration, constant or intermittent:
    - has anything changed the pain
    - ever had this pain before, how often does it occur
  - **Exacerbating or relieving factors**:
    - eg rest, medicines, eating, position changes, ice/splinting
  - **Severity** - at rest, on movement:
    - mild, moderate, severe
    - scale from 0–10 (0 = no pain, 10 = worst pain imaginable)
    - if child consider **FLACC** or **FACES**
- Ask about:
  - any pain relief already given/taken prior to presentation eg by carer, self, ambulance staff:
    - when, what, dose, how effective
  - pain relief used in past - what worked/did not work, side effects
- Get past history, including:
  - current medicines, over-the-counter medicines
  - opioid use (if any)
- Do vital signs
- If child - do weight - bare weight if < 2 years

Pain assessment scales

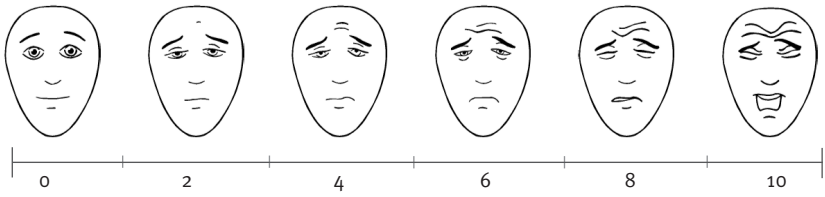
FLACC pain scale birth–3 years (or as required eg nonverbal person)[3]
Observe with legs + body uncovered for 2–5 minutes

	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting, back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams, sobs, frequent complaints
Consolability	Content, relaxed	Reassured by touching, hugging or being talked to, distractable	Difficult to console or comfort

Calculate score: 0 = relaxed + comfortable, 1–3 = mild discomfort, 4–6 = moderate pain, 7–10 = severe discomfort/pain

FACES 4+ years[1,3]

"These faces show how much something can hurt. This face ***[point to left-most face]*** shows no pain. The faces show more and more pain ***[point to each from left to right]*** up to ***this*** one ***[point to right-most face]***. It shows very much pain. Point to the face that shows how much you hurt **[right now]**"



Clinician to say 'hurt' or 'pain' (language child understands) - not words like 'happy' or 'sad'

4. Management

- Consult MO/NP if:
  - severe pain, even if settled after initial analgesia
  - fever, persistent tachycardia or tachypnoea, or hypotension
  - analgesia is not effective
  - unable to find cause of pain
  - recurrence of pre-existing condition
  - suspected opioid seeking

Analgesia[1,4]

- Consider medicine(s) already given
- Use **Step wise approach** + consider **Non-pharmacological options**
- Some causes of pain may require **Alternative treatment/considerations**[5]

Alternative treatment/considerations

- Head injury, p. 140 only give opioids as per MO/NP
- Headache, p. 122
- Renal colic, p. 208 - give ketorolac
- Bites + stings - hot water, ice or lidocaine may be effective depending on cause
- Woman in Labour 1st stage, p. 383
- Eyes - Oxybuprocaine, p. 269 may be indicated
- Gout, p. 321
- Shingles, p. 312

Step wise approach to acute pain management[2,5]

Severity	Analgesia - if not allergic	Practice points
1–3 Mild	**Step 1** Non-pharmacological options **AND/OR** paracetamol	• The paracetamol content of all medicines must be considered. Advise max. dosing to take at home
4–6 Moderate	**Step 2** As for step 1 **AND/OR** ibuprofen* **AND/OR** oxycodone (adults only)	• Combination of paracetamol + ibuprofen is more effective than the use of either alone • *Always consider cautions/contraindications, see Ibuprofen drug box, p. 35 • Consider oxycodone only if pain is not adequately relieved by paracetamol ± ibuprofen
7–10 Severe	**Step 3** As for step 2 **AND/OR** Further dose of oxycodone **OR** morphine or fentanyl	• Check/monitor **Sedation score** • Consider intranasal fentanyl for child • **Note:** IM/subcut absorption may be impaired if poor perfusion eg hypovolaemia, shock • Preferably titrate via IV route

- **For quick procedures** < 10 minutes eg suturing, trauma/transferring in ambulance, consider:
  - **methoxyflurane** (eg Penthrox®) or **nitrous oxide** (eg Entonox®)
  - if **infant** consider **sucrose**, see Neonatal Medicines - NeoMedQ

Non-pharmacological options[1]

- Ice, massage, heat pack, repositioning, distraction, imagery, warm/quiet room/privacy, breathing techniques
- Elevation + splinting of injuries/suspected fractures - immobilisation can ↓ pain significantly
- Reassurance - explain cause of pain + expected outcome to relieve anxiety
- If infant/young child - breastfeeding, low lighting, bubbles, cuddling carer/parent, dummy use, swaddling

Monitor effect of analgesia

- Repeat pain scale:[1,3]
  - **mild/moderate pain** - 30–60 minutely as clinically indicated
  - **severe pain** - 10 minutely for 1st 30 minutes, then as required
- Do vital signs as appropriate + give antiemetic if Nausea and vomiting, p. 40
- **Note:** if given subcut, monitor for at least 2 hours due to delayed absorption/adverse effects

Sedation score[6]

- Patient must be woken to assess sedation

Score	Description	Action
0	**Awake**	• Nil
1	**Mild** - easy to rouse, able to keep eyes open for 10 seconds	• Increase monitoring of vital signs, sedation + pain score • Recheck score before giving potentially sedating medication
2	**Moderate** - rousable but unable to keep eyes open for 10 seconds	**Early respiratory depression** • Give O_2 to maintain $SpO_2 \geq 94\%$ • Stay with patient • Do not give further opioids/sedating medications • 15 minutely vital signs, sedation + pain score until sedation score < 2 • Contact MO/NP promptly
3	**Severe** - difficult to rouse or unrousable	• Stay with patient + call for help • Support airway/breathing + give O_2 to maintain $SpO_2 \geq 94\%$ • Give Naloxone, p. 39 if opioid was given • **Contact MO/NP urgently** • 5 minutely vital signs, sedation + pain score until sedation score < 2

S2	Ibuprofen			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg 400 mg	Oral	**Adult** 200–400 mg	stat Then 6–8 hourly as needed
Oral liquid	100 mg/ 5 mL		**Child > 3 months** 5–10 mg/kg (max. 400 mg) *Round down to the nearest measurable dose*	Max. 48 hours supply (or 1 bottle of liquid)
Offer CMI: Do not take if dehydrated eg due to vomiting or diarrhoea. Take with a glass of water. If upsets stomach take with food. May cause nausea, indigestion, GI bleeding, diarrhoea, headache, dizziness, fluid retention or hypertension				
Note: If renal impairment, taking diuretics, ACEIs, or ARBs consult MO/NP. Use with caution if asthma, cardiovascular disease or ↑ cardiovascular risk, taking lithium or anticoagulants				
Pregnancy: Avoid use. May ↑ rate of miscarriage. Seek specialist advice for use in the 2nd half of pregnancy; do not use during the last few days before expected birth				
Contraindication: Dehydration, active peptic ulcer disease or GI bleeding, severe renal, heart or liver failure, coagulation disorders				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [7]				

S2	Paracetamol			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose***	**Duration**
Tablet	500 mg	Oral	**Adult + child ≥ 12 years** 500 mg–1 g (max. 8 tablets/4 g in 24 hours)	stat Then 4–6 hourly as required Max. 48 hours supply (or 1 bottle of liquid)
Oral liquid	240 mg/5 mL 120 mg/5 mL 100 mg/mL		**Child › 1 month–11 years** 15 mg/kg (max. 1 g) *Round down to nearest measurable dose* (max. 60 mg/kg in 24 hours. Do not exceed 4 g in 24 hours)	
Suppository	125 mg 250 mg 500 mg	PR	**Adult + child ≥ 12 years** 500 mg–1 g	stat Further doses on MO/NP order
			Child › 1 month–11 years 15 mg/kg (max. 1 g) *Round down to nearest strength*	
Offer CMI: Too much paracetamol can cause liver damage. **Adult** do not take more than 4 g in 24 hours. **Child** give strictly according to dose + frequency instructions. Doses should not be given more frequently than 4–6 hours. Check paracetamol content of other medicines being taken eg over-the-counter medicines, cough + cold products				
Note: If hepatic impairment consult MO/NP. ***Reduce dose if risk factors for toxicity ie Adult:** (dehydration, alcohol use, under-nutrition/low body weight, anticonvulsants, elderly/frail) - if ≥ 50 kg, ↓ max. dose to 3 g/24 hours; if ‹ 50 kg, give 15 mg/kg (max. 4 doses/24 hours). **Child:** (fever, dehydration, under-nutrition, or if ‹ 5 kg) - ↓ max. dose to 45 mg/kg/24 hours (do not exceed 3 g/24 hours). **Also see *Guideline for safe paracetamol use*** https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/medicines/safety				
Management of associated emergency: Consult MO/NP. Recognise + treat suspected paracetamol toxicity without delay. Contact Poisons Information Centre ✆ 131 126 [8,9]				

S8	Oxycodone			Extended authority ATSIHP/IHW/RIPRN
ATSIHP and IHW must consult MO/NP and administer only				
RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet (immediate release)	5 mg	Oral	**Adult only** 5 mg	stat Repeat after 4 hours if needed Further doses on MO/NP order
Offer CMI: May cause nausea, vomiting, itch, drowsiness, dizziness, headache, constipation, low BP when moving to standing, indigestion or dry mouth				
Note: Monitor sedation score + RR. If elderly/frail or acute alcoholism seek MO/NP advice				
Pregnancy: Consult MO/NP				
Contraindication: Acute or severe bronchial asthma or other obstructive airways disease. Avoid use if renal or severe hepatic impairment, head injuries or raised ICP - get MO/NP advice				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80. Give naloxone if overdose [5,10]				

<table>
<tr><th>S8</th><th colspan="3">Morphine</th><th>Extended authority
ATSIHP/IHW/MID/RIPRN</th></tr>
<tr><td colspan="5">ATSIHP, IHW and RN must consult MO/NP</td></tr>
<tr><td colspan="5">RIPRN may proceed EXCEPT for pregnant women</td></tr>
<tr><td colspan="5">MID may proceed for intrapartum use only. IM/subcut routes only</td></tr>
<tr><th>Form</th><th>Strength</th><th>Route</th><th colspan="2">Dose</th><th>Duration</th></tr>
<tr><td rowspan="8">Injection</td><td rowspan="8">10 mg/mL</td><td rowspan="6">IM/
Subcut</td><td colspan="2">Adult only</td><td rowspan="6">stat

Further doses on MO/NP order</td></tr>
<tr><td>Age (years)</td><td>mg</td></tr>
<tr><td>‹ 40</td><td>7.5–10</td></tr>
<tr><td>40–60</td><td>5–10</td></tr>
<tr><td>60–70</td><td>2.5–7.5</td></tr>
<tr><td>70–85</td><td>2.5–5</td></tr>
<tr><td>› 85</td><td>2–3</td><td></td></tr>
<tr><td>IV</td><td colspan="2">Adult only
0.5–2 mg increments (max. 10 mg)

Use the lower dose if › 70 years</td><td>stat
Inject slowly over 4–5 minutes
Repeat every 5 minutes if needed based on response + sedation score (max. 10 mg)
Further doses on MO/NP order</td></tr>
<tr><td colspan="6">Preparation: IV dilute with 9 mL water for injections to make a concentration of 1 mg/mL. IM/subcut start at lower end of dose range, titrate to response + sedation score</td></tr>
<tr><td colspan="6">Offer CMI: May cause nausea, vomiting, itch, drowsiness, dizziness, headache, constipation, low BP when moving to standing, dry mouth, sweating or dysphoria</td></tr>
<tr><td colspan="6">Note: Monitor sedation score + RR. Fentanyl is more appropriate in renal disease</td></tr>
<tr><td colspan="6">Contraindication: Acute or severe bronchial asthma or other obstructive airways disease. Avoid use if renal or severe hepatic impairment, head injuries or raised ICP - get MO/NP advice</td></tr>
<tr><td colspan="6">Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80. Give naloxone if overdose [5,11,12]</td></tr>
</table>

S8	Fentanyl	Extended authority ATSIHP/IHW/RIPRN

ATSIHP, IHW and RN must consult MO/NP. **Note:** IHW + ATSIHP may NOT administer intranasal

RIPRN may proceed for adult. **If child** - must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances allow

Form	Strength	Route	Dose		Duration
Injection	100 microg/ 2 mL	Subcut	**Adult only**		stat Further doses on MO/NP order
			Age (years)	microg	
			‹ 40	100	
			40–60	75–100	
			60–70	40–100	
			70–85	40–75	
			› 85	30–50	
		IV	**Adult only** 10–20 microg increments (max. 100 microg)		stat Inject slowly over 3–5 minutes Repeat every 5–10 minutes if needed based on response + sedation score Further doses on MO/NP order
		Intranasal*	**Child 1–12 years** 1.5 microg/kg (max. 100 microg)		stat Divide dose between nostrils to minimise swallowing + effects eg sneezing May repeat after 5–10 minutes on MO/NP order

Preparation: IV use undiluted or add sodium chloride 0.9% to facilitate slow injection. **Intranasal** use mucosal atomiser device (MAD), **add** 0.1 mL to initial dose to accommodate MAD dead space

Offer CMI: May cause rash, drowsiness, dizziness, headache, ↓HR, ↓BP when standing, dry mouth

Note: Monitor sedation score + RR. Use with caution if › 70 years. ***Intranasal is off-label use** - ensure documentation + evaluation is undertaken as per CATAG guiding principles for the quality use of off-label medicines www.catag.org.au

Contraindication: Acute or severe bronchial asthma or other obstructive airways disease, concurrent use with MAOI. Avoid use if possible in head injuries, raised ICP - get MO/NP advice

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80. Give naloxone if overdose [5,13,14]

S4	Nitrous oxide + oxygen (Entonox®)	Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed. SRH may proceed for adults only

Form	Strength	Route	Dose	Duration
Premix gas	Nitrous oxide 50% + oxygen 50%	Inhalation	**Adult + child › 4 years** Self-administered as needed	Short-term use only

Offer CMI: Patient must self administer ie hold the mouthpiece or mask (not clinician or parent). Pain relief after 5–8 breaths + wears off quickly. May cause dizziness, nausea and brief disinhibition

Note: Use with caution if opioid given. Use in well ventilated area to minimise non-patient exposure

Contraindication: Heart failure, severe cardiac impairment, may worsen/cause myocardial depression. Air containing cavities eg middle ear occlusion, abdominal distension, pneumothorax - risk of ↑ pressure ± volume in cavities

Management of associated emergency: Consult MO/NP. Give oxygen if overdose [15,16]

S4	Methoxyflurane			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Inhalation solution	99.9%	Inhalation	**Adult + child ≥ 6 years** 3 mL	stat Can repeat after 20 minutes (max. 6 mL/day)
Offer CMI: Pain relief after 6–10 breaths + continues for several minutes after stopping. May cause dizziness, drowsiness or headache				
Note: Self-administered with supervision. Only use if conscious + cooperative. Use in well ventilated area to minimise non-patient exposure. Do not use on consecutive days or exceed 15 mL/week				
Contraindication: Susceptibility to malignant hyperthermia				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [15,17]				

S3	Naloxone			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	400 microg/mL	IV	**Adult** 100–200 microg	stat Can repeat every 2 minutes (max. 10 mg)
		IM	**Adult** 400 microg **Child** 10 microg/kg (max. 400 microg)	stat Can repeat in 5 minutes/as per MO/NP
Nasal spray	1.8 mg/ actuation	Intranasal	**Adult + child** 1.8 mg (1 spray into 1 nostril)	stat Can give 2nd dose (using new device) into other nostril after 2–3 minutes
Note: Repeat doses until patient is more awake and breathing adequately. Patient should improve in 1 minute. Failure to respond may indicate another cause of unconsciousness. The duration of naloxone is short (15–30 minutes) compared to opioids. Continue observation + monitor RR. May cause an acute withdrawal syndrome in those with opioid dependence eg anxiety, agitation, tachycardia, confusion				
Pregnancy: Do not use in opioid dependent women, risk of withdrawal in fetus				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,18]				

5. Follow up

- If morphine/fentanyl needed, patient will likely need retrieval for further management
- If not retrieved, follow up as per MO/NP + likely cause of pain
- If supplied with paracetamol or ibuprofen + further pain relief is needed after 48 hours, consult MO/NP

6. Referral/consultation

- Consult MO/NP if further analgesia is needed + max. dose has been given

Nausea and vomiting

HMP Nausea and vomiting - adult/child

Recommend

- Always consider life-threatening causes eg bowel obstruction, mesenteric ischaemia, acute pancreatitis, myocardial infarction + head injury/raised intracranial pressure[1]
- Offer antiemetic for aeromedical retrieval prophylaxis

1. May present with

- Nausea ± vomiting

2. Immediate management

- If related to chest pain, go to Chest pain assessment, p. 100
- Do vital signs + BGL
- Screen for Sepsis, p. 62

ALERT suspect Button battery, p. 78 in all children if vomiting blood. A button battery lodged in the oesophagus can burn a hole through to the aorta causing catastrophic haemorrhage

3. Clinical assessment

Check for red flags - if any contact MO/NP urgently[2,3]

- ↑ BGL may indicate DKA, p. 87; ↓ BGL consider Hypoglycaemia, p. 89 as cause
- Prolonged vomiting
- Looks very unwell/very drowsy
- Significant weight loss
- Abdominal distension or tenderness
- Rectal bleeding
- Green, bile or blood/coffee grounds vomit
- Fever, neck stiffness, confusion
- Severe headache, altered LOC
- Isolated vomiting, lack of nausea
- History of head trauma/injury
- Bulging fontanelle - infant/young child
- Child - T › 39 or 38 if ‹ 3 months
- Projectile vomiting if 3–6 weeks of age. See Pyloric stenosis, p. 531

- Always try to identify the cause of the nausea/vomiting[1]
- Get history, including:[3]
  - duration of illness + frequency of vomiting
  - timing in relation to eating
  - food eaten in last 24 hours - could it be food poisoning
  - similar symptoms in family members/close contacts
  - pregnancy
  - exposure to toxins/poisons/bites/stings
  - recent illicit drug use, alcohol/hangover related
  - recent travel
- Ask about other symptoms eg:[1,2]
  - chest pain, heartburn
  - headache, vertigo or dizziness
  - last bowel motion, any diarrhoea
  - related to motion/travel
  - dysuria or frequency of urine
  - fever

- Get past history, including:[1]
  - current medicines, over-the-counter medicines, previous antiemetics
  - recent initiation of a new medicine(s)
  - diabetes
  - abdominal surgery
- Do physical examination, including:
  - Hydration assessment - adult, p. 202 or child, p. 522
  - + as determined from history eg:
    - GCS, p. 550
    - Abdominal examination, p. 199
    - urinalysis. **Note:** urinalysis cannot reliably exclude UTI in infants + young children[3]
    - pregnancy test if reproductive age
  - if child, do weight - bare weight if < 2 years

4. Management[1]

- Urgently contact MO/NP if any **Red flags**
- Contact MO/NP if:
  - child/infant, also see Child with vomiting, p. 475
  - no obvious cause/unsure
  - suspected poisoning
  - re-presentation/parental concerns
- If pregnant - seek advice from midwife/MO/NP - avoid antiemetic if possible:[4]
  - severe vomiting that starts in late pregnancy may indicate Preeclampsia, p. 370
  - if hyperemesis gravidarum (extreme morning sickness) MO/NP may order ondansetron
- Otherwise, treat cause if known - be guided by relevant topic
- If probable gastroenteritis ± dehydrated, see Gastroenteritis - adult, p. 202 or Gastroenteritis - child, p. 522
- Offer antiemetic as needed + monitor effect - contact MO/NP if not effective

S4	**Metoclopramide**			**Extended authority** ATSIHP/IHW/MID/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	10 mg	Oral IM IV	**Adult ≥ 20 years** 10 mg	stat Inject IV dose slowly over **at least 3 minutes** Further doses on MO/NP order
Injection	10 mg/2 mL			
Offer CMI: May cause drowsiness, dizziness or headache. Avoid driving or operating heavy machinery if affected. Report uncontrolled or repeated body movements eg face, mouth or tongue				
Contraindication: Parkinson's disease (avoid if possible), phaeochromocytoma + conditions where ↑GI motility may be harmful eg GI obstruction or perforation				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80. If extrapyramidal adverse effects + acute dystonic reaction (within minutes to days) **treat with benzatropine** [5]				

S4	Ondansetron			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet/orally disintegrating tablet	4 mg 8 mg	Oral/ IV	**Adult** 4–8 mg **Child › 6 months** **Oral** 8– ‹ 15 kg - 2 mg 15–30 kg - 4 mg › 30 kg - 8 mg **IV** 0.15 mg/kg (max. 4 mg)	stat Inject IV dose slowly over at least 5 minutes, or if › 75 years, infuse over 15 minutes Repeat after 8–12 hours if needed Further doses on MO/NP order
Injection	4 mg/ 2 mL			
Offer CMI: Put disintegrating tablet on top of tongue to dissolve, then swallow. May cause dizziness, headache, constipation				
Note: Seek MO/NP advice if hepatic impairment, phenylketonuria, prolonged QT interval (or risk factors for). Use for non-specific nausea + vomiting is off-label, see www.catag.org.au for documentation				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 2,6,7				

S4	Benzatropine			Extended authority ATSIHP/IHW/MID/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed. MID may proceed with oral dose only				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	2 mg	Oral	**Adult** 1–2 mg	stat Further doses on MO/NP order
Injection	2 mg/2 mL	IM		
Offer CMI: May cause drowsiness, dizziness or blurred vision. May increase effects of alcohol				
Contraindication: GIT or urinary obstruction, myasthenia gravis				
Management of associated emergency: Consult MO/NP 8				

5. Follow up

- As per MO/NP + cause of nausea/vomiting

6. Referral/consultation

- As above

Emergency

Resuscitation

Basic life support (BLS) - adult/child

DRSABCD resuscitation, collapsed patient

Recommend[1-4]

- Good quality CPR and reducing time to defibrillation are the highest priorities
- Airway takes precedent over any injury, including possible spinal injury. Handle gently with no twisting or bending of spinal column or neck[1]
- **If pregnant** - once CPR in progress put padding, eg towel, under right hip to tilt 15–30°. Leave shoulders flat
- **Child/infant** - central pulse palpation may be used to assess circulation. If a pulse cannot be definitely identified within 10 seconds (or HR ‹ 60 with signs of poor circulation) start CPR[5]
- **If severe hypothermia** - still do CPR if fixed dilated pupils + assess for carotid pulse/breathing BEFORE compressions (take up to 1 minute)[6]

Background[2]

- Agonal breaths (occasional irregular gasps) are common in early stages of cardiac arrest

1. May present with[2]

- Collapse. Unresponsive and absent or abnormal breathing eg gasping

2. Immediate management[1-5,7]

DRSABCD as per **Basic life support flowchart**

- **Danger** - check environment/patient surroundings are safe before proceeding. PPE as needed
- **Response** - verbal and tactile stimuli (talk and touch)
- **Send for help** - shout for help + start ABCD. Contact MO/NP/RSQ or other local help:
  - control Catastrophic haemorrhage, p. 131 if trauma related
- **Airway** - leave person in position found:
  - open using **head tilt–chin lift** or **jaw thrust.** If neck injury, only use jaw thrust:
    - child - head in 'sniffing position'
    - infant ‹ 1 year - head in neutral position
  - **if fluid/matter obstructs airway** at any time:
    - use suction if available OR roll on to side to clear airway
    - if visible material, remove if able eg with forceps or rescuer's fingers
- **Breathing:**
  - **look** - movement of chest/abdomen, **listen** - for breath sounds, **feel** - air on rescuer's cheek
  - if unresponsive but breathing normally, see Unconscious patient, p. 58
- **Start CPR if unresponsive + breathing absent or NOT normal:**
  - place on firm surface
  - 30 compressions: 2 ventilations
    - if paediatric BLS trained - **child** 2 ventilations (first): 15 compressions
  - 100–120 compressions/minute
- **Defibrillation** - attach automated external defibrillator **(AED)** + follow prompts:
  - **adult and child › 8** - adult pads
  - **child 1–8** - paediatric pads (or adult size if not available)
  - continue CPR + minimise interruptions to chest compressions
  - alternate person doing compressions when AED advises to stop eg to analyse rhythm/shock, or if fatigued

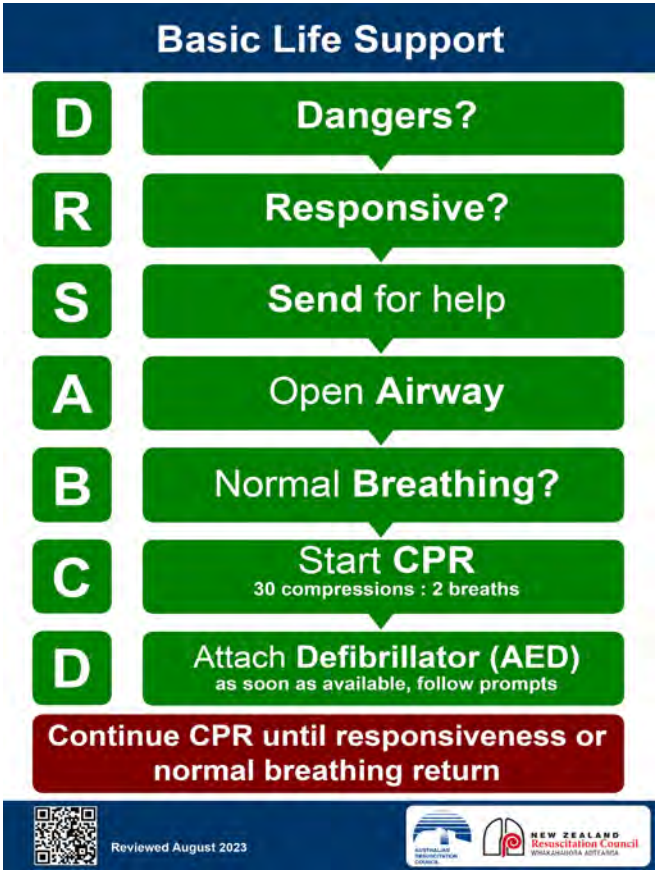
3. Clinical assessment

- See **Immediate management**

4. Management

- **Get ALS trained clinicians if available**
- Continue CPR until responsive, normal breathing returns, or MO/NP instructs otherwise
- Control bleeding, protect from weather + other first aid measures depending on circumstances

Basic life support flowchart[8]



5. Follow up

- According to patient's condition/presentation

6. Referral/consultation

- As above

Advanced life support (ALS) - adult/child

Recommend[1]

- As soon as possible use ALS treatments to supplement BLS
- **Good quality CPR and reducing time to defibrillation are the highest priorities**
- **Medicine resources (Qld):**
  - CREDD - *Qld paediatric resuscitation tools*
  - RESUSMENU and ReMS - resuscitation medication preparation/safety (Qld Health intranet only)

CREDD

1. May present with[1,2]

- Unresponsive and absent or abnormal breathing eg gasping **+ BLS commenced**

2. Immediate management[1-5]

- **See flowchart** - Adult ALS, p. 49 or Paediatric ALS, p. 50
- Urgently contact MO/NP/RSQ

Continue CPR + minimise interruptions

- **Adult** - 30 compressions: 2 ventilations
- **Child/infant** - 2 ventilations (first): 15 compressions
- 100–120 compressions/minute

Attach defibrillator pads + assess rhythm

- **SHOCKABLE rhythm** - VF or pulseless VT
  - give single shock:
    - adult/child › 8 years: 200 J (all shocks) or as per AED[3]
    - infant/child ≤ 8 years: 4 J/kg. See Estimated weight (kg) based on age, p. 47 or CREDD
  - resume CPR for 2 minutes - unless responsive or breathing normally
  - after 2 minutes - reassess rhythm + treat as per rhythm eg if shockable give another shock
  - give IV/intraosseous:
    - adrenaline (epinephrine) after 2nd shock + then every 2nd cycle of CPR (approx. 4 minutely)
    - amiodarone after 3 shocks on MO/NP order
- **NON-SHOCKABLE rhythm** - asystole or Pulseless Electrical Activity (PEA)
  - continue CPR
  - give IV/intraosseous adrenaline (epinephrine) immediately, then every 2nd cycle of CPR (approx. 4 minutely)

Continue cycle - CPR for 2 minutes, reassess rhythm, treat as per rhythm (shock or CPR)

During CPR - ALL RHYTHMS

- O_2 100%
- IV or Intraosseous, p. 55 access
- Consider airway adjuncts **without interrupting CPR › 5 seconds** eg oro/nasopharyngeal airway, LMA, p. 54 (if LMA inserted continue CPR without breaks for ventilation)
- Waveform capnography monitoring if available

Look for + correct reversible causes in collaboration with MO/NP[1,2]

- Get rapid history from witnesses if able:
  - physical circumstances, precipitating events/symptoms
  - medicines/allergies
- **Consider 4 Hs and 4 Ts:**
  - **Hypoxia** - 100% O_2 via bag-valve-mask
  - **Hypovolaemia** - rapid IV sodium chloride 0.9% 20 mL/kg. Stop obvious bleeding
  - **High or low electrolytes (K, Ca, Mg) + metabolic disorders** - consider i-STAT - BGL + UE
  - **Hyper/hypothermia**:[6]
    - ↓T - remove wet clothing/rewarm as per Hypothermia, p. 189 + do BGL
    - ↑T - rapid cooling as per Hyperthermia, p. 191
  - **Tension pneumothorax** - do Needle decompression, p. 138 if indicated
  - **Tamponade**
  - **Toxins/poisons/drugs** - if possible remove source ± call Poisons Information Centre ✆ 13 11 26
  - **Thrombosis** - pulmonary/coronary. If adult with suspected PE, MO/NP may consider fibrinolysis[1]

S3	Adrenaline (epinephrine)			Extended authority NIL
MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1:10,000 (1 mg/10 mL)	**IV** **Intraosseous**	**Adult** 1 mg	**stat/after 2nd shock** **Then every 2nd cycle** (3–5 minutely) Rapid injection
			Child 10 microg/kg (max. 1 mg) **Note:** 100 microg = 1 mL	**Flush with sodium chloride 0.9%** 20–30 mL or if child, small bolus
Preparation: See CREDD **for correct dose for child's weight.** Give **undiluted.** Use prefilled syringe if available. If 1:10,000 not available, use 1:1,000 and dilute to 10 mL with sodium chloride 0.9% [2,5,7,8]				

S4	Amiodarone			Prescribing guide
MID, RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	150 mg/3 mL	**IV** **Intraosseous**	**Adult** 300 mg 2nd dose of 150 mg if needed	**After 3rd shock** Inject over 1–2 minutes or 5 minutes if child
			Child > 1 month 5 mg/kg (max. 300 mg) Can be repeated	**Flush with glucose 5%** 20–30 mL or if child, small bolus
Preparation: Adult dilute 6 mL (300 mg) to 30 mL with glucose 5%. **Child see** CREDD **for correct dose for child's weight.** Dilute 3 mL (150 mg) to 15 mL in glucose 5% to give 10 mg/mL. **Note:** if needed inject undiluted as IV push. Incompatible with sodium chloride 0.9% [2,5,8,9]				

Estimated weight (kg) based on age[8]

Birth (term)	1 month	2 months	3 months	4 months	6 months	9 months	1 year	2 years	3 years	4 years
3.5	4	5	6	7	8	9	10	12	14	16
5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	
18	20	22	25	28	30	35	40	45	50	

- **Be guided by MO/NP as to when to cease CPR**. In consultation with family if present

Consider prolonged CPR if

- Poisoning. Get advice from toxicologist or Poisons Information Centre (PIC) ✆ 13 11 26 (24 hours) if possible[10]
- Electrical injury, lightning strike. Fixed dilated pupils may be transient[11]
- Box jellyfish sting[12] + give Box jellyfish antivenom, p. 226
- Drowning[13]
- Hypothermia - until T › 30 or as per MO/NP.[6] See Hypothermia, p. 189 for how to rewarm
- If PE and fibrinolysis given - do CPR at least another 30 minutes/as per MO/NP[5,14]
- Anaphylaxis + ensure adequate IV fluid volume resuscitation[14]

Return of spontaneous circulation (ROSC)

- Suspect ROSC if regular respiratory effort, movement, or readings from monitors compatible with ROSC/pulse. Check for a pulse, if palpable continue with post resuscitation care, otherwise continue CPR[15]

3. Clinical assessment

- See **Immediate management**

4. Management

Post resuscitation care - commences once ROSC occurs[16,17]

- Re-evaluate ABCDE
- Urgent retrieval
- In collaboration with MO/NP, monitor/do:
  - vital signs:
    - SpO_2 - aim for 94–98%
    - sBP - aim for › 100 (adult). As guided by MO/NP for child
  - temperature - aim for 35.6–37.5 (unless MO/NP advising therapeutic hypothermia)[18]
  - avoid fever + Hyperthermia, p. 191. Treat aggressively if occurs
  - BGL frequently. Avoid Hypoglycaemia, p. 89. If BGL › 10 MO/NP may order insulin[17]
  - ECG + continuous cardiac monitoring
  - IV fluids
  - ± chest x-ray
  - continue to investigate + treat reversible causes
  - assess for resuscitation related injuries
- MO/NP may consider antiarrhythmic to prevent recurrent VF

If resuscitation unsuccessful and patient has died

- See Patient death in absence of MO, p. 549

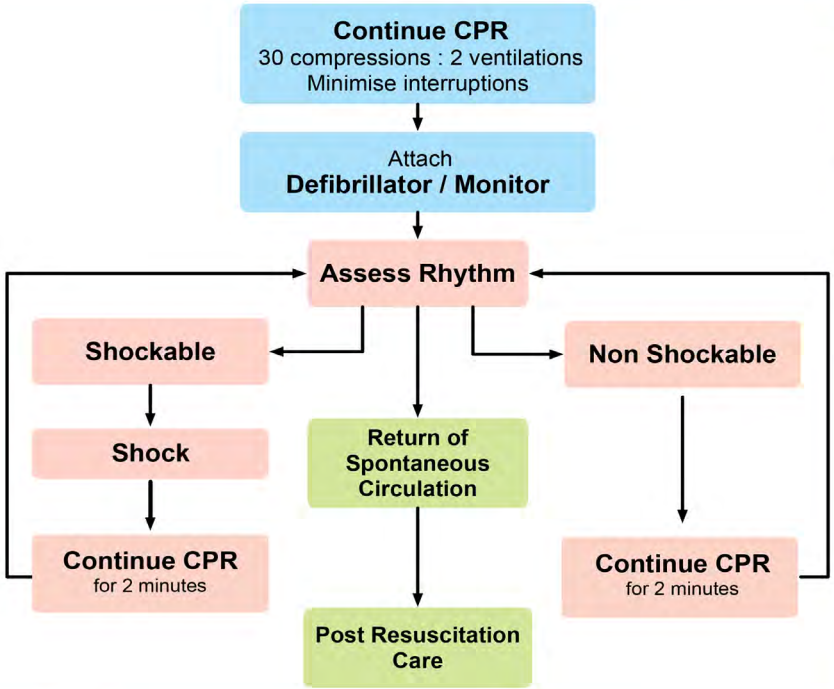
5. Follow up[1]

- Provide support for family members
- Consider sensitive, professional debriefing of people involved in resuscitation

6. Referral/consultation

- Always contact MO/NP

Adult Advanced Life Support



During CPR
- Airway adjuncts (SGA or ETT)
- Oxygen
- Waveform capnography
- IO or IV access
- Plan actions before interrupting CPR (e.g. charge defibrillator)

Drugs

Shockable
- Adrenaline 1 mg after 2nd shock (then every 2nd cycle)
- Amiodarone 300mg after 3 shocks

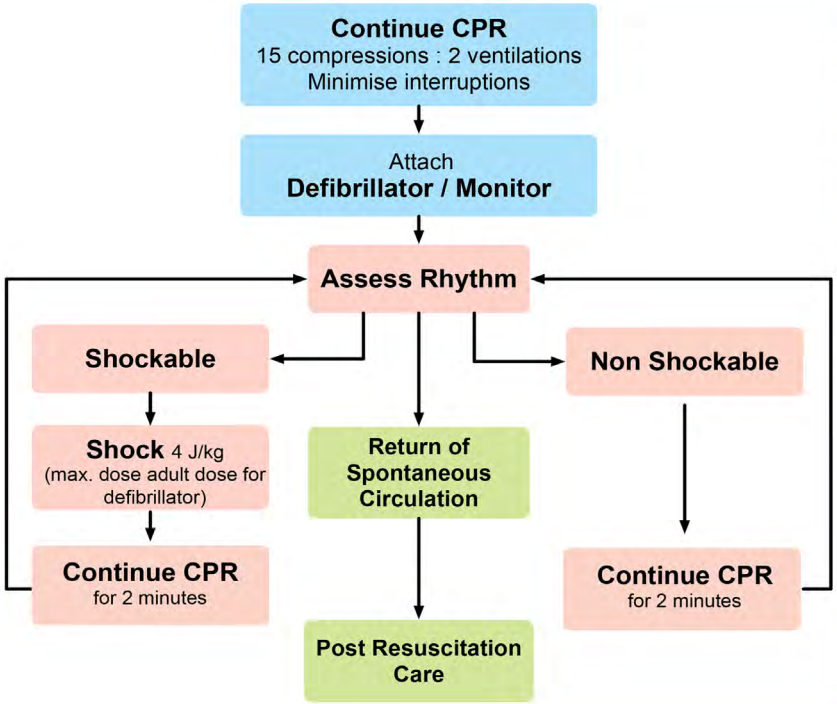
Non Shockable
- Adrenaline 1mg immediately (then every 2nd cycle)

Consider and correct
- Hypoxia
- Hypovolaemia
- High or low electrolytes (K, Ca, Mg) & metabolic disorders
- Hypothermia or hyperthermia
- Tension pneumothorax
- Tamponade
- Toxins
- Thrombosis (pulmonary or coronary)

Post Resuscitation Care
- Re-evaluate ABCDE
- 12 lead ECG plus CXR
- Treat precipitating cause
- Aim for SpO2 94-98%, normocapnia, normoglycaemia
- Temperature control

Reviewed August 2023

Paediatric Advanced Life Support



During CPR
- Airway adjuncts (SGA or ETT)
- Oxygen
- Waveform capnography
- IO or IV access
- Plan actions before interrupting CPR (e.g. charge defibrillator)

Drugs

Shockable
- Adrenaline 10 micrograms/kg (max. dose 1 mg) after 2nd shock (then every 2nd cycle)
- Amiodarone 5 mg/kg (max. dose 300 mg) after 3 shocks

Non Shockable
- Adrenaline 10 micrograms/kg (max. dose 1mg) immediately (then every 2nd cycle)

Consider and correct
- Hypoxia
- Hypovolaemia
- High or low electrolytes (K, Ca, Mg) & metabolic disorders
- Hypothermia or hyperthermia
- Tension pneumothorax
- Tamponade
- Toxins
- Thrombosis (pulmonary or coronary)

Post Resuscitation Care
- Re-evaluate ABCDE
- 12 lead ECG plus CXR
- Treat precipitating cause
- Aim for SpO2 94-98%, normocapnia, normoglycaemia
- Temperature control

Oxygen delivery

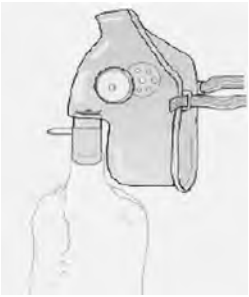
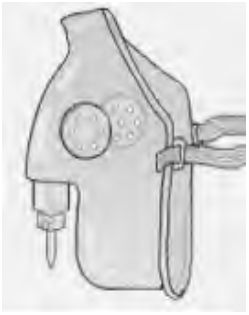
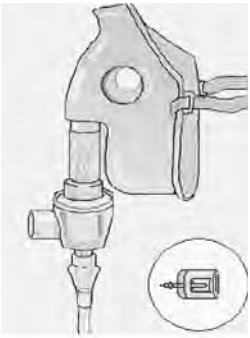
Oxygen delivery - adult/child

Recommend[1]

- Oxygen is a therapeutic intervention. It should only be given if clinically indicated + titrated to SpO_2

Oxygen use in specific scenarios[1-4]

Scenario	Recommendation	Target SpO_2
Shock **Major trauma** **Sepsis** **Other critical illnesses**	• Give high flow O_2 with non-rebreather mask at 15 L/minute until stable	≥ 94%
Acute stroke	• Give if SpO_2 ‹ 92%	
Hypotension	• Give until hypoxia can definitely be excluded	
Chest pain/ACS	• Do not routinely administer O_2- unless SpO_2 ‹ 93% or signs of shock	
Carbon monoxide poisoning eg house fire	• 15 L/minute O_2 with non-rebreather mask for 6 hours • Keep at rest to minimise O_2 needs • Pulse oximetry is unreliable + may give false normal or high reading	
Suspected decompression illness or pulmonary barotrauma after diving	• Give near 100% O_2 as soon as possible, regardless of SpO_2 • Continue until advised by MO/NP	
Paraquat (herbicide) poisoning **Previous treatment with Bleomycin**	• Do not routinely administer O_2 - can be hazardous • Only give if arterial O_2 saturation falls below 90%	88–92%
Patients at risk of hypercapnic respiratory failure (HRF) eg • Previous HRF • COPD, bronchiectasis, cystic fibrosis • History of heavy smoking • Obstructive sleep apnoea • BMI › 40 • Severe kyphoscoliosis or ankylosing spondylitis • Neuromuscular disorders with respiratory muscle weakness eg motor neurone disease • Use of opioids, benzodiazepines • Patients with acute asthma who are tiring • Home oxygen/oxygen concentrators	• If critically unwell administer O_2 - do not withhold. Observe for effect and harmful effects - contact MO/NP urgently • Do not routinely administer O_2 - can be hazardous/harmful • Normal SpO_2 is sometimes 90–92% • Excess O_2 can lead to elevated SpO_2 › 95% which ↓ respiratory drive leading to under-ventilation • Use capnometry if available	88–92%

Oxygen delivery systems[1,5]			L/minute
Non-rebreather mask (mask with reservoir)	• Partial **or** full non-rebreather • High flow device • Ensure O_2 flow keeps reservoir inflated		8–15
Simple face mask (Hudson mask)	• If require › 10 L/minute use non-rebreather mask		5–10 **Note:** not ‹ 5 L/minute, due to risk of re-breathing CO_2
Venturi face mask	• Colour coded dilution jets delivering various % of high flow O_2 • Select the appropriate jet + O_2 flow rate according to manufacturer's instructions		As per manufacturer's instructions
Nasal prongs	• Neonate max. 1 L/minute • Child ‹ 2 years max. 2 L/minute • Child › 2 years–adult max. 4 L/minute • If requires › 4 L/minute use a face mask • High flow nasal cannula, see Bronchiolitis, p. 486		0.125–4

Continuous positive airway pressure (CPAP) if skilled[6,7]

- Use local guidelines eg › 16 years QAS Clinical practice procedure - *Respiratory/non-invasive ventilation-CPAP* https://www.ambulance.qld.gov.au/clinical/cpm/procedures
- **Indications:**
  - acute pulmonary oedema
  - life-threatening asthma
- **Only use if:**
  - GCS › 8, conscious +
  - able to protect own airway + manage respiratory secretions
  - no vomiting, facial trauma or epistaxis
- **Set up equipment** as per manufacturer's instructions
- **Ensure a good seal:**
  - check that inner circumference of air cushion of face mask encompasses bridge of nose, side of mouth + lower border of bottom lip with mouth slightly open[5]
- **Oxygen flow rate:**
  - adult - initially 8 L/minute to generate 5 cm H_2O of CPAP. Gradually increase to max. 15 cm H_2O
  - ‹ 16 years - consult MO/NP
- Maintain SpO_2 90% or as per MO/NP
- Stay with patient where possible
- Nurse sitting up or semi-recumbent. Consider side lying if obese abdomen or pregnant
- **Monitor closely:**
  - continuous SpO_2 + cardiac monitoring
  - chest sounds, chest wall movement, accessory muscle use
  - patient comfort, skin integrity under mask/straps + mouth/eye care prn
- **Monitor for complications:**
  - nausea/vomiting (risk of aspiration)
  - gastric distension
  - ⇩BP
  - pneumothorax eg ⇩air entry, ⇧percussion on affected side ± unequal chest movement

Laryngeal mask airway (LMA) insertion

LMA - adult/child

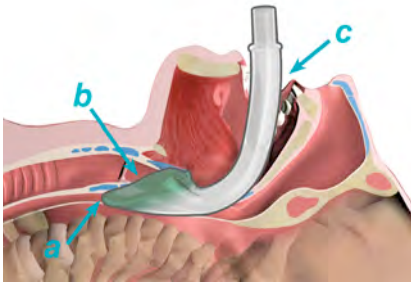
Instructions for i-gel® supraglottic airway[1] (concept is similar for other LMAs - check first)

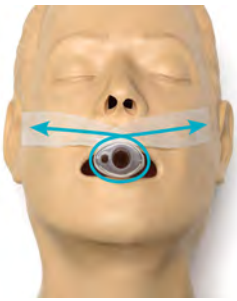
- See training and guidance videos https://au.intersurgical.com/info/igel-videos
- Select appropriate size
- Lubricate back, sides + front of cuff with thin layer of lubricant
- If using i-gel O_2® check supplementary O_2 port is capped[2]

Age/kg	i-gel® size
Neonate 2–5 kg	1.0
Infant 5–12 kg	1.5
Child 10–25 kg	2.0
25–35 kg	2.5
Adult 30–60 kg	3
50–90 kg	4
90+ kg	5

If adult and no c-spine injury suspected, extend head with neck flexed[2]

- Grasp i-gel along the bite block + position so that the cuff outlet is facing towards the chin
- Place patient's head in the 'sniffing position'
- Open the mouth by gently pressing the chin
- Introduce soft tip into the mouth towards hard palate
- Glide i-gel downwards + backwards along hard palate with a continuous but gentle push until a definitive resistance is felt
- If early resistance is felt, jaw thrust or deep rotation may overcome this
- No need to insert fingers into patient's mouth
- **Do not apply excessive force**
- A black line across the bite block indicates approx. position of teeth when positioned correctly
- The tip of the i-gel should be located in the upper oesophageal opening **(a)** and the cuff against the laryngeal framework **(b)**. The teeth resting on the bite block **(c)**
- **Secure i-gel** by taping maxilla to maxilla
- If patient no longer tolerates i-gel or unable to ventilate effectively, remove it





Images used with permission of ®Intersurgical Ltd, UK

Also see QAS Clinical practice procedure - *Supraglottic airway - i-gel®* https://www.ambulance.qld.gov.au/clinical/cpm/procedures

Intraosseous access

HMP Intraosseous access - adult/child

Recommend

- Use if urgent need for fluids/medications + difficult/failed IVC access[1]
- Pain from intraosseous infusion under pressure is more severe than insertion[2]

- **Check for contraindications:**[2]
  - fracture, burn or tissue loss in or adjacent to the target bone
  - excessive tissue ± absence of adequate anatomical landmarks
  - infection at site
  - previous significant orthopaedic procedure at the site, prosthetic limb or joint
  - intraosseous access/attempted access in targeted bone within last 48 hours
- **Prepare equipment + site:**
  - select site + needle set, as per **Insertion guide** (next page)[1,2]
  - clean site using antiseptic + aseptic technique
  - **note:** lidocaine is not usually needed for insertion of intraosseous needle
  - if responsive to pain, **before infusion** prime extension set with lidocaine 1% approx. 1 mL (10 mg)
- **Insert intraosseous needle** (instructions next page)
- **Once inserted:**[1,2]
  - place stabilising dressing over the hub
  - aspirate for blood/bone marrow. The inability to withdraw/aspirate blood does not mean unsuccessful insertion, consider re-trying after the flush
  - attach primed extension set + flush with lidocaine 1% OR sodium chloride 0.9% if unresponsive
  - connect fluids. Infusion may need to be pressurised to get desired rate ie pressure bag or pump

<table>
<tr><th>S4</th><th colspan="3">Lidocaine</th><th>Prescribing guide</th></tr>
<tr><td colspan="5">MID, RIPRN and RN only. Must be ordered by an MO/NP</td></tr>
<tr><th>Form</th><th>Strength</th><th>Route</th><th>Dose</th><th>Duration</th></tr>
<tr><td rowspan="4">Injection</td><td rowspan="4">1%
50 mg/
5 mL</td><td rowspan="4">Intraosseous</td><td>Adult
40 mg</td><td rowspan="2">Remember to calculate including dose in primed IV extension
Give over 2 minutes, allow to dwell in intraosseous space for 1 minute, then rapidly flush with sodium chloride 0.9%
child 5 mL adult 10 mL</td></tr>
<tr><td>Child < 16 years
0.5 mg/kg
(max. 40 mg)</td></tr>
<tr><td colspan="2">Additional half doses</td></tr>
<tr><td>Adult
20 mg</td><td rowspan="2">Give over 1 minute
Repeat doses as per MO/NP
max. of once in 45 minutes</td></tr>
<tr><td>Child < 16 years
0.25 mg/kg
(max. 20 mg)</td></tr>
<tr><td colspan="5">Note: Child see CREDD. Monitor for extravasation, hypersensitivity/other side effects ie dizziness, paraesthesia, nystagmus, rash, drowsiness/confusion, seizures, ↓RR, ↓HR, ↓BP</td></tr>
<tr><td colspan="5">Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,4]</td></tr>
</table>

Insertion guide[2]

Needle set

- Select needle set based on patient weight, anatomy + clinical judgment

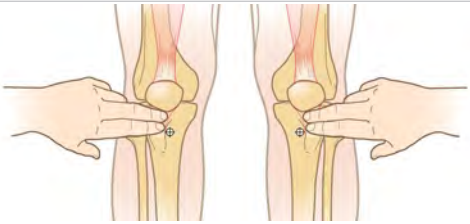
- **45 mm needle set** (yellow hub) proximal humerus › 40 kg + patients with excessive tissue over any insertion site
- **25 mm needle set** (blue hub) › 3 kg
- **15 mm needle set** (pink hub) approx. 3–39 kg

Proximal humerus

- Place patient's hand over the abdomen, place your palm on the shoulder anteriorly. The 'ball' under your palm is the general target area. Aim needle downward at approx. 45° angle
- **Note:** abduction of arm after placement will dislodge needle

Proximal tibia

- Extend the leg, feel for flat aspect of tibia
- Approx. 3 cm (1–2 cm in infant/child) below the patella + approx. 2 cm medial (1 cm in infant/child) to the tibial tuberosity along the flat aspect of the tibia (depending on anatomy). Aim needle at a 90° angle to the bone

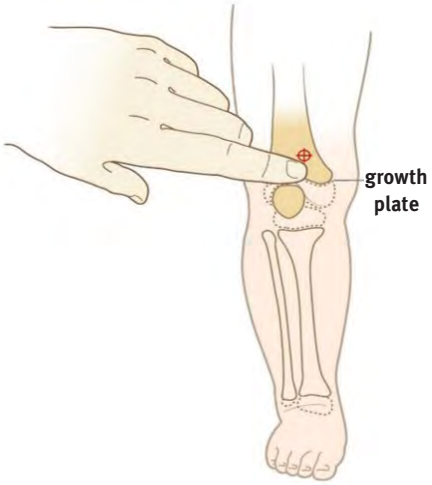


Distal tibia

- Approx. 3 cm (infant 1 cm/1 finger) above most prominent aspect of medial malleolus. Feel for anterior and posterior borders of tibia to assure that insertion site is in the flat centre of the bone. Aim needle at a 90° angle to the bone

Distal femur - child only

- Secure site with leg outstretched to ensure knee does not bend. Feel for patella, insertion site is just proximal to superior border (max. 1–2 cm) and approx. 1–2 cm medial



Arrow EZ-IO Vascular Access System images courtesy of Teleflex

Insertion guide (continued)[2]	
How to insert Arrow EZ-IO® device	• Attach needle set to driver + remove safety cap • Push needle tip through the skin until tip touches the bone: – before pressing the trigger, **check** at least 1 black line is visible above the skin to confirm adequate needle set length • Gently drill. Immediately stop advancing + release the trigger when you feel a 'pop' or 'give' as the needle set enters the medullary space: – do **NOT** pull/jerk back on the driver when releasing the trigger • Hold the hub + pull the driver straight off needle set. Continue to hold hub in place while twisting the stylet off with anticlockwise rotations • **See instructions + video** at Teleflex EZ-IO
Manual insertion	• Hold the needle set with the catheter hub and stylet as 1 piece. Ensure stylet + hub stay screwed together • Rotate clockwise/anticlockwise while applying gentle, moderate steady downward pressure without rocking the needle set. Allow rotation + pressure to penetrate the bone cortex, not excessive force • **Child** - stop when change of pressure or resistance felt as a 'pop' or 'give' indicating entry to medullary space • **Adult** - advance needle set approx. 1–2 cm after entry into medullary space, which is felt as a change in resistance; in the proximal humerus for most adults the needle set should be advanced 2 cm or until hub is flush or against the skin
After insertion	• **Monitor closely + contact MO/NP if:**[1,2] – intraosseous lidocaine is not sufficient + the patient is still in pain: – MO/NP may consider systemic analgesia – change in patient's response to medications – ↓ flow rate/alarms on infusion pump – fever or signs of: – extravasation/infiltration at site – Compartment syndrome, p. 159 in limb
Removal	• Remove extension set + dressing and attach luer-lock syringe to the hub • While maintaining axial alignment, twist the syringe + catheter clockwise while pulling straight out, **do not rock or bend** • Apply gentle pressure + dressing • Catheter must be removed in 24 hours from insertion

Critical emergencies

Unconscious/altered level of consciousness - adult/child

Recommend[1]

- **Medical emergency.** Early stability + diagnosis are vital
- Assume a serious cause until proven otherwise

1. May present with[2]

- Unconscious/altered level of consciousness (LOC)

2. Immediate management[2]

- **DRSABCD** as per BLS, p. 44
- Assist patient onto the ground/bed + position on side, left lateral if pregnant
- Do NOT leave sitting in a chair or put head between their knees
- **Open airway** - airway takes precedence over any injury:
  - consider c-spine immobilisation, p. 144 - handle gently, avoid twisting or forward movement of head + spine
  - use head tilt/chin lift for adult + child › 1 years
  - infant - keep head neutral
- **Call for help + contact MO/NP urgently**
- Stop any bleeding
- **Do vital signs +**
  - note pattern + regularity of breathing eg if:[1]
    - hyperventilation, ↑ RR - consider DKA, p. 87
    - shallow with extremely ↓ RR - consider opioid overdose. Give Naloxone, p. 214
  - give O_2 if required to maintain SpO_2 ≥ 94%
  - BGL - if ‹ 4 treat immediately. See Hypoglycaemia, p. 89
  - insert IVC x 2
  - GCS/AVPU, p. 550 (AVPU if child) + neurological observations:[3]
    - pupil size, symmetry + light response
    - motor response in limbs - compare sides
    - fontanelle in infant - sunken/soft/bulging/tense[4]
    - **note:** if GCS ≤ 8 may require secured airway, consider LMA, p. 54 until patient can be intubated[1]
  - continuous cardiac monitoring + ECG
- If hypotensive, rapidly give bolus IV sodium chloride 0.9%
  - **adult** 250–500 mL, **child** 10–20 mL/kg. See Shock, p. 60
- Screen for Sepsis, p. 62

3. Clinical assessment

- Do not leave patient alone if possible
- Constantly re-check for any change, including:[2,5]
  - airway for any signs of obstruction eg:
    - laboured/noisy breathing, or no sound of breathing
    - ↑ WOB eg intercostal recession, nasal flaring in infants
    - abdomen moves in/out, but loss of natural rise of chest
  - GCS, p. 550 - if drops ≥ 2 points urgently contact MO/NP

- **Get rapid history** from friends/relatives or bystanders:[1]
  - was the loss of consciousness witnessed
  - when/what happened prior/what were they doing
  - onset of ↓ LOC - gradual over hours or sudden, if sudden - at what time
  - prior headache/chest pain/other symptoms eg fever, unwell contacts, diarrhoea, nausea or vomiting
  - ingestions, IV drug use, medications, see Best possible medication history, p. 548 as a guide
  - trauma
  - seizures/abnormal movements
- **Look for clues/causes eg:**[1]
  - trauma
  - signs of stroke
  - overdose eg suicide note, empty medicine packet(s), needle + syringe, additional patches eg GTN, opioid - if suspected opioid give Naloxone, p. 214
    - + do Toxicology assessment, p. 213
  - alcohol or substance/drug use. **Note:** if alcohol intoxication suspected, continue to look for other causes
  - infection, especially in the elderly + children
  - bruising/minor injuries
  - snake bite/other envenomation. If suspected see Bites and stings, p. 217
  - indications of known allergies eg jewellery/accessory, key ring, USB stick, shoe tag, anklet, watch, tattoo

Possible causes of altered LOC[1,2]

Neurological	Metabolic
• Head injury/trauma, consider non-accidental injury in child • Stroke • Seizure/post seizure • Meningitis, encephalitis • Epilepsy • Tumour	• Hypo/hyperglycaemia, DKA • Intoxication - alcohol, inhalants • Poisoning or overdose • Sepsis • Electrolyte derangement • Encephalopathy • Liver failure, kidney failure
Low oxygen/hypoxia	**Heart + circulation**
• Airway obstruction, respiratory failure • Choking/foreign body • Allergy/anaphylaxis • Croup/epiglottitis • Asthma/COPD • Burns • Toxic gas/smoke/steam inhalation • Drowning/near drowning • Pneumonia • PE, pulmonary oedema	• Hypotension • Trauma/haemorrhage • GI bleed • Ectopic pregnancy • Ruptured aortic aneurysm • Cardiac arrest/arrhythmia • Intracranial haemorrhage • Hypo/hyperthermia

- **Get past history** as able (from relatives/friends/medical records):
  - known underlying illness eg epilepsy, diabetes, cancer
  - allergies
  - recent surgery/hospitalisation

- **Do physical examination**, including:[1]
  - listen to chest - any wheeze, crackles
  - head to toe examination - check for:
    - any odour eg fruity sweet smelling breath. **Note:** acetone - similar to paint thinner or nail polish remover - may indicate DKA, p. 87
    - skin eg rash, drug injection sites, puncture wounds
    - remove all clothing as you move down, maintain privacy + keep patient warm
  - urinalysis + pregnancy test if reproductive age
- **Take bloods/i-STAT:**[1]
  - FBC, lactate, glucose, UE, Ca, LFT, coagulation studies
  - toxicology screen including paracetamol, salicylate + blood alcohol level

4. Management

- Ongoing management as per MO/NP, which may include:
  - chest x-ray, eFAST (if trained/available)
  - retrieval + treatment according to suspected cause

5. Follow up

- According to possible cause - as per MO/NP

6. Referral/consultation

- As above

Shock - adult/child

Background[1]

- Shock is a loss of effective circulation resulting in impaired tissue oxygen + nutrient delivery and causes life-threatening organ failure. Any seriously ill/injured patient is at risk of developing shock
- Causes include - cardiogenic failure, sepsis, anaphylaxis, major haemorrhage, large fluid loss, rarely obstruction of cardiac outflow or neurogenic shock (spinal cord injury)

1. May present with[1-3]

- **Signs of shock:**
  - ↓ LOC
  - ↓ perfusion - mottled or pale skin, cool extremities, capillary refill › 2 seconds ± clammy
  - ↑ HR, ↑ RR
  - **note:** beta blockers may limit ↑ HR response

2. Immediate management

- **DRSABCD**
- Call for help + urgently contact MO/NP when able
- If signs of shock + suspected anaphylaxis:
  - give IM adrenaline (epinephrine) 1:1,000 (see Anaphylaxis, p. 80 for doses)
  - repeat every 5 minutes if needed
- Lie the person down, if unconscious place on side[2]
- **Start resuscitation**
- Give O_2 15 L/minute via non-rebreather mask[1,3]

- Insert IVC x 2 eg 18 G **or** Intraosseous, p. 55 if 2 failed attempts:
  - take bloods/i-STAT - VBG, lactate, UE, glucose. **Note:** if lactate › 2 inform MO/NP
- **Rapidly give bolus IV sodium chloride 0.9%:**[1,2]
  - **adult** 250–500 mL, **child** 20 mL/kg
  - reassess + repeat if no improvement in HR, LOC or perfusion
- If persisting signs of shock after fluid bolus x 2 - urgently contact MO/NP
- Screen for Sepsis, p. 62 - if suspected initiate sepsis pathway + give broad spectrum antibiotics[2]
- Monitor - vital signs, GCS, p. 550, capillary refill time
- Continuous cardiac monitoring[2]
- Look for cause of shock:[1]
  - **haemorrhage** eg Ectopic pregnancy, p. 357 - do pregnancy test, Traumatic injuries, p. 131, PPH, p. 398, Upper GI bleeding, p. 205, Button battery, p. 78, Rectal bleeding, p. 206
    - **note:** if trauma or postpartum haemorrhage MO/NP may order Tranexamic acid, p. 135 - give within 3 hours
  - **large fluid loss** eg Gastroenteritis - adult, p. 202 or Gastroenteritis - child, p. 522
  - **anaphylaxis, brain/spinal injuries**
  - **cardiac dysfunction** eg ACS, p. 104
  - **blockage of blood flow** in/around the heart eg PE, p. 120
- Insert IDC + hourly urine measures
- Keep patient warm and dry, consider forced air warming - if available
- Monitor closely + constantly re-check for any change

3. Clinical assessment

- **A**llergies + check for medical alert eg jewellery, key ring, USB stick, shoe tag, anklet, watch, tattoo
- **M**edications
- **P**ast medical history eg immunocompromised, underlying conditions eg cancer, heart disease, diabetes
- **L**ast ate/drank
- **E**vents/recent:
  - illness, nausea/vomiting, diarrhoea
  - alcohol/drug use, social issues eg domestic and family violence
- Do physical examination, including:[1]
  - listen to chest - any wheeze, crackles, breath sounds equal/absent
  - ECG - send for urgent review by MO/NP
  - urinalysis
  - remove clothing and any dressings - check skin - any rash, wounds, bruising
  - abdomen - palpate for any tenderness, guarding, rigidity, rebound tenderness, masses
- Consider removing watches, rings, jewellery

4. Management

- Ongoing management as per MO/NP + likely cause of shock

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Sepsis/septic shock - adult/child

Recommend

- **Medical emergency.** Early recognition + rapid treatment is imperative for survival[1-5]
- Use sepsis pathway https://clinicalexcellence.qld.gov.au/resources/clinical-pathways. If outside of Qld, use local pathway

Background

- Septic shock = shock + infection. Sepsis = infection + organ dysfunction[2]

1. May present with

- Consider in all patients with acute illness or deterioration who may have an infection[5]

2. Immediate management

Child ‹ 16 years[1]

Screen + recognise - could it be sepsis

- Signs of infection or history and evidence of fever or hypothermia
- **PLUS ANY of the following:**
  - looks sick or toxic
  - patient, parental, carer or clinician concern
  - re-presentation with same illness
  - immunocompromised*
  - altered behaviour or ↓ LOC
  - ‹ 3 months
  - sepsis admission within last 30 days
  - Aboriginal and Torres Strait Islander

Do vital signs + BP, AVPU, p. 550, BGL, weight - bare weight if ‹ 2 years

Yes

No → Continue assessment as per HMP/CCG

ANY features of severe illness

- Severe respiratory distress/tachypnoea/apnoea (CEWT respiratory score 3)
- Severe tachycardia or bradycardia (CEWT HR score 3)
- Hypotension (CEWT BP score ≥ 2)
- Altered AVPU
- Poor skin perfusion or cold extremities
- Lactate ≥ 2 (if known)

Yes

Highly likely to HAVE sepsis

- **Consult MO/NP/RSQ urgently**
- **Start resuscitation + treatment now,** p. 64

No

Do you still suspect sepsis

Yes

MAY have sepsis

- **Consult MO/NP/RSQ urgently**
- Targeted history + examination
- Do i-STAT lactate

No

Unlikely to have sepsis

- Reassess + escalate if needed, as per HMP/CCG
- If discharged, give **Paediatric sepsis checklist** to parent/carer as per pathway (link in **Recommend**)

Note: *if oncology patient use *Initial management of suspected neutropenic sepsis* (Qld Health intranet only)

Adult ≥ 16 years[2]

Screen all adults who meet ANY of the following criteria

- Looks sick
- You suspect they may have sepsis
- Has a suspected infection
- Patient/family/carer concerned about patient condition
- Current or recent fever ± chills or rigors
- Hypothermia < 35.5
- Signs of clinical deterioration eg change in behaviour, new onset confusion, or total Q-ADDS/Q-MEWT score ≥ 4
- If you suspect neutropenic sepsis, use local guidelines if available, or continue screening

If any of above

If none of above, continue assessment as per HMP/CCG

Screen + recognise - are ANY of the following risk factors present

*Absence of risk factors **does not exclude sepsis** as a cause of deterioration*

- Re-presentation within 48 hours or requiring repeated reviews
- Malnourished or frail
- Impaired immunity eg diabetes, steroids, chemotherapy, neutropenia, asplenia
- Alcohol or drug use disorder
- Indwelling medical device eg IVC, catheter, drain
- Recent trauma/surgery/invasive procedure
- Postpartum/miscarriage
- Aboriginal and Torres Strait Islander

AND/OR - is there any potential source of infection

- Genital tract/reproductive system
- Respiratory tract
- Urinary tract
- Abdomen/GIT
- Breach of skin integrity/soft tissue/joint
- Implantable device/prosthesis
- CNS/meningitis
- Surgical site/wound
- Source is unclear, or other

Yes

ANY high risk criteria[2]

- **sBP < 90 (or drop > 40 from normal)**
- **Lactate ≥ 2 (if known)**
- **Non-blanching rash/mottled/ashen/ cyanotic**
- RR ≥ 25
- New O_2 requirement to keep SpO_2 ≥ 92%
- HR ≥ 130
- Not passed urine in last 18 hours OR urine output < 0.5 mL/kg/hour (if known)
- Evidence of new or altered mental state
- Recent chemotherapy

Yes

HAS sepsis or septic shock until proven otherwise

- **Consult MO/NP/RSQ urgently**
- **Start resuscitation + treatment now,** p. 64
- Increase observation frequency
- Do i-STAT lactate

No

No

ANY moderate risk criteria[2]

- **sBP 90–99**
- RR 21–24
- HR 90–129 OR new arrhythmia
- Not passed urine in last 12–18 hours
- T < 35.5 or ≥ 38.5 (or ≥ 38 if maternity patient)
- Family members/carers concerned about mental state
- Acute deterioration in functional ability

Yes

MAY have sepsis

- **Consult MO/NP/RSQ urgently**
- Do i-STAT lactate

No

Low risk for sepsis

- Look for other common causes of deterioration + consider hypovolaemia, AMI, stroke, PE
- **OR** continue as per HMP/CCG - if patient deteriorates escalate + reassess risk
- If to be discharged, give sepsis Patient information sheet (as per pathway link in **Recommend**)

Use sepsis pathway https://clinicalexcellence.qld.gov.au/resources/clinical-pathways
If outside of Qld, use local pathway

Start resuscitation + treatment now - child + adult[1,2]

- Call for help
- **Consult MO urgently + arrange early retrieval** - senior MO to diagnose sepsis where possible
- **Maintain SpO_2** ≥ 94% (88–92% if COPD). Give O_2 if needed
- **Insert IVC x 2 or** Intraosseous, p. 55 if 2 failed attempts
- **Take bloods** unless this will delay antibiotics › 1 hour (see table below)

Child	• Blood cultures - aim for 2–6 mL (1 aerobic bottle) • Lactate/VBG + BGL • If possible add FBC, CRP, CHEM20, coagulation studies
Adult	• Lactate - measure or remeasure • Blood cultures - 2 sets from 2 sites (2 sets of aerobic + anaerobic bottles) • FBC, UEC, glucose (or CHEM8+ i-STAT), LFT, lipase. **If septic shock** add coagulation studies • **Also** collect urine, sputum + other relevant cultures but do not delay antibiotics

Give antibiotics within 1 hour - do not delay[1,2]

- **Give within 30 minutes if** febrile neutropenia or suspected meningococcus or meningitis
- MO/NP will order **Empirical antibiotics** or target to source of infection if known +
  - check **allergies**, **MRSA risk**, history of **multidrug-resistant (MDR) organisms**
  - **if allergic to penicillins, see Sepsis pathway for alternative antibiotics**
  - **may contact ID physician** if shock, *MDR infection, encephalitis, pregnant, antibiotic contraindications, extremes of weight, immunocompromised, dialysis, IV drug use, significant underlying conditions + known to be colonised with antibiotic-resistant organisms
- **Give antibiotics with shorter infusion times first.** If IV/intraosseous failed, give IM **unless** contraindicated

Empirical antibiotics - if **NOT** allergic to penicillins

	Age	Sepsis	Septic shock/critically ill
Child	‹ 2 months	• **Cefotaxime PLUS ampicillin** • If MRSA risk* ADD vancomycin	• ADD gentamicin PLUS vancomycin • OR in North Qld if risk of melioidosis (tropic wet season or flooding) - REPLACE cefotaxime with meropenem and ADD vancomycin
	2 months–16 years	• **Cefotaxime** • If MRSA risk* ADD vancomycin	
	All ages - if encephalitis suspected ADD Aciclovir, p. 74		
Adult		• **TobramycinΔ PLUS flucloxacillin** • If MRSA risk* ADD vancomycin • If suspected invasive meningococcal disease ADD ceftriaxone	• TobramycinΔ PLUS ceftriaxone PLUS flucloxacillin. If MRSA risk* ADD vancomycin • **Wet season:** meropenem PLUS vancomycin • **If suspect toxic shock** ADD clindamycin 600 mg

***MRSA risk:** chronic underlying disease (eg kidney disease, diabetes), immunosuppression, chronic wounds or dermatitis, injection drug use, living in close quarters or communities with high MRSA prevalence, or known colonisation with MRSA. **MDR infection risk:** recent admission (‹ 12 months) to overseas hospital with high prevalence of MDR organisms, or prior colonisation or infection with a resistant MDR Gram-Negative organism suspected

ΔGentamicin can be used instead of tobramycin at same dose. **If MDR infection risk**, MO may replace tobramycin with amikacin. Only 1 aminoglycoside can be used within 24 hours of each dose - decision needs to be made early

Max. mL for IM injection (per site)					
Muscle	**0–18 months**	**18 months–3 years**	**3–6 years**	**6–15 years**	**› 15 years**
Vastus lateralis (outer mid-thigh)	0.5 mL	1 mL	1.5 mL	1.5–2 mL	2–2.5 mL
Deltoid	Not recommended	*0.5 mL	0.5 mL		1 mL
Ventrogluteal		*1 mL	*1.5 mL	*1.5–2 mL	2–2.5 mL
*Gluteus maximus		1 mL	1.5 mL	1.5–2 mL	2–2.5 mL
*Not recommended if other sites are available					
Note: Volumes of up to 2.4 mL in 1 injection are used in exceptional circumstances (with documented informed consent ie where the risk of muscle necrosis is discussed with the patient/carer)					

Start IV/intraosseous fluid resuscitation - MO/NP may order sodium chloride 0.9% or Hartmann's

- **Child** - give rapid fluid bolus 10–20 mL/kg:
  - monitor for fluid overload eg hepatomegaly (enlarged liver)
  - MO/NP may order:
    - repeat up to 40–60 mL/kg within 1st hour
    - if hypoglycaemic - 2 mL/kg glucose 10%
  - consider second IV/intraosseous access
- **Adult** - consider volume based on weight, cardiac function, comorbidities, current volume status + haemodynamics:
  - if indicated, give rapid fluid bolus 250–500 mL
  - consider albumin 5% solution if septic shock
  - assess response + give further bolus if indicated
  - further IV fluids on MO/NP orders (do not exceed 30 mL/kg without senior MO input)

Consider inotropic support and prepare early - MO/NP may order

- **Child** - if no or limited improvement in haemodynamic status after 40–60 mL/kg of fluid:
  - IV/intraosseous adrenaline (epinephrine) infusion
  - preparation - dilute 1 mg (1 mL of 1:1,000) adrenaline (epinephrine) to 50 mL with sodium chloride 0.9%. Start infusion at 0.1–0.5 microg/kg/minute. See CREDD for equivalent mL/hour for weight
- **Adult** - vasopressors/inotropics for hypotension during/after fluid resuscitation eg:
  - noradrenaline (norepinephrine). Usual starting dose 5 microg/minute

Reassess + monitor response to resuscitation

- **Child** - check for ANY **Persistent signs of sepsis** ≤ 15 minutes of treatment

Persistent signs of sepsis (child)

- Tachypnoea - CEWT respiratory score ≥ 2
- Tachycardia - CEWT HR score ≥ 2
- Hypotension - CEWT BP score ≥ 2
- Lactate ≥ 2
- Altered AVPU
- Poor skin perfusion; capillary refill ≥ 3 or cold extremities
- Urine output ‹ 1 mL/kg/hour

- **Adult** - aim for:
  - SpO_2 ≥ 92% - titrate to 92–96% (88–92% if COPD)
  - sBP › 100
  - urine output › 0.5–1.0 mL/kg/hour

MO/NP will urgently seek ICU/RSQ advice if:

- Vasopressor/inotropes started
- Child with **Persistent signs of sepsis**
- Adult if haemodynamic status not improving
- Lactate ≥ 2
- If critically ill at any time

3. Clinical assessment[1,2]

- Ask about recent history of:
  - illness, operations/hospitalisation, postpartum, skin infections
  - antimicrobials in prior 3 months - which one(s), what for
  - travel - where to/when
- Past history:
  - diabetes, immunosuppressive medications, chemotherapy
- Ask about/look for source of infection. **Note:** source might be unclear:
  - cough, sputum, breathlessness - pneumonia is the most common cause of sepsis
  - listen to chest for:
    - air entry
    - crackles or wheeze
  - dysuria, frequency:
    - do urinalysis + MSU for MCS + pregnancy test if possible
  - abdominal pain, distension + listen for bowel sounds - paralytic ileus may be present
  - cellulitis, septic arthritis, infected wound, device related infection
  - neck stiffness, photophobia, non-blanching rash, new onset confusion, headache, vomiting, nausea
- Check all skin surfaces for:
  - bruising/bleeding
  - rash at pressure points + under clothing. **Note:** petechiae + purpura do not fade on pressure
- Check vaccination status

4. Management[1,2]

- Ongoing management as per MO/NP
- Monitor closely until retrieval, including:
  - continuous - SpO_2, RR, HR
  - 15 minutely - AVPU, capillary refill time, BP
  - 60 minutely - T, strict fluid balance + urine output (consider inserting IDC)
  - 4 hourly - lactate, VBG, BGL or as per MO/NP
- If child - in addition to above, reassess for **Persistent signs of sepsis** after:
  - any intervention
  - vital signs changes, and
  - every 60 minutes as a minimum
- Discuss with patient/family, as appropriate eg:
  - explanation of sepsis
  - Patient/parent/carer information sheet (see Sepsis pathway, link in **Recommend**)
  - family questions
  - offer referral to supportive services if available eg social work
- Further doses of antibiotics may be required in 6–8 hours - contact MO/NP if still waiting for retrieval

S4	Cefotaxime			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g 2 g	**IV/Intraosseous** **IM** *Can be given IM but very painful*	**Infant + child ≤ 16 years** 50 mg/kg (max. 2 g)	stat **IV/Intraosseous** Inject slowly over at least 3–5 minutes **IM** See Max. mL/IM injection, p. 65
Preparation: See CREDD. **IV/intraosseous** reconstitute 1 g vial with 5 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 10 mL (concentration 100 mg/mL). **IM** reconstitute 1 g vial with 2.6 mL WFI (concentration 330 mg/mL). **Flush well between aminoglycosides**				
Note: Rapid IV injection can cause cardiac arrhythmias				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6,7]				

S4	Ampicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 mg 1 g	**IV** **IM**	**‹ 2 months** 50 mg/kg (max. 2 g)	stat **IV** ≤ 500 mg - inject over 3–5 minutes › 500 mg - infuse over 15–30 minutes **IM** See Max. mL/IM injection, p. 65
Preparation: See CREDD. **IV** reconstitute 1 g vial with 5 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 10 mL (concentration 100 mg/mL). **IM** reconstitute 500 mg vial with 1.7 mL WFI OR 1 g vial with 3.3 mL (concentration 250 mg/mL). **Flush well between aminoglycosides**				
Note: Rapid IV administration may cause seizures				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6,8]				

S4	Tobramycin			Prescribing guide
RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose‡**	**Duration**
Injection	80 mg/ 2 mL	**IV/** **Intraosseous** **IM**	**Adult** 4–5 mg/kg (max. 500 mg) **High MRSA tropical OR if shock** 7 mg/kg (max. 700 mg)	stat **IV/Intraosseous** Inject slowly over 3–5 minutes
Preparation: **IV/Intraosseous** dilute with 20 mL sodium chloride 0.9%. **Flush well between cephalosporins and penicillins.** **IM** inject undiluted into large muscle				
Offer CMI: May cause nephrotoxicity or otovestibular toxicity				
Note: ‡Use IBW or ABW, whichever is less. Where ABW is ›20% of IBW, use AdjBW. For calculations or if chronic kidney disease, see TG or Aminoglycoside dosing in adults guidelines				
Contraindication: Previous vestibular/auditory toxicity, myasthenia gravis or severe allergic reaction to an aminoglycoside				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2-4,9]				

S4	Vancomycin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose‡**	**Duration**
Injection	500 mg 1 g	**IV/ Intraosseous** **CANNOT be given IM**	**› 1 month** 15 mg/kg (max. 750 mg) **› 16 years–adult** 25–30 mg/kg loading dose (max. 3 g)	stat See **Infusion rates*** below
Preparation: Child see CREDD. Reconstitute 500 mg vial with 3 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 100 mL (concentration 5 mg/mL). **Adult** reconstitute 500 mg vial with 10 mL WFI (1 g vial 20 mL) **THEN** dilute 1 g to 250 mL sodium chloride 0.9% (concentration 2.5–5 mg/mL). ***Infusion rates** ≤ 1 g 60 minutes, 2 g 120 minutes, 3 g 180 minutes				
Note: ‡use ABW. See TG for subsequent dosing or for obese adults. Extravasation may cause tissue necrosis. **Do not infuse faster than recommended rate** - can cause severe reactions ie profound hypotension + 'red-man syndrome' eg fever, chills, erythema, facial/upper torso rash, angio-oedema/ itch - decrease/stop infusion + contact MO/NP				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-4,6,10]				

S4	Flucloxacillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	**IV/ Intraosseous** **IM**	**› 16 years–adult** 2 g	stat **IV/Intraosseous** Infuse over 30 minutes **IM** Inject deep into large muscle. Max. 1 g in each site
Preparation: IV/Intraosseous reconstitute with 20 mL water for injections (WFI) then dilute in 100 mL sodium chloride 0.9%. **Flush well between aminoglycosides. IM** reconstitute 1 g with 2.5 mL WFI **or** lidocaine 1%				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins. History of cholestatic hepatitis with dicloxacillin or flucloxacillin				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2-4,11]				

S4	Meropenem			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	**IV/Intraosseous** **CANNOT be given IM**	**Child** 40mg/kg (max. 2 g) **› 16 years–adult** 2 g	stat Inject over 5 minutes
Preparation: Child see CREDD. Reconstitute each 1 g vial with 5 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 20 mL (40 mL for 2 g) (concentration 50 mg/mL). **Adult** reconstitute each 1 g vial with 20 mL WFI. **Shake well before use**				
Contraindication: Severe hypersensitivity to carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,6,12]				

S4	Gentamicin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose‡**	**Duration**
Injection	80 mg/2 mL	IV/ Intraosseous IM	**Term neonate ≤ 1 month** 5 mg/kg **› 1 month to ‹ 10 years** 7.5 mg/kg (max. 320 mg) **≥ 10 years** 7 mg/kg (max. 640 mg)	IV/Intraosseous Infuse over 30 minutes IM See Max. mL/IM injection, p. 65
Preparation: IV/Intraosseous dilute each 2 mL (80 mg) to 8 mL (concentration 10 mg/mL) - see CREDD. **Flush well between cephalosporins and penicillins.** Rapid IV injection may result in ototoxicity. IM inject undiluted				
Offer CMI: May cause nephrotoxicity or otovestibular toxicity				
Note: ‡Use IBW to calculate dose, unless actual body weight is lower. If › 20% over IBW use IBW. Determine IBW by using corresponding weight for height percentile on growth chart https://www.rch.org.au/childgrowth/about_child_growth/Growth_charts/				
Contraindication: Previous vestibular/auditory toxicity, myasthenia gravis or severe allergic reaction to an aminoglycoside				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6,13]				

S4	Ceftriaxone			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	IV/ Intraosseous IM	**Adult** 2 g	stat IV/Intraosseous - inject over at least 5 minutes IM - inject deep into large muscle ≤ 1 g in each site
Preparation: IV/Intraosseous reconstitute 2 g with water for injections 20 mL. **Flush well between aminoglycosides or calcium containing solutions eg Hartmann's (incompatible).** IM reconstitute 1 g vial with lidocaine 1% 2.3 mL				
Note: Rapid IV administration may result in seizures				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2-4,14]				

5. Follow up

- As per MO/NP

6. Referral/consultation

- Urgent treatment + retrieval/hospitalisation required
- Refer family to CHQ Bereavement Service ✆ 1800 080 316 or email CHQ_Bereavement@health.qld.gov.au - as appropriate

HMP **Meningitis** - adult/child

Recommend[1,2]

- **Medical emergency.** Early recognition + antibiotics ≤ 30 minutes are imperative
- Suspect meningitis if sick child with no obvious source of infection
- Parents/carers may notice early, subtle changes in child's LOC - do not ignore their concerns

Background

- Meningitis is inflammation/infection of the membranes that surround the brain + spinal cord

1. May present with[1,2]

- Fever, lethargy/irritability or altered LOC ±
  - headache, photophobia, neck stiffness
  - nausea or vomiting - often prominent
  - rash - maculopapular (in earlier stages), petechial or purpuric (late sign)
  - focal neurological signs eg dysphasia, hemiparesis, focal seizures
  - seizures, shock
- **Older child** - any combination of the above ±
  - upper or lower respiratory tract symptoms, myalgia + abdominal pain
- **‹ 3 months** - bulging fontanelle, high pitched cry, poor feeding, apnoea, seizures, vomiting, hypothermia or fever

2. Immediate management

- If seizure, see Seizures, p. 84 for midazolam dosing
- **Consult MO/NP urgently + urgent retrieval**
- Get rapid history + manage concurrently
- Do vital signs, GCS, p. 550, central capillary refill time
- BGL
- **Give O_2** to maintain SpO_2 ≥ 94% in child, adult ≥ 92%
- **Insert IVC x 2 or** Intraosseous, p. 55 if 2 failed attempts
- **Take bloods** unless this will delay antibiotics › 30 minutes (see table below)[2-4]

Child ‹ 16 years	• Meningococcal PCR 1 mL in EDTA pink top tube • VBG + lactate, FBC, coagulation studies, LFT, UE, BGL, CRP • Blood cultures - aim for 2–6 mL (1 aerobic bottle)
Adult › 16 years	• Meningococcal PCR 4 mL in mauve top tube • VBG + lactate, FBC, coagulation studies, LFT, UE, BGL, CRP • Blood cultures - 2 sets from 2 sites (2 sets of aerobic + anaerobic bottles)

- **Weight** - bare weight if ‹ 2 years
- **Correct BGL if needed** - give glucose 10% 2 mL/kg - as per MO/NP[2]

Give antibiotics within 30 minutes - do not delay[1,2]

- MO/NP will order **Empirical antibiotics:**
  - check allergies - if any, MO/NP will advise alternatives
  - give antibiotics with shorter infusion times first
  - If IV/intraosseous failed, give IM. See Max. mL/IM injection, p. 65

Empirical antibiotics - if **NOT** allergic	
Age	**Antibiotics**
< 2 months	• Ampicillin PLUS cefotaxime
≥ 2 months	• Ceftriaxone OR cefotaxime • **If critically ill immunocompetent child** - MO/NP may ADD gentamicin PLUS vancomycin. See Sepsis, p. 62 for dosing
Adult	• Ceftriaxone • If immunocompromised, > 50 years, history of heavy alcohol intake, pregnant or debilitated - to cover listeria **ADD benzylpenicillin** • If high risk ie resistant pneumococcus, recent penicillin use, or sinusitis/chronic otitis media **ADD vancomycin**. See Sepsis, p. 62 for dosing
All ages	• **Give dexamethasone before or within 1 hour of 1st dose of antibiotic if > 3 months** • If encephalitis suspected eg acute change in mental status, may range from subtle change to confusion to coma[3] **ADD aciclovir**

Start fluid resuscitation

- MO/NP may order IV/intraosseous sodium chloride 0.9% 20 mL/kg bolus (Hartmann's if adult):[2,4,5]
  - repeat if needed as per MO/NP
  - **note:** if child - careful management of fluid + electrolyte balance is important - discuss with paediatrician as soon as possible[2]

3. Clinical assessment

- **Note:** apparent explanation for fever eg pharyngitis, UTI, otitis media, does not rule out meningitis[2]
- Consider Sepsis, p. 62 as a differential diagnosis
- **Ask about:**
  - headache, irritability, fever, rash, neck stiffness, lethargy, confusion[1]
  - immunisations - Hib, meningococcal, pneumococcal + check vaccination status
  - prior use of oral antibiotics (may modify clinical features)
- Check for **Risk factors** for meningitis[2]

Risk factors

- Recent contact with - bacterial meningitis (especially in family), HSV 'cold sores' or confirmed enterovirus infection
- Recent overseas travel
- Maternal GBS colonisation (if infant < 3 months)
- Immunocompromised
- Recent neurosurgical procedure or penetrating head injury
- VP shunt or cochlear implant
- Unvaccinated

- **Do thorough physical examination,** including:
  - listen to chest for air entry, any crackles, wheeze
  - **check for neck stiffness:**
    - with patient lying down, put hand behind head + gently raise
    - **note:** may not complain of neck stiffness, but with passive or active flexion - cannot touch chin to chest
  - **skin for rashes** including at pressure points + under nappies/clothing:
    - petechiae or purpura (do not fade on pressure)
    - **note:** if child, rash may not appear until child is rehydrated[2]
  - Hydration assessment - adult, p. 202 or child, p. 522
  - ENT
  - fontanelle if infant - any fullness, bulging

4. Management

- Use Qld sepsis pathway to guide management https://clinicalexcellence.qld.gov.au/resources/clinical-pathways (or local pathway)
- If child - also see QPEC guidelines *Meningitis - emergency management in children*
- Give analgesia + antiemetic as needed
- Monitor closely until retrieval, including:
  - vital signs, BGL + strict fluid balance
- Check timing of further antibiotic doses if retrieval is delayed/prolonged - contact MO/NP
- Notify Public Health Unit **within 6 hours** meningitis is suspected

S4	Dexamethasone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	8 mg/2 mL 4 mg/mL	**IV/** **Intraosseous** **IM**	**Child › 3 months** 0.15 mg/kg (max. 10 mg) ***IV route only*** **Adult** 10 mg	stat **IV/Intraosseous** Inject slowly over 3–5 minutes **IM** Inject into gluteal muscle
Preparation: **IV/intraosseous** dilute in 10 mL sodium chloride 0.9%				
Offer CMI: May cause transient perineal itching or burning				
Note: **Give before or within 1 hour of 1st dose of antibiotic**. Do not delay antibiotics if not available				
Contraindication: DBL® 8 mg/2 mL brand if known hypersensitivity to sulfites				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,6]				

S4	Ampicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 mg 1 g	**IV** **IM**	**‹ 2 months** 50 mg/kg (max. 2 g)	stat **IV** ≤ 500 mg - inject over 3–5 minutes › 500 mg - infuse over 15–30 minutes **IM** See Max. mL/IM injection, p. 65
Preparation: See CREDD. **IV** reconstitute 1 g vial with 5 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 10 mL (concentration 100 mg/mL). **IM** reconstitute 500 mg vial with 1.7 mL WFI OR 1 g vial with 3.3 mL (concentration 250 mg/mL). **Flush well between aminoglycosides**				
Note: Rapid IV administration may cause seizures				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [7,8]				

S4	Cefotaxime			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g 2 g	**IV/ Intraosseous** **IM** *Can be given IM but very painful (ceftriaxone preferred)*	**Neonate and child** 50 mg/kg (max. 2 g)	stat **IV/Intraosseous** Inject slowly over at least 3–5 minutes **IM** See Max. mL/IM injection, p. 65
Preparation: See CREDD. **IV/intraosseous** reconstitute 1 g vial with 5 mL water for injections (WFI). Withdraw entire volume and further dilute to a final volume of 10 mL (concentration 100 mg/mL). **IM** reconstitute 1 g vial with 2.6 mL WFI (concentration 330 mg/mL). **Flush well between aminoglycosides**				
Note: Rapid IV injection can cause cardiac arrhythmias				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [8-10]				

S4	Ceftriaxone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	**IV/ Intraosseous** **IM**	**Child › 1 months** 50 mg/kg (max. 2 g) **Adult** 2 g	stat **IV/Intraosseous** Inject over at least 5 minutes OR infuse over 30 minutes **IM** See Max. mL/IM injection, p. 65 Inject deep into large muscle
Preparation: IV/intraosseous adult reconstitute 2 g with water for injections (WFI) 40 mL. **Child** see CREDD. Reconstitute 1 g vial with 5 mL WFI. Withdraw entire volume and further dilute to a final volume of 25 mL (concentration 40 mg/mL). If 2 vials needed, dilute each vial with 5 mL WFI, then withdraw entire volume and further dilute to a final volume of 50 mL (concentration 40 mg/mL). **Flush well between aminoglycosides or calcium containing solutions eg Hartmann's (incompatible)** **IM** reconstitute 1 g vial with lidocaine 1% 2.3 mL to give a concentration of 350 mg/mL				
Note: If renal impairment seek MO/NP advice. Rapid IV administration may result in seizures				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins. Do not use in neonates				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [8,11,12]				

S4	Benzylpenicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	600 mg 1.2 g	**IV** **IM**	**Adult** 2.4 g	stat **IV** - Infuse over at least 30 minutes **IM** - Inject deep into large muscle. No more than 1 g in each site
Preparation: **IV** reconstitute vial with 5–10 mL water for injections (WFI), THEN dilute in 100 mL sodium chloride 0.9%. **IM** reconstitute 600 mg vial with 1.6 mL WFI **or** 1.2 g vial with 3.2 mL to give a concentration of 300 mg/mL. **Flush well between aminoglycosides**				
Note: Rapid IV administration may cause seizures				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [13,14]				

S4	Aciclovir			Prescribing guide
RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	250 mg/10 mL 500 mg/20 mL	**IV/** **Intraosseous**	**‹ 12 years** 20 mg/kg (max. 1 g) **12 years–adult** 10 mg/kg (max. 1 g)	stat Infuse over at least 1 hour
Preparation: Child see CREDD. Dilute 10 mL (250 mg) to a final volume of 50 mL OR 20 mL (500 mg) to 100 mL (concentration 5 mg/mL). **Adult** as per child. **Shake to mix thoroughly**				
Note: Monitor injection site closely, extravasation can cause severe inflammation + necrosis. Stop infusion if redness/pain. Dosing interval varies by age - seek specialist advice				
Contraindication: Allergy to valaciclovir				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,8,15]				

5. Follow up

- Chemoprophylaxis is needed for contacts of patient with either meningococcal or Hib meningitis. Unvaccinated contacts of Hib meningitis ‹ 5 years should be immunised as soon as possible. Public Health Unit will advise
- Refer for audiology assessment 6–8 weeks after discharge if bacterial meningitis[16]

6. Referral/consultation

- ☽ For all suspected or confirmed cases notify Public Health Unit **within 6 hours**[17]

Choking (foreign body airway obstruction) - adult/child

Background[1,2]

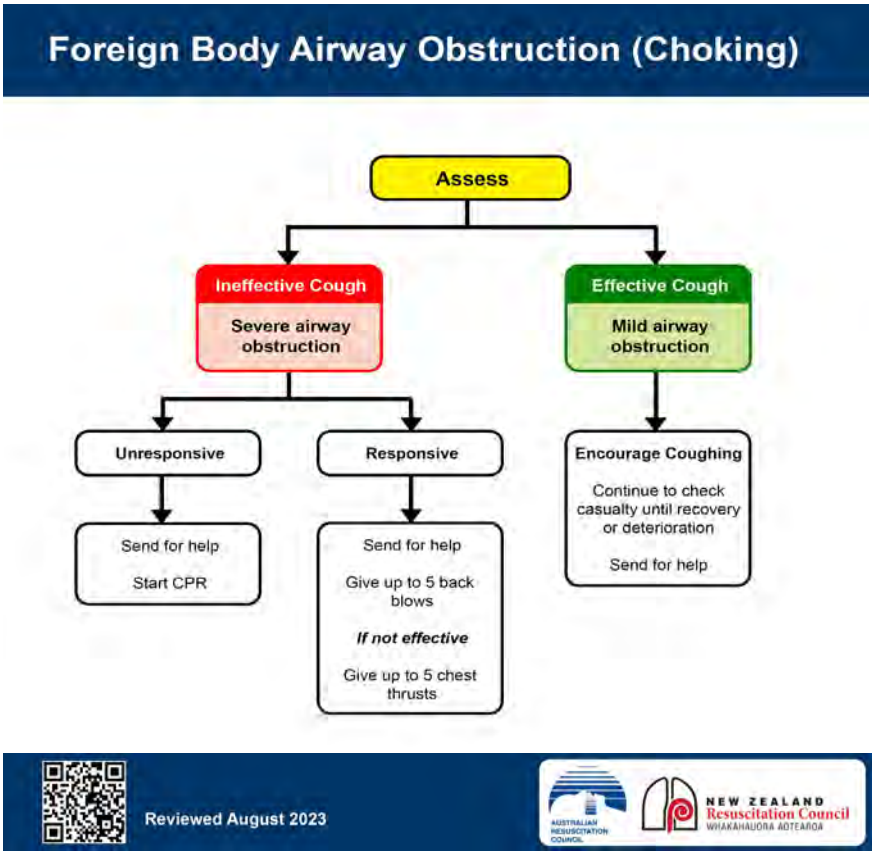
- Abdominal thrusts (Heimlich manoeuvre) are **not recommended**
- Consider foreign body aspiration in any infant/toddler with acute onset respiratory distress

1. May present with[1,2]

- Sudden coughing
- Clutching neck
- Extreme anxiety, agitation, gasping sounds
- Unable to speak, breath or swallow, hoarseness, stridor
- Cyanosis, collapse
- **Infant** - gagging, noisy breathing/no breath sounds, pale or loss of consciousness

2. Immediate management[1,3]

- Assess for effective cough and manage as per flowchart below:
  - **note:** see how to do back blows and chest thrusts on next page



Effective cough **mild airway obstruction**

- Reassure + encourage coughing until foreign body is expelled
- Allow to position themselves
- Do not do back blows or chest thrusts while there is an effective cough
- Continue to check until recovery or deterioration

Ineffective cough and conscious severe airway obstruction

- Call for help
- **Do up to 5 sharp back blows:**
  - use the heel of your hand in the middle of the back between the shoulder blades
  - if infant - place in a head downwards position ie across your lap

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After each back blow OR chest thrust, check to see if obstruction relieved
Aim is to relieve the obstruction rather than give all 5 blows/thrusts

- **If UNSUCCESSFUL do up to 5 chest thrusts:**
  - same location as chest compressions for CPR but sharper and delivered at a slower rate
  - **infant** - place head downwards on their back, across your thigh
  - **child/adult** - sitting or standing position
  - **support child/adult's back when doing thrusts eg by:**[4]
    - putting your other hand on the patient's back
    - if patient sitting, use your other hand to support the back of the chair
    - get someone to stand behind patient to provide support
    - stand patient against a firm surface eg a wall
    - **OR** lie patient down
- **Continue alternating 5 back blows with 5 chest thrusts** until obstruction cleared:
  - if cannot do chest thrusts, continue with back blows

Unconscious or becomes unresponsive[1,2]

- Call for help
- If solid material is visible in the mouth - try to remove with Magill forceps (not blind finger sweep)
- Start CPR. See BLS, p. 44
- Urgently contact MO/NP

3. Clinical assessment[1,2]

- Get rapid history as able - timing, nature of event, possible FB (if witnessed)
- If effective cough and responsive:
  - do vital signs
  - inspect chest for expansion, use of accessory muscles
  - listen to the chest for air entry and added sounds (crackles or wheeze)

4. Management[1,2]

- In cases of near (severe) choking or unseen positional foreign object:
  - consult MO/NP urgently + retrieval
  - O_2 if needed to maintain $SpO_2 \geq 94\%$
  - chest x-ray if indicated - MO/NP will advise
  - monitor vital signs
- If choking episode minor + foreign body has dislodged and removed:
  - if asymptomatic and chest findings normal, patient can go home after observation
  - if any concerns, contact MO/NP
- If choking as a result of a button battery, see Button battery, p. 78

5. Follow up

- If discharged, advise to be reviewed the next day:
  - consult MO/NP if patient has any symptoms eg ↑HR, ↑T or any chest findings

6. Referral/consultation

- Consult MO/NP on all occasions of severe choking

Button battery ingestion/insertion - adult/child

Recommend[1,2]

- Suspected or actual ingestion is a **time critical emergency - x-ray neck/chest/abdomen**
- A button battery stuck in the oesophagus requires removal ‹ 2 hours. Burns can cause perforation, aorto-oesophageal fistula, and catastrophic haemorrhage/death
- Some newer button batteries release blue dye on contact with moisture. This may be an early indicator, but absence of blue dye does not rule out button battery exposure
- Promote button battery awareness https://kidsafeqld.com.au/button-batteries/

Background

- Oral honey or jam may slow the development of a chemical burn for a swallowed button battery

1. May present with[1,2]

- Parent/carer may suspect that child has swallowed or inserted something

Ingestion with oesophageal impaction - consider in child with ANY of the following

- **Early symptoms** - minutes–hours due to battery obstructing oesophagus:
  - blue dye on hands/around mouth
  - an episode of gagging or choking - occurs as battery is swallowed
  - drooling or regurgitation of solids
  - hoarse voice, croupy cough (battery in upper oesophagus)
  - vomiting or food refusal (may still be able to drink fluids)
  - pain - throat/chest/abdomen (often poorly localised and sometimes presents as grunting)
- **Late symptoms** - due to battery eroding through oesophagus:
  - coughing or choking when feeding (fistula to trachea)
  - hoarse voice, progressive croup (laryngeal swelling or recurrent laryngeal nerve palsy)
  - bleeding from GI tract eg black bowel motions, black vomits, or fresh bleeding (fistula to major vessel). **Note:** blood vomited through the nose might look like a nose bleed
  - neck pain (erosion into spine)
  - systemic symptoms eg unexplained fever, hypotension, sepsis

Ingestion with battery lodged in stomach or gut (rare)

- Abdominal pain or distension, vomiting, diarrhoea, bleeding as above

If symptoms, still suspect ingestion EVEN if it is not witnessed or it is thought that the child had no access to a button battery. Non-mobile children have been fed batteries by siblings

Insertion

- Bleeding or purulent discharge from urethra, rectum, vagina, ear, nose, or eye or smell/pain under a cast or prosthesis

2. Immediate management

Ingestion

- **DRSABCD**, see ALS, p. 46 as indicated[2]
- Get rapid history + urgently consult MO/NP/RSQ/PIC
- **If any bleeding or signs of shock** eg cool, ↑HR, CRT › 2 seconds:
  - insert largest possible IVC x 2, urgent bloods + crossmatch:
    - IV fluids to maintain perfusion. **Note:** excess fluids can ↑risk/rate of haemorrhage
    - be prepared for massive haemorrhage

- If any airway compromise, contact MO/NP urgently, who may order:
  - 2 mg budesonide NEB if available and child tolerates[3]
  - position to support airway and clearance of secretions
- Do vital signs
- **Urgent neck, chest + abdomen x-ray** (if small child - do neck to bottom in 1 film) even if asymptomatic:[1,2]
  - if no x-ray available, will need urgent retrieval for x-ray
- If stable, no bleeding and ‹ 12 hours since ingestion give oral honey (if child › 1 year) or jam:[1,2,4]
  - 10 mL (2 teaspoons) every 10 minutes, up to 6 doses
  - then keep nil by mouth
- **If battery seen on x-ray - urgently contact PIC ✆ 13 11 26 (24 hours). PIC can advise + assist with retrieval**

If battery in oesophagus, urgent retrieval for removal via endoscopy required[2]

- If battery in the stomach or beyond:[2]
  - PIC will advise management depending on eg age, symptoms, size of battery, time of ingestion (if known)
- **If insertion suspected:**
  - consult MO/NP regarding urgent removal
  - x-ray may be required to determine how many batteries are present as visualisation often difficult[1]
- Monitor closely until retrieval, including vital signs

3. Clinical assessment

- Ask about - if known:
  - time of ingestion/insertion, any witnesses
  - size of battery - if ≥ 2 cm, more likely to lodge in oesophagus when ingested
  - what treatment (if any) has been tried at home
  - colour of stools/vomit - any red or black, or any other early or late signs/symptoms
  - pain - where
- Consider deliberate self harm:
  - particularly if young girl or woman, who ingest or insert into their vagina
  - may be frequent re-presenter to clinic
  - depending on battery size, may present with ingestion AND insertion at the same time
- **NOTE:** any battery (not just button battery) with residual charge › 1.2V or a 'flat battery' can cause caustic burns. Cylindrical batteries are capable of causing severe fistulae when inserted (usually vaginal)

4. Management

- Ongoing management as per MO/NP in consultation with PIC/specialist

5. Follow up

- As advised by MO/NP in consultation with PIC/specialist. **Note:** if battery has been lodged necrosis can continue even after removal[1]

6. Referral/consultation

- Always consult PIC ✆ 13 11 26 (24 hours)

HMP **Anaphylaxis** - adult/child

Recommend[1]

- **Medical emergency - give IM adrenaline (epinephrine) without delay**

Background

- See ASCIA Guidelines - acute management of anaphylaxis
- **Anaphylaxis is defined as:**
  - any **acute onset illness** with **typical skin features** (urticarial rash or erythema/flushing ± angioedema) **PLUS** involvement of **respiratory** ± **cardiovascular** ± persistent severe **gastrointestinal** symptoms; or
  - any **acute onset** of **hypotension** or **bronchospasm** or **upper airway obstruction** where anaphylaxis is considered possible, **even if typical skin features are not present**

1. May present with[1]

- Acute onset of ANY ONE of:
  - difficult or noisy breathing
  - swelling of tongue
  - swelling or tightness in throat
  - difficulty talking or hoarse voice
  - wheeze or persistent cough - usually sudden
  - persistent dizziness or collapse
  - pale and floppy (young children)
  - abdominal pain, vomiting - especially for insect sting or injected drug (medication) allergy
- Onset can range from minutes to hours

2. Immediate management[1] *also see flowchart inside back cover*

- **Call for help**
- **Remove allergen** if still present - **do not delay adrenaline (epinephrine) to do this**:
  - stop infusion of medicine/blood product
  - flick out insect stings; freeze tick with liquid nitrogen or ether containing spray
- **Lay patient flat. Do NOT allow to stand or walk** - can result in fatal hypotension:
  - if breathing difficult allow to sit - with legs outstretched in front (not in chair):
    - lay flat again if ↓ BP or ↓ LOC or confusion
  - do not hold infants upright
  - if pregnant, put in left lateral position
- **Give IM adrenaline (epinephrine) into OUTER MID-THIGH WITHOUT DELAY**
  - repeat adrenaline (epinephrine) every 5 minutes as needed
  - if known **asthmatic with allergy** give adrenaline (epinephrine) **first,** then asthma reliever if **sudden breathing difficulty** (wheeze, persistent cough or hoarse voice) - even if no skin symptoms
- **Urgently consult MO/NP**

<table>
<tr><th>S3</th><th colspan="5">Adrenaline (epinephrine)</th><th>Extended authority
ATSIHP/IHW</th></tr>
<tr><td colspan="7">ATSIHP and IHW may proceed with up to 2 doses then must consult MO/NP</td></tr>
<tr><td colspan="7">MID, RIPRN and RN may proceed</td></tr>
<tr><th>Form</th><th>Strength</th><th>Route</th><th colspan="4">Dose</th><th>Duration</th></tr>
<tr><td rowspan="11">Injection</td><td rowspan="11">1:1,000
1 mg/mL</td><td rowspan="11">IM

Use 1 mL syringe with 22–25 G needle, 25 mm length or if very large adult, 38 mm length

do NOT use insulin syringe</td><td colspan="4">Adult and Child › 12 years
0.5 mg</td><td rowspan="11">stat

Deep injection into outer mid-thigh

Repeat every 5 minutes as required</td></tr>
<tr><td colspan="4">Child ≤ 12 years
0.01 mg/kg (max. 0.5 mg)</td></tr>
<tr><td colspan="4">Doses on approx. age/weight</td></tr>
<tr><td>Age (years)</td><td>Weight (kg)</td><td>Volume 1:1,000</td></tr>
<tr><td>‹ 1</td><td>‹ 7.5</td><td rowspan="2">0.1 mL</td></tr>
<tr><td>1–2</td><td>10</td></tr>
<tr><td>2–3</td><td>15</td><td>0.15 mL</td></tr>
<tr><td>4–6</td><td>20</td><td>0.2 mL</td></tr>
<tr><td>7–10</td><td>30</td><td>0.3 mL</td></tr>
<tr><td>10–12</td><td>40</td><td>0.4 mL</td></tr>
<tr><td>› 12–adult</td><td>› 50</td><td>0.5 mL</td></tr>
<tr><td colspan="8">OR if using autoinjector eg Epipen®, Anapen®</td></tr>
<tr><td rowspan="3">Auto injector</td><td>0.15 mg</td><td rowspan="3">IM</td><td colspan="4">7.5–20 kg (approx. 1–5 years)
0.15 mg</td><td rowspan="3"></td></tr>
<tr><td>0.3 mg</td><td colspan="4">› 20 kg (approx. › 5 years)
0.3 mg</td></tr>
<tr><td>0.5 mg</td><td colspan="4">› 50 kg (approx. › 12 years)
0.5 mg OR 0.3 mg</td></tr>
<tr><td colspan="8">Offer CMI: May cause restlessness, anxiety or headache and palpitations in conscious patients</td></tr>
<tr><td colspan="8">Note: Instructions for autoinjector on device labels. May cause hypertension + tachypnoea</td></tr>
<tr><td colspan="8">Management of associated emergency: Consult MO/NP [1]</td></tr>
</table>

When skills and equipment are available[1]

- **Do NOT allow patient to walk or stand, even if they appear to have recovered**
- Cardiac monitor, ECG
- Monitor:
  - vital signs, SpO_2
  - for altered LOC and confusion. See GCS/AVPU, p. 550
- O_2 6–8 L/minute if:
  - respiratory distress, ↓LOC, or needs repeat doses of adrenaline (epinephrine)
  - consider O_2 if asthmatic, or chronic respiratory/cardiovascular disease
- Airway support if needed:
  - jaw thrust, oro/nasopharyngeal airway or bag-valve-mask with high flow O_2 will save most patients, even with airway swelling[1]
- Insert IVC if adult (14–16 G) or tachycardic ± hypotensive child. Intraosseous, p. 55 if 2 failed attempts

- If hypotensive:
  - IV sodium chloride 0.9% 20 mL/kg rapidly
  - + insert another IVC

If inadequate response to 2–3 adrenaline (epinephrine) doses OR deterioration

- MO/NP may consider - **adrenaline (epinephrine) infusion** on advice of emergency medicine/critical care specialist (see drug box next page)
- If adrenaline (epinephrine) infusion NOT effective **MO/NP may order:**

Upper airway obstruction	• Nebulised adrenaline (epinephrine) 5 mL (5 ampoules of 1:1,000)
Persistent hypotension/shock	• Sodium chloride 0.9% - max. 50 mL/kg in the first 30 minutes • IV glucagon
Persistent wheeze	• Salbutamol, p. 94 8–12 puffs (MDI) using a spacer **OR** 5 mg (NEB) • Oral Prednisolone, p. 97 1 mg/kg (max. 50 mg) or IV hydrocortisone (see below) • **Note:** do not use bronchodilators or steroids as first line treatment

- **Do not** give oral sedating antihistamines or injectable promethazine
- **If airway not able to be maintained and SpO_2 falling consider** (if skills/equipment):
  - intubation - avoid prolonged attempts
  - cricothyrotomy
- **If cardiac arrest,** see ALS, p. 46 + do prolonged CPR:
  - **PLUS** aggressive fluid resuscitation AND IV adrenaline (epinephrine) bolus

3. Clinical assessment[1]

- Get rapid history - from patient, relatives or friends:
  - food, medicine, sting/bite, herbal medicines, other exposures in the previous 6–8 hours
  - known allergies and reaction - check for medical alert jewellery/accessories eg tattoo, anklet, watch, key ring, shoe tag[2]
  - any previous episodes, treatments used and effect
  - current medications, use of an autoinjector eg EpiPen®
- Do physical examination:
  - check affected body systems - skin changes, face, throat, breathing, HR, neurological state
- Monitor response to treatment - using simple palpable systolic BP:
  - palpate radial or brachial pulse. Note pressure at which this disappears
  - may be more difficult in children
  - **note:** infants can stay pale after 2–3 doses of adrenaline (epinephrine), which can resolve without further doses. Use BP to guide response
- Monitor for signs of over treatment:
  - hypertension or pulmonary oedema

S4	Hydrocortisone			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	100 mg	IV	5 mg/kg (max. 200 mg)	stat - inject over 30 seconds–5 minutes
Preparation: Reconstitute with 2 mL water for injections or sodium chloride 0.9%				
Management of associated emergency: Consult MO/NP [1,3,4]				

S3	Adrenaline (epinephrine)			Prescribing guide
MID, RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1:1,000 1 mg/mL	**IV INFUSION only** in separate IV line	1:1,000 (1 mL)	**Start infusion at** ~ 5 mL/kg/hour (~0.1 microg/kg/minute) using a pump* **Titrate rate up/down according to response + side effects**
Preparation: Dilute in 1,000 mL sodium chloride 0.9%				
Note: *If pump not available, start at ~ 2 drops/second using standard giving set				
Monitor continuously: ECG, SpO_2 + frequent BP to maximise benefit and minimise risk of adrenaline (epinephrine) toxicity eg nauseous, shaky, vomiting, tachycardia, but with normal BP. Do not stop suddenly. Extravasation can cause ischaemia and necrosis. **DO NOT GIVE IV BOLUS of adrenaline (epinephrine) unless in cardiac arrest situation**				
Management of associated emergency: Consult MO/NP [1,5]				

4. Management[1]

When stable

- Monitor closely for at least 4 hours after last dose of adrenaline (epinephrine):
  - relapse/protracted ± biphasic (two phase) reactions may occur
- BP, RR, HR, LOC - 15 minutely for 2 hours then hourly
- Retrieval/hospitalisation may be required if:
  - severe reaction eg required repeated doses of adrenaline (epinephrine) or IV resuscitation OR
  - severe/protracted anaphylaxis OR
  - has other concomitant illness eg asthma, arrhythmia OR
  - lives alone or remote from medical care OR
  - presents for medical care late in evening
- If not retrieved, continue to manage as per MO/NP instructions
- Document allergy in medical record

Patient advice prior to discharge

- Avoid being re-exposed to the allergic trigger
- If there is a risk of re-exposure (eg stings, food) **OR unknown cause** provide:
  - an autoinjector of adrenaline (epinephrine) on discharge, or script for an autoinjector
  - education of how and when to use the autoinjector
- Give an *ASCIA action plan for anaphylaxis* + other resources https://allergy.org.au/anaphylaxis
- Discuss medical alert jewellery

5. Follow up

- If not retrieved advise to be reviewed the next day, or earlier if concerned
- Advise to see MO/NP at next clinic

6. Referral/consultation

- Ensure referred to clinical immunology/allergy specialist[1]
- Report adverse reactions ⓘ:
  - immunisation - use Qld AEFI form (if outside of Qld use local reporting systems)
  - medicine Blue card adverse reaction reporting form

HMP Seizures - adult/child
Convulsions

Recommend

- **Status epilepticus** is continuous seizure activity › 5 minutes or repeated seizures without full recovery to normal LOC between episodes - **neurological emergency, aim to stop seizure urgently**[1,2]

Background

- Most seizures are brief + end within 1–3 minutes without needing midazolam[2]
- Febrile seizures occur with rapid ↑T in early acute illness in child aged 6 months–6 years[3]
- If child, also see QPEC guidelines *Status epilepticus; Febrile seizures - emergency management in children*

1. May present with

- Seizure eg:[1,4]
  - sudden body stiffening, will fall if standing
  - jerking movements, head arching back
  - shallow breathing or may stop temporarily
  - dribbling, blood stained if tongue bitten
  - eye deviation
  - apnoea/change in colour (particularly infants)
  - ± fever
- Post seizure - drowsy, confused, incontinent, agitated, noisy breathing if partial airway obstruction

2. Immediate management

- **Seizure:**[1-4]
  - protect patient's head + avoid restraining unless essential to avoid injury
  - lay down + turn on the side when practical
  - note the time
  - maintain airway - do not force mouth open or attempt to insert object
  - insert IVC if possible
  - do BGL - **if adult ‹ 4, child ‹ 3** - treat Hypoglycaemia, p. 89 concurrently
  - contact MO/NP urgently
- **Status epilepticus** - seizure › 5 minutes or repeated seizures without full recovery to normal LOC:[1,2]
  - give midazolam + 100% O_2 via non-rebreather mask at 15/L minute
  - repeat midazolam if seizure continues after 5 minutes - as per MO/NP
- MO/NP will seek urgent advice + may order 2nd line agent eg:
  - levetiracetam, phenobarbitone or phenytoin[1]
- Do:[1,2]
  - continuous SpO_2 + cardiac monitoring - assess for arrhythmias
  - GCS, p. 550 + vital signs. Check for ↓BP
  - check for complications eg airway, aspiration, hyperthermia, IV site for extravasation
  - monitor closely until retrieval
- **Post seizure:**[1,2]
  - insert oropharyngeal/nasopharyngeal airway if needed
  - place in recovery position

- give O_2 to maintain $SpO_2 \geq 94\%$
- continuous cardiac monitoring
- take bloods/i-STAT - VBG, FBC, UE
- reassure patient/family/carers - fitting can be extremely distressing[1]

Look for causes + manage concurrently[1,2]

- Screen for Sepsis, p. 62
- If Alcohol withdrawal, p. 346 cannot be excluded, give IV thiamine
- Suspected poisoning or drug overdose. See Toxicology assessment, p. 213
- Epilepsy - adherence with therapy, recent sleep deprivation[2]
- Pregnancy › 20 weeks, consider Eclampsia, p. 370

S4	Midazolam			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	5 mg/5 mL 5 mg/mL	**IV/IM** (ATSIHP + IHW may NOT give IV)	**Adult** 5–10 mg **Child** **IV** 0.15 mg/kg **IM** 0.2 mg/kg **Buccal/intranasal** 0.3 mg/kg (max. 10 mg)	stat If IV, give as push Consider repeat dose if no effect after 5–10 minutes on MO/NP order
	5 mg/mL	**Buccal/ Intranasal**		
Administration advice: **Child** **IV** dilute to 1 mg/mL. See CREDD. **Buccal** slowly drip into mouth between gums and cheek using a syringe or squeeze directly from the *plastic ampoule*. **Intranasal** use mucosal atomisation device (MAD) or 1–3 drops (*plastic ampoule)*, 1 at a time into alternate nostrils until full dose is given (over 15 seconds)				
Note: Monitor for sedation and respiratory depression				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,5,6]				

3. Clinical assessment

- **Ask about details leading up to seizure**, including:[1]
  - prior events
  - changes in behaviour
  - signs/symptoms of illness, fever
- **Get details of the seizure**, including:[1]
  - how it started
  - any movements of eyes + limbs, symmetry of movements
  - focal movements eg rubbing of hands, lip smacking
  - estimated duration + appearance/behaviour after
  - pre-hospital treatment
- **Get past history**:[1,2]
  - previous seizure or family history + previous management
  - medical/surgical eg intracranial infection, hypoglycaemia/electrolyte disturbance, ARF,[1] neurological damage/surgery eg placement of ventriculoperitoneal (VP) shunt
  - if child - immunisation status especially Hib and pneumococcal[3]

- **Do physical examination**, including:[5]
  - if child + fever - look for source eg URTI, pneumonia, AOM, UTI
  - assess neurological status + return to normal level of alertness + activity[1]
  - ECG if adult[2] and in child if - seen to fall before seizure, family history of seizures or unexplained death[1]
  - check for injuries[2]
  - pregnancy test if reproductive age

4. Management

- Ongoing management as per cause in collaboration with MO/NP
- **If brief seizure < 5 minutes:**[1,2]
  - observe/monitor for ongoing seizures
  - further investigations as per MO/NP
  - consider discharge if:[1]
    - cause of seizure is certain
    - no further seizures for several hours + patient is alert/responding normally
    - observations, including GCS, pupil reaction, BP, HR - within normal ranges
    - family/caregivers are able to safely manage the patient at home
- **If child with febrile seizure:**[5]
  - MO/NP will advise, based on source of fever. **Note:** if any doubt check clinical features against QPEC guidelines *Febrile seizures - emergency management in children*
  - give ibuprofen ± paracetamol if uncomfortable. See Acute pain, p. 32
  - consider discharge if:
    - returned to normal age appropriate baseline neurology
    - infection source identified that can be managed in community
  - give *Febrile convulsions* fact sheet eg https://www.childrens.health.qld.gov.au/health-a-to-z
- Advise family/carers about:[1]
  - first aid/how to manage subsequent seizure eg *First aid management of a seizure* https://resus.org.au/guidelines/
  - return promptly if deterioration/another seizure

5. Follow up

- If discharged, advise review the next day or sooner if concerned/recurrent seizure - contact MO/NP urgently. Also see MO/NP at next clinic + advise not to drive until cleared by a specialist

6. Referral/consultation

- MO/NP will advise if specialist referral required

Diabetic ketoacidosis (DKA) - adult/child
Hyperosmolar hyperglycaemic state (HHS)

Recommend[1,2]

- Can be rapidly fatal. **Avoid delays to treatment** - IV fluids, potassium replacement + IV insulin
- Be aware - excessive thirst + frequent urination can be a sign of undiagnosed diabetes

Background[1,3]

- DKA - BGL › 11 + acidosis, sudden onset
- HHS - BGL › 33.3 + profound dehydration without ketosis - gradual onset, commonly caused by acute illness
- If child, also see QPEC guidelines *DKA and HHS - emergency management in children*
- If adult, also see *Management of diabetic ketoacidosis in adults (age ≥ 16 years and over)* https://clinicalexcellence.qld.gov.au/resources/diabetes-resources/diabetic-ketoacidosis

1. May present with[4]

- ↑BGL
- Hyperventilation, ↑RR
- Excessive thirst, dehydration
- Abdominal pain ± vomiting
- Fruity sweet smelling breath (acetone - similar to paint thinner or nail polish remover)
- Confusion, ↓LOC or unresponsive
- **Note:** DKA occurs mainly with type 1 diabetes. Also seen with type 2 diabetes, particularly if taking sodium-glucose co-transporter 2 (SGLT2) inhibitors, when DKA may occur without hyperglycaemia[5]

2. Immediate management[2,3]

- **DRSABCD**
- Rapidly assess + manage concurrently
- Do vital signs + BGL + blood ketones
- Insert IVC x 2 into large veins
- Take bloods/i-STAT - FBC, UE, LFT, glucose, VBG
- Start IV fluids:
  - **adult** sodium chloride 0.9% 1,000 mL/hour, repeat if systolic BP ‹ 100
  - **child** only give on MO/NP order - sodium chloride 0.9% 10 mL/kg bolus over 20–30 minutes, repeat as necessary to max. 20 mL/kg (2 doses)
- **Contact MO/NP urgently**
- Look for signs of acute illness[1,3] eg Sepsis, p. 62, ACS, p. 104, Stroke, p. 127
- Start fluid balance
- Continuous cardiac monitoring
- Do neurological observations - look for cerebral oedema (headache, ↓LOC, agitation/aggression, vomiting, irritability if child, ↓HR, ↑BP)
- If patient is using a continuous subcut insulin pump, disconnect it

3. Clinical assessment[1-3]

- Get history, including:
  - polyuria + excessive thirst, **note:** may be absent in young child

  - if toilet trained child - any new bed wetting or 'accidents'
  - recent weight loss, ↑appetite
  - vomiting, abdominal pain, non-specific symptoms + malaise
- If known diabetic, ask about:
  - unstable glycaemic control or review continuous glucose monitoring (CGM) device data if available
  - antihyperglycaemics, insulin - total daily dose, adherence to regimen[5]
  - past DKA
  - initiation of new medicines including over-the-counter
- Do physical examination, including:
  - look for signs of infection eg appendicitis, ileus + pancreatitis
  - weight
  - Hydration assessment - adult, p. 202 or if child - check for signs of severe dehydration ie dry mucus membranes, ↓skin turgor, sunken eyes, poor capillary refill
  - ECG
  - urinalysis, MSU for MCS + pregnancy test if reproductive age

4. Management[2,3]

- MO/NP will arrange urgent retrieval + may order:
  - potassium replacement + IV short acting insulin infusion eg Actrapid®, see **Management guide**
  - give patient's usual subcut long acting insulin (if already on it)
- If ↑BGL + ketones but not acutely unwell, closely monitor + aggressively manage to prevent DKA

Management guide - use local protocol if available	
≥ 16 years[2]	• Continue aggressive IV sodium chloride 0.9% ± potassium • Start IV insulin infusion as per MO/NP - max. starting dose 10 units/hour: – ongoing rate titrated to BGL, aim to maintain BGL 9–14 • When BGL < 14 - start glucose 10% at 100 mL/hour • If BGL < 9 - ↑rate of glucose as per MO/NP
< 16 years[3] **Note:** do not use adult protocol	• Start IV insulin infusion as per MO/NP (1 hour after starting IV fluids) • Rate as per MO/NP - ideal continuous dose 0.1 unit/kg/hour via syringe pump* • If BGL falls to ≤ 15 - MO/NP may advise IV sodium chloride 0.9% with glucose 5% + potassium 40 mmol* • Do not reduce insulin infusion rate unless advised
Monitor closely until retrieval[3]	• Continuous cardiac monitoring - assess for T wave changes **Do hourly BGL +** • Vital signs + neurological observations/signs of cerebral oedema • Strict fluid balance • Blood ketones, UE + VBG 2–4 hourly or as per MO/NP
MO/NP may also advise	• Nil by mouth/ice to suck, insert NGT, IDC • If suspected infection - antibiotics, blood cultures, throat swab[2]
*See CREDD for insulin infusion rate mL/hour + fluid recipe	

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Hypoglycaemia - adult/child

Recommend[1]

- **Medical emergency.** If left untreated can cause convulsions, irreversible brain damage + death

Background

- Hypoglycaemia can be secondary to insulin/oral medication for those with diabetes; alcohol or critical illness
- If child, also see QPEC guidelines *Unexplained hypoglycaemia - emergency management in children*

1. May present with[2,3]

- BGL ‹ 4 adult, ‹ 3 child
- Sweating, pale skin, shaking, palpitations, feeling anxious
- Hunger, difficulty concentrating, confusion/inappropriate behaviour
- Loss of consciousness, seizures
- Child - drowsy, listless + lethargic[1]

2. Immediate management[1]

- Do BGL - rapidly assess + manage concurrently - avoid delays
- If child + BGL ‹ 3 on glucometer - **confirm BGL** on i-STAT + finger prick/blood ketones

ALERT if hazardous alcohol use or severely malnourished **give thiamine before glucose in any form.** Glucose may deplete thiamine stores causing Wernicke encephalopathy[3,4]

If severe - unconscious/seizure OR child with confirmed BGL ≤ 2.6[1,3]

- Insert IVC into antecubital vein
- Give IV bolus glucose 10% **OR** IM/subcut glucagon if IV will cause delay
- Contact MO/NP urgently
- **Note:** most seizures are brief - if lasting › 5 minutes, give midazolam as per Seizures, p. 84
- Monitor closely - patients given IV glucose respond within minutes
- Do vital signs, GCS, p. 550 + neurological observations ie:[5]
  - pupil size + reaction to light
  - motor response in limbs
  - fontanelle if infant
- Repeat BGL 10–15 minutes, if ‹ 4 repeat glucose as per MO/NP
- If patient is using a continuous subcut insulin pump, disconnect it
- If confusion/loss of consciousness - recovery may take hours, even if normal BGL
- **If child** - MO/NP may order:
  - IV infusion of glucose 10% + sodium chloride 0.9% at maintenance rate
  - **to prepare** use 1 L bag of glucose 5% with sodium chloride 0.9%, withdraw 100 mL + discard. Inject 100 mL of glucose 50% into the bag + mix well
  - urine metabolic screen - get the first urine passed after BGL ≤ 2.6, regardless of age + time since episode, use urine bag if needed
- Ongoing management as per MO/NP who may advise urgent retrieval +
  - antiemetic + IV fluids if dehydrated
  - when able, oral fluids + carbohydrate snack

Unscheduled	Glucose			
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN and RN may proceed for adult only. **Must consult MO/NP for child**				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	**10% in 500 mL**	IV/ Intraosseous	**Child and adolescent** 2 mL/kg (max. 100 mL)	Infuse over 20 minutes until BGL › 4
			Adult 150–200 mL	Infuse over 15 minutes
Management of associated emergency: Contact MO/NP. See Anaphylaxis, p. 80 [1,3]				

S3	Glucagon			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 mg	IM/Subcut	**Adult and child › 25 kg** 1 mg	stat Further doses on MO/NP order
			Child ≤ 25 kg 0.5 mg	
Offer CMI: May cause nausea, vomiting or allergic reaction				
Note: Reconstitute before use. Response should occur within 10 minutes				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,6]				

Unscheduled	Thiamine			
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	300 mg/3 mL	IV/IM	**Adult** 300 mg	stat Inject IV slowly over 10 minutes
Preparation: IV dilute in 10–20 mL of sodium chloride 0.9%. **IM** undiluted. Consider giving in 2 separate sites				
Note: Give thiamine before administering glucose for hypoglycaemia. Giving glucose in thiamine deficiency may precipitate Wernicke encephalopathy				
Management of associated emergency: Contact MO/NP. See Anaphylaxis, p. 80 [4]				

If conscious/cooperative[2,3]

- Give oral glucose:
  - **adult** - 15 g tube of glucose gel, or if BGL ‹ 3 give 20 g
  - **child** confirmed BGL › 2.6 - give sugary drink/fruit juice or flavoured ice block - do not give hydralyte ice block
- If glucose gel not available, give alternative eg:
  - 5–20 jelly beans, 20–25 Skittles®, 5–10 Mentos®
  - sugary drink/fruit juice 200 mL - DO NOT give diet/zero/sugar free
  - OGTT drink, or 3 teaspoons of honey/sugar
- Give a carbohydrate snack eg 1 slice of bread/glass of milk/piece of fruit/2–3 pieces of dried fruit/ snack size tub of yoghurt - not diet/sugar free
- Repeat BGL in 10–15 minutes. If ‹ 4 repeat glucose as per MO/NP
- If patient is using a continuous subcut insulin pump, ask them to stop it[1]

3. Clinical assessment

- **If known diabetic**, ask about:[7]
  - antihyperglycaemics, insulin - type, total daily dose, adherence[3]
  - recent alcohol[3]

  - unstable glycaemic control, past hypoglycaemic events or review continuous glucose monitoring (CGM) device data if available
  - do they have a diabetes management plan
- **Look for other causes**, ask about:[3]
  - severe vomiting, diarrhoea or fasting in last 3 days - most common cause in children:[1]
    - if fasted - how long before becoming hypoglycaemic
  - stopping hyperglycaemia-inducing drugs eg glucocorticoids
  - drugs + alcohol/withdrawal
  - vigorous ± prolonged exercise, exposure to heat
  - recent unexplained weight loss/gain
  - consider Sepsis, p. 62
- **If child without clear cause,** ask about:[1]
  - difficulty to wake in the morning
  - fasting overnight, if so how long
  - recent protein meal, fruit or honey
  - potential ingestion eg insulin, metformin, beta-blockers, quinine, chloroquine, salicylates + valproate
- **Get past history**, including:[3]
  - cognitive or kidney impairment, liver disease,[1] coeliac disease, bariatric surgery eg gastric sleeve/bypass, hypopituitarism, adrenal cortical failure
- **Do physical examination**, including:[1]
  - Hydration assessment - adult, p. 202 or child, p. 522
  - weight, urinalysis, pregnancy test if reproductive age
- Take bloods/i-STAT - UE, LFT, VBG, glucose, lactate + as per MO/NP

4. Management[1,3]

- Consult MO/NP in all cases
- **Monitor closely until retrieval:**
  - BGL every 15 minutes until normal, then hourly/as per MO/NP
  - hourly - vital signs, neurological observations + IV site for signs of extravasation

If non-severe hypoglycaemia

- Check BGL 15 minutely until normal, then 1–2 hourly for 4 hours
- Consult MO/NP prior to discharge:
  - if high risk for thiamine deficiency - will need ongoing thiamine
- Check/refer for diabetes management plan
- Give advice on preventing/recognising hypoglycaemia events eg:
  - have access to glucagon injection + be trained to give it
  - know diabetes first aid eg *First Aid management of a diabetic emergency* https://resus.org.au/guidelines/

5. Follow up

- Advise to be reviewed the next day or sooner if recurrent hypoglycaemia - contact MO/NP

6. Referral/consultation

- Offer referral to diabetes educator for management plan

HMP Acute asthma - adult/child

Recommend[1]

- Beware of severe asthma in patient with no wheeze and unable to speak
- Consider conditions which can present similar to asthma eg inhaled FB, DKA, pneumonia, croup[2]
- Resources Australian asthma handbook
- If thunderstorm asthma event, follow local protocols eg if outside Qld

1. May present with[1]

- Breathlessness, speaking in short sentences
- Wheeze/cough
- ↑WOB, ↓SpO_2
- Symptoms continue despite using puffer
- Cyanosis, exhaustion, drowsy/collapsed, quiet chest, poor respiratory effort

2. Immediate management[1,2]

- **Consider and treat** Anaphylaxis, p. 80 if asthma like symptoms **AND:**
  - features of anaphylaxis eg itchy rash, angio-oedema (swelling) **OR**
  - history of allergy **OR**
  - if suspected or cannot be excluded
- **If < 12 months of age** - do not treat as asthma. Bronchiolitis, p. 486 or small floppy airways likely cause of wheeze. Consult MO/NP

Step 1 - rapidly assess severity

Mild/Moderate	Severe	Life-threatening
• Can walk, speak whole sentences in 1 breath • Young child - can move around and speak in phrases • SpO_2 > 94%	**ANY** of: • Unable to speak whole sentences in 1 breath • Visibly breathless/ ↑WOB • Use of accessory muscles eg: – neck or intercostal – tracheal tug or subcostal recession – nasal flaring[2] • SpO_2 90–94%	**ANY** of: • Unable to speak[2] • Drowsy/ ↓LOC, collapse • Exhaustion • Cyanosis • Poor respiratory effort, soft/ absent breath sounds • SpO_2 < 90%

Step 2 - give salbutamol immediately
(+ ipratropium if severe/life-threatening)
see **next page**

If unresponsive, cannot inhale bronchodilators OR respiratory arrest imminent

- Give IM adrenaline (epinephrine) - same dose as Anaphylaxis, p. 80
- Repeat 3–5 minutely if needed

Call for help

Give salbutamol ± ipratropium

Mild/Moderate	Severe	Life-threatening
Salbutamol puffer **with spacer**	Salbutamol + ipratropium puffer **with spacer** or NEB if unable use puffer	Continuous salbutamol NEB + ADD ipratropium to NEB

Note: NEBs carry high risk of transmitting viral infections - use PPE
Aerosol droplets can spread for several metres and stay airborne for › 30 minutes[1]

- **Give O_2** if SpO_2 ‹ 92% in adult or ‹ 95% in child:[1]
  - target: **adult** 93–95%, if COPD 88–92%; **child** › 95%
  - do not over-oxygenate

Step 3
Within minutes reassess severity - use table below:[1,2]
- general appearance
- LOC, speech
- listen to chest, look for use of accessory muscles
- vital signs

If severe or life-threatening at any time
- Call for help
- **Urgently contact MO/NP**
- **Urgent retrieval**
- Be prepared for rapid deterioration ± cardiorespiratory arrest

Mild/moderate	Severe	Life-threatening
ALL of: • Alert, can walk • Can finish a sentence in 1 breath • For young child: can crawl, talk or vocalise • Respiratory distress not severe • Skin colour normal • Wheeze or normal lung sounds • RR: – adult ‹ 25 – child - normal range* • HR: – adult ‹ 110 – child - normal range* • SpO_2 › 94%	**ANY of:** • Can only speak a few words in 1 breath • Lethargic • Unable to lie flat due to SOB • Sitting hunched forward • Use of accessory muscles: – chest sucks in when breathes in, or – neck or intercostal, or – tracheal tug or abdominal breathing (subcostal recession) • RR: – ≥ 6 years–adult ≥ 25 – ‹ 6 years - tachypnoea* • HR: – adult ≥ 110 – child - tachycardia* • SpO_2 90–94%	**ANY of:** • Drowsy or unconscious • Can't speak • Collapsed or exhausted • Severe respiratory distress or poor respiratory effort • Cyanosis • Soft/absent breath sounds • Silent chest or ↓ air entry • Abnormally slow breathing (respiratory exhaustion) • Arrhythmia or bradycardia - may occur just before arrest • SpO_2 ‹ 90%

*Child vital signs as per CEWT
Reduced wheezing alone is an unreliable indicator of improvement. It may mean deterioration

Go to step 4

S3 MDI **S4** NEB	**Salbutamol**	**Extended authority** ATSIHP/IHW/RIPRN

RN may proceed with MDI. NEB - on MO/NP order (or standing order)

ATSIHP and IHW may proceed with 1 dose then consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
MDI (puffer)	100 microg/ puff	**Inhalation** Use spacer + *mask if young child*	**Mild/moderate/severe** **≥ 6 years–adult** 12 puffs **1–5 years** 6 puffs	stat **Mild/moderate** Give every 20–30 minutes for 1st hour if needed, or sooner as needed **Severe** Give at least every 20 minutes for 1st hour or sooner as needed **Life-threatening** Give continuously until SOB improves. Refill as needed
Nebule	2.5 mg/ 2.5 mL 5 mg/ 2.5 mL	**NEB** *With air or O_2 6–8 L/minute	**Severe** **≥ 6 years–adult** 5 mg nebule **1–5 years** 2.5 mg nebule **Life-threatening** **≥ 6 years–adult** 2 x 5 mg nebules **1–5 years** 2 x 2.5 mg nebules	

Offer CMI: May cause tremor, palpitations or headache

***NEB: Adult** - give with air unless O_2 needed or life-threatening. **Child** - give with O_2

MDI/puffer with spacer:

- some spacers require priming with 10 puffs of salbutamol. See packaging details[1]
- shake inhaler and insert upright into spacer
- place mouthpiece between persons teeth and ask them to seal lips firmly around
- **fire 1 puff at a time into the spacer followed by 4 breaths** in and out of the spacer
- remove spacer from mouth. Shake MDI prior to next puff - without detaching from spacer

Management of associated emergency: Observe for salbutamol toxicity eg tachycardia, tachypnoea. Consult MO/NP [1-3]

S4	**Ipratropium**	**Extended authority** ATSIHP/IHW/IPAP/RIPRN

RN must consult MO/NP (or standing order)

ATSIHP, IHW and IPAP may proceed with first dose then consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
MDI (puffer)	21 microg/puff	**Inhalation** Use spacer + *mask if young child*	**Severe** **≥ 6 years–adult** 8 puffs **1–5 years** 4 puffs	stat Give every 20 minutes for 1st hour Further doses on MO/NP order
Nebule	250 microg/mL 500 microg/mL	**NEB** With air or O_2 6–8 L/minute	**Severe or life-threatening** **≥ 6 years–adult** 500 microg **1–5 years** 250 microg	

Offer CMI: May cause dry mouth, throat irritation, headache, taste disturbance or nausea. If using NEB, patient should close their eyes or wear eye protection. Avoid getting mist into eyes

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]

Step 4 - severity reassessed as

Mild/moderate or severe
or was life-threatening + marked improvement

- Continue salbutamol ± ipratropium as per drug boxes
- **Assess response after each dose - if SOB/WOB:**
  - is partially relieved at 5 minutes, reassess at 15 minutes
  - is not relieved, repeat salbutamol + ipratropium
- **Note: if no improvement after 1st dose:**
  - contact MO/NP. May require retrieval, regardless of initial severity

If poor response or worsening

Continue as above + as per **Management**

Life-threatening

- **Continuous salbutamol + ipratropium NEB until breathing improves**
- Call for help
- Urgently contact MO/NP/RSQ
- IVC x 2
- MO/NP may order IV magnesium sulfate ± other add-on treatment(s)
- Continually monitor
- **Urgent retrieval** - may require ventilation/intubation

If respiratory arrest imminent

- Give IM adrenaline (epinephrine)
  - same dose as Anaphylaxis, p. 80
  - repeat 3–5 minutely if needed
- CPR as needed. See BLS, p. 44

Unscheduled	**Magnesium sulfate**			**Prescribing guide**
RIPRN and RN only. Must be ordered by an MO/NP				
Use local protocols for administration of magnesium sulfate if available				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	10 mmol/5 mL (2.5 g/5 mL)	IV	**Adult** 8–10 mmol **Child ≥ 2 years** 0.2 mmol/kg (max. 10 mmol)	Infuse over 20 minutes
Preparation: Adult dilute in 100 mL sodium chloride 0.9%. **Child** dilute 5 mL ampoule with sodium chloride 0.9% to make 50 mL (concentration 0.2 mmol/mL). See CREDD for dose/weight + Estimated weight/age, p. 47. **Infuse with syringe driver with safety software** if available				
Offer CMI: Relaxes bronchial smooth muscle. May cause nausea, vomiting or flushing				
Note: Do continuous cardiac monitoring + BP 5 minutely. Monitor knee reflexes if repeat doses to assess for magnesium toxicity - can cause respiratory failure				
Contraindication: Heart block, hypermagnesaemia				
Management of associated emergency: Cease infusion if persisting hypotension or reflexes absent. Contact MO/NP [1,2,5-7]				

3. Clinical assessment[1]

- **Get rapid history:**
  - reliever puffer taken for this episode - dose, number of doses, time of last dose
  - current asthma medicine(s) - regular + as needed; type of devices used
  - if prescribed preventer puffer, are they using it correctly
  - what triggered this episode, if known eg allergy, hypersensitivity, medicine, URTI
  - heart or lung disease, COPD
  - smoker, exposure to second hand smoke
  - previous ICU/hospital admission(s) for asthma

4. Management[1]

- Continue to manage severe and life-threatening asthma, or mild asthma that is not responding, in collaboration with MO/NP

In all cases

- Repeatedly assess response to treatment + vital signs - **in particular** fatigue, LOC, RR, HR, SpO_2

Within 1st hour start corticosteroids - all presentations, even mild

- **Adult and child ≥ 6 years:**
  - oral prednisolone **OR** oral dexamethasone (child)
  - if oral route not possible, IV hydrocortisone **OR** IV/IM dexamethasone (child)
- **Child 1–5 years** - only on MO/NP order + severe wheezing

1 hour after starting salbutamol - reassess response to treatment

- Use assessment table in **Step 3**
- Do spirometry if available, patient able, and staff trained
- If adult - check for SOB while lying flat

If still not improving

- If persisting respiratory distress **OR** ↑ WOB **OR** not able to lie flat without SOB:
  - **urgently contact MO/NP**
  - continue salbutamol every 20 minutes
  - MO/NP may consider add-on treatments eg IV magnesium sulfate
  - retrieval/hospitalisation

- **MO/NP may consider retrieval/hospitalisation if any of:**[1]
  - hypoxia at presentation
  - abnormal spirometry (if done) 1–2 hours after presentation
  - respiratory distress, ↑ WOB unresolved or unable to lie flat without SOB 1–2 hours after presentation
  - history of ICU admission for asthma; or (if child) hospitalised in prior 12 months
  - acute asthma in past 4 weeks, or frequent presentations for acute asthma
  - high recent use of salbutamol/other beta2 agonists
  - patient cannot be monitored well at home or cannot return easily
  - other risk factors eg poor asthma control, chronic lung disease, cardiovascular disease:
    - + if child - confirmed food allergy, incorrect inhaler technique, poor adherence to preventer/asthma action plan, exposure to tobacco smoke/clinically relevant allergens

If mild/moderate episode, no fever, and SOB/WOB resolves[1]

- Observe for at least 3 hours (or as per MO/NP) after breathing difficulty resolves:[1]
  - if breathing difficulty persists OR returns, contact MO/NP
  - if no further breathing difficulty patient may return home
- Advise to continue usual asthma medicines, including:
  - salbutamol puffer 4 hourly as needed - supply remainder of MDI
  - preventer puffer (as prescribed)
- Check and coach inhaler technique:
  - eg see https://www.nationalasthma.org.au/health-professionals/how-to-videos
  - give spacer + care instructions (if does not have one)
- Check patient knows how to recognise asthma symptoms and what to do. Give discharge plan eg https://www.asthmahandbook.org.au/acute-asthma/clinical/post-acute-care

S4	Prednisolone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed for **adult and child ≥ 6 years only**				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	1 mg, 5 mg, 25 mg	Oral	**Adult** 50 mg	**stat** Repeat each morning for 5–10 days
Oral liquid	5 mg/mL		**Child 6–11 years** **Day 1:** 2 mg/kg (max. 50 mg) **Day 2 and 3:** 1 mg/kg *Child 1–5 years with severe wheeze on MO/NP order*	**stat** Repeat each morning on days 2 and 3 Can extend to 5 days if symptoms still on day 3 - consult MO/NP
Offer CMI: May affect mood and sleep. Take with food to ↓ stomach upset				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,8]				

S4	Dexamethasone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	1 mg/mL	Oral*	**Child 6–11 years** 0.6 mg/kg (max. 16 mg)	**stat** Single dose
Injection	4 mg/mL	IM/IV		
Offer CMI: **Oral** take with food to ↓ stomach upset. *Injection can be given orally if oral liquid not available (tasteless). **IV** inject undiluted over at least 1 minute				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,9]				

S4	Hydrocortisone			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	100 mg	IV	**Adult** 100 mg **Child 6–11 years and child 1–5 years with severe wheeze** 4 mg/kg (max. 100 mg)	**stat** Inject over 30 seconds–5 minutes Further doses as per MO/NP
Preparation: Reconstitute with 2 mL water for injections or sodium chloride 0.9%				
Offer CMI: May cause ↑ BGL and affect mood and sleep				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,10,11]				

5. Follow up[1]

- Advise to return the following day for review, or sooner if concerned/needing to use salbutamol more than 4 hourly. If returns earlier consult MO/NP
- On review the next day:
  - if wheeze/other symptoms present consult MO/NP
  - if no wheeze present advise to be reviewed at next MO/NP clinic and again in 2–4 weeks
- Patients, relatives and friends of people with asthma should have an Asthma Action Plan + know asthma first aid https://www.asthmahandbook.org.au/

6. Referral/consultation[1]

- Consult MO/NP as above

Drowning/submersion - adult/child

Recommend[1,2]

- Ventilation + oxygenation to reverse hypoxia

Background

- If child, also see QPEC guidelines *Drowning - emergency management in children*

1. May present with[1-3]

- Immersion ± vomiting, respiratory compromise, apnoea or in cardiac arrest
- **Suspect spinal injury** if history indicates eg dived into shallow water, found near dumping surf, rocks or after boating accident

2. Immediate management[1-3]

- **Rapidly assess + manage concurrently**

DRSABCD

- As needed, BLS, p. 44 or ALS, p. 46 - **do prolonged CPR**
- Still do CPR if severe hypothermia + fixed dilated pupils, perceived rigor mortis or pooling of blood in lower extremities

- **Assess patient on back with head + body at same level** (NOT head down - risk of regurgitation or vomiting):
  - only roll on side if airway obstructed. Reassess condition after rolling
  - c-spine immobilisation, p. 144 if suspect spinal injury
- **If hypothermia** handle gently to avoid precipitating arrhythmias

If breathing

- **LOC** → Place on side + open airway eg head tilt
- **Alert** → Allow to sit a comfortable position

- **Give 100% O_2 via non-rebreather mask at 15 L/minute IF**:
  - respiratory difficulty, ↑WOB **or** SpO_2 < 95% on room air:
    - aim to maintain SpO_2 ≥ 95% in adult + child
    - if unable to maintain SpO_2 with O_2 + adequate conscious state (GCS 13–15), consider non-invasive ventilation eg CPAP, p. 53

- **Vital signs +** GCS, p. 550
- BGL + continuous cardiac monitoring

- **Remove wet clothing,** dry + keep warm with blankets
- If hypothermia **active rewarming is not routinely recommended**. May lead to rapid overshoot of core T

- **Consult MO/NP urgently,** who may order:
  - IV/Intraosseous, p. 55 sodium chloride 0.9%. If child 20 mL/kg

3. Clinical assessment[1-3]

- Ask about:
  - circumstances leading to the drowning, duration of immersion, duration of being missing
  - resuscitation, length of CPR + drugs given
  - witnesses
  - type of water, contaminated eg agricultural, sewage; fast flowing, pool/lake
  - any trauma eg fall before submersion
- If cause of drowning not clear, ask about:
  - epilepsy
  - personal + family history of arrhythmias
  - diabetes
  - drug + alcohol use
  - dementia
- Do physical examination, including:
  - chest - look, listen + feel - any crackles, wheeze, tenderness, chest x-ray if available
  - ECG
  - if distended stomach, do not try to empty by applying external pressure
  - check for other injuries. Avoid prolonged exposure to prevent heat loss
- Consider non-accidental injury or neglect if child with inconsistent histories, a lapse in supervision, a delay in seeking care or other injuries eg bruises, old fractures. See Child protection, p. 539

4. Management[1-3]

- MO/NP may advise:
  - IV/Intraosseous, p. 55 sodium chloride 0.9%. If child 20 mL/kg
  - IV antibiotics if grossly contaminated water
  - insert IDC, NGT
  - bloods/i-STAT ± blood gas
  - retrieval/hospitalisation - **early contact with retrieval service is advised**
- Monitor closely until retrieval:
  - continue O_2 + encourage to cough + take deep breaths
  - keep warm, avoid T › 37.5
  - vital signs + strict fluid balance
- If patient initially appears well, observe for 4–8 hours, they may still deteriorate due to pulmonary oedema:
  - if remains asymptomatic + SpO_2 › 95%, consider discharge in collaboration with MO/NP
  - provide water safety education as appropriate

5. Follow up

- As per MO/NP

6. Referral/consultation[1]

- A person in charge of a hospital is required to notify Qld Health of any immersions if ‹ 5 years in a swimming pool. See https://www.health.qld.gov.au/public-health/notifiable-incidents-conditions/pool-immersion-reporting. Reporting will trigger an inspection of the pool fence regardless of the method of access. Let the family know that this will occur. Refer to local policy if outside of Qld

Cardiovascular emergencies

Chest pain assessment

Recommend[1-3]

- Chest pain assessment is time critical
- Use cardiac clinical pathways. Ensure they are readily available https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways
- ECG Flash is available in some Qld remote facilities https://qheps.health.qld.gov.au/caru/clinician-engagement/networks/cardiac/ecg-flash/about (Qld Health intranet only)
- Do NOT use medication cocktails eg pink lady (oral viscous lidocaine, antacid ± anticholinergic) to assist in ruling out a cardiac cause

1. May present with[1]

- Chest pain or discomfort

2. Immediate management[1]

- Aim to identify Acute coronary syndrome, p. 104 or other life-threatening causes
- **Do rapid assessment:**
  - general appearance
  - vital signs
  - allergies
  - **ECG** - to be reviewed by MO/NP **within 10 minutes of presentation:**[4]
    - if difficult to interpret, MO/NP may send to cardiologist using ECG Flash if available
- **Ask about the pain and symptoms:**[1,5]
  - **Site** - may occur in any area of chest eg central, L/R side, epigastric, or shoulder/back, jaw, neck, arm
  - **Onset** - when did it start, sudden or gradual, is it present now
  - **Characteristics** - discomfort, pressure, tightness, heaviness, cramping, band like, burning, ache, sharp, dull, stabbing, fullness, squeezing, tearing, ripping
  - **Radiation** - to neck, jaw, shoulder, 1 or both arms, into hands and wrists, back
  - **Associated symptoms:**
    - SOB
    - nausea, vomiting, sweating
    - dizziness/light-headedness, fainting, fatigue/lethargy
    - fever, cough with purulent or pink frothy sputum or blood
  - **Timing:**
    - constant or intermittent
    - ever had this pain before, how often does it occur, how long did it last
  - **Exacerbating or relieving factors:**
    - what brought on the pain eg activity, foods, cold, stress, trauma
    - what makes it better/worse eg rest, medicines (GTN, antacids), eating, position changes, deep inspiration, movement, cough, laugh
    - any analgesia taken, effect
  - **Severity** - scale of 0–10, with 0 being none and 10 being the worst
- **Use tables on next page to help with differential diagnosis** (note - these do not include all causes)

Life-threatening causes of chest pain	
Cause	**Signs + symptoms**
Acute coronary syndrome[1,4]	• If possible cardiac chest pain ± other symptoms of myocardial ischaemia, go immediately to ACS, p. 104 • Heaviness/pressure/tightness/squeezing/burning pain: – central chest - may radiate to arm, neck, jaw – duration ≥ 10 minutes – ± triggered by exertion, emotional stress, temperature extremes • **Other symptoms** eg SOB, nausea/vomiting, sweating, unexplained fatigue, syncope/fainting, dizziness, SOB when lying down • **Atypical symptoms** ie symptoms without pain. More common in elderly, women, renal failure, diabetes, Aboriginal and Torres Strait Islander people
Pulmonary embolism[5] Contact MO/NP urgently. Go to PE, p. 120	• Sudden onset SOB - most common symptom • Sharp, pleuritic pain • Cough, fainting • Consider if: – symptoms of DVT, p. 119 eg calf swelling/pain in 1 leg – pregnant/postnatal woman, HRT – hospitalised within previous 3 months – a period of inactivity eg long-distance travel – history of cancer - other than skin cancer – bone fracture
Aortic dissection (rare)[5] Contact MO/NP urgently	• Sudden onset of severe chest ± back pain: – sharp, ripping, tearing, stabbing – can radiate anywhere in chest or abdomen • Pulse deficits ie ↓ flow to peripheral vessels • Commonly associated with hypertension or connective tissue disorder • Fainting, ↓ BP, shock • sBP may be different on each arm of › 20
Tension pneumothorax[5]	• Go to Chest injuries, p. 137 • History of trauma • ↑ respiratory distress, ↑ HR, ↓ BP • Unequal chest movement, ↓ air entry
Cardiac tamponade[5] Contact MO/NP urgently	• May be spontaneous or if history of trauma, also see Chest injuries, p. 137 • Commonly presents with SOB, but can have chest pain. Consider if features of: – pericarditis - sharp/pleuritic pain, especially if worse lying down + relieved by leaning forward, URTI symptoms, pericardial friction rub ± new wide-spread ST-elevation or PR depression – cardiogenic Shock, p. 60 – ↓ BP, ↑ JVP, + muffled heart sounds (most patients do not have all 3) – large cardiac shadow on chest x-ray

Non-immediate life-threatening causes of chest pain	
Cause	**Signs + symptoms**
Spontaneous pneumothorax[5]	• Sudden onset unilateral pleuritic chest pain • SOB, absent breath sounds, ↑ resonance to percussion • ↑ HR, hypoxia
Musculoskeletal causes[5]	• Eg rib fracture(s) from coughing, stress fracture • Pain/tenderness on palpation • Pain on inspiration, movement of chest or upper body
Pneumonia[5]	• Pleuritic pain, fever, productive or dry cough • ↑ RR, ↓ breath sounds, crackles, wheeze • Night sweats, rigors • See Pneumonia - adult, p. 241
Acute bronchitis[6]	• Cough, worse at night or with exercise • Low grade fever, wheeze • Smoking history ± close contact with infected person • See URTI - adult, p. 238
Lung cancer[5]	• Chest discomfort, typically on side of tumour • Persistent cough, coughing up blood • SOB, hoarseness • Smoking history, symptoms › 30 days, weight loss
Gastrointestinal causes[5]	• Heartburn, regurgitation, dysphagia, precipitated by meal, fatty foods, bending down, or lying down • Retrosternal without radiation • Epigastric pain, relieved by antacid or food • GORD may mimic angina • See Abdominal pain, p. 198, Gastritis, p. 204

3. Clinical assessment

- Get past history, including prior:[1,5]
  - presentation/admission to hospital/clinic with chest pain within 28 days
  - cardiac investigations eg stress test, exercise ECG, coronary CT angiography
  - heart disease, previous myocardial infarction
- Ask about cardiovascular risk factors:[5]
  - ↑ cholesterol
  - hypertension, diabetes
  - smoking - cigarettes/day, years smoking, quit date
  - obesity - weight, BMI
  - family history
  - chronic kidney disease - stage
- Also ask about:[5]
  - current medicines + aspirin, anticoagulants
  - lung disease
  - cancer
  - alcohol, recreational drug use eg cocaine, amphetamines
  - diet

  - recent events eg:
    - pregnancy, trauma, major surgery or medical procedures
    - periods of immobilisation, long-distance travel
    - illness, fever, malaise
    - strenuous physical activity
- Do physical examination, including:[5]
  - BP on both arms - if concern for aortic dissection
  - inspect and auscultate chest ± heart sounds if skilled
  - palpate abdomen
- MO/NP may order:
  - chest x-ray
  - bloods/i-STAT - troponin, VBG, D-dimer (if available) - to help in differential diagnosis[5]

4. Management

- If suspected cardiac cause, see ACS, p. 104
- Urgently contact MO/NP if severe or life-threatening symptoms
- Consult MO/NP for all other presentations of chest pain

5. Follow up

- As per MO/NP

6. Referral

- As above

HMP Acute coronary syndrome (ACS) - adult

Possible cardiac chest pain, unstable angina, myocardial infarction

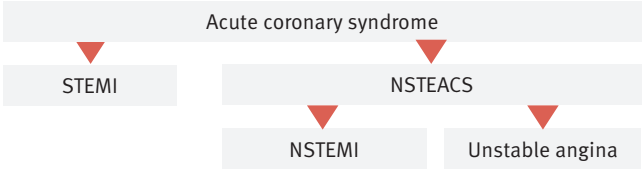
Recommend[1,2]

- Retrieval/treatment of ACS is time critical
- **Use cardiac clinical pathways**. Ensure they are readily available. In Qld https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways eg
  - *Suspected acute coronary syndrome clinical pathway*

    Note: use the pathway that corresponds to the troponin assay used at your facility ie:
    - ***iSTAT/Point of Care Troponin Assay*** OR ***Laboratory Troponin Assay***
    - the same assay MUST be used for serial troponin tests
  - *Acute coronary syndrome clinical pathway*
  - *Reperfusion for STEMI clinical pathway*
- Elevated troponin alone (without cardiac symptoms) should not trigger the urgent treatment of ACS. Troponin may be elevated in many conditions, including sepsis[3] and PE.[1] Urgently consult MO/NP in all cases

Background[1]

- ACS includes myocardial infarction (MI) or unstable angina:
  - MI can be ST-elevation (STEMI) or non-ST-elevation (NSTEMI)
  - patients without ST-elevation are initially described as having NSTEACS (non-ST-elevation acute coronary syndrome) until investigated further
- Reperfusion is restoring the flow of blood to the heart



1. May present with[1,4]

- **Chest discomfort or pain:**
  - heaviness/discomfort/pressure
  - aching, numbness
  - tightness/fullness
  - squeezing/burning
  - can radiate to shoulder, arm, jaw, back, or upper abdominal area
  - duration ≥ 10 minutes
  - typically triggered eg by exertion, emotional stress, temperature extremes OR can occur at rest
- **Associated symptoms:**
  - SOB or difficulty breathing ± chest discomfort
  - dizziness, light-headedness, feeling faint or anxious
  - nausea, vomiting, indigestion
  - sweating/cold sweat
  - lethargy/fatigue
- **Consider atypical presentation:**
  - associated symptoms WITHOUT chest pain
  - especially if diabetes, renal failure, female, elderly or Aboriginal and Torres Strait Islander person[5]

2. Immediate management[1,5]

Use *Suspected acute coronary syndrome clinical pathway* appropriate to your facility
https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways
or local pathway if outside Qld

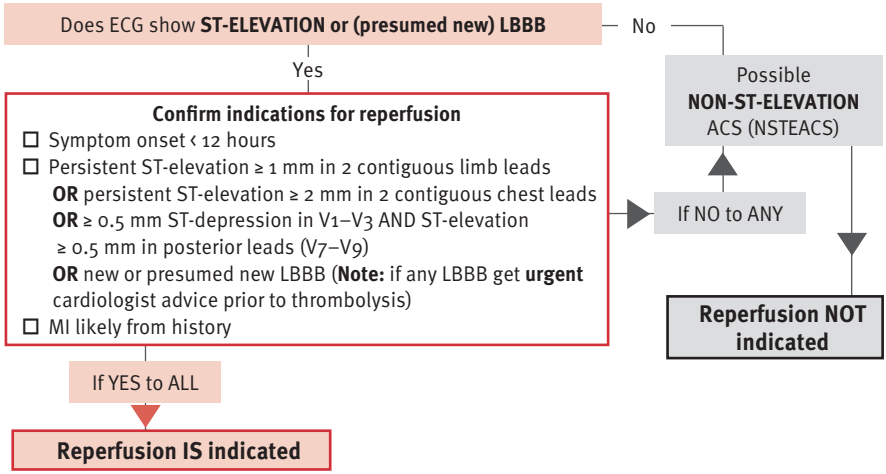
- **Get rapid history** of chest pain as per Chest pain assessment, p. 100
  - site, onset, characteristics, radiation, associated symptoms, timing, exacerbating or relieving factors, severity
  - other Life threatening causes of chest pain, p. 101 eg aortic dissection, PE - must be considered[1]
- **Do ECG + vital signs:**
  - send for **urgent review by MO/NP within 10 minutes** of first patient contact
  - if difficult to interpret, MO/NP may send to cardiologist using ECG Flash if available. See https://qheps.health.qld.gov.au/caru/networks/cardiac/ecg-flash
- **Give aspirin** as soon as possible (if not contraindicated/already given)
- **Give subling glyceryl trinitrate** (GTN) if no contraindications:
  - repeat every 5 minutes for ongoing chest pain or discomfort (aim for no pain)
  - up to 3 doses
- **Insert IVC x 2**
- **Take blood for troponin** - i-STAT
- **If symptoms not relieved with GTN** or for ongoing chest discomfort at any time during initial management:
  - give IV fentanyl or morphine - titrate to pain. See Acute pain, p. 32 for doses
  - **note:** opioids may delay absorption of clopidogrel and ticagrelor[6]
- **Give antiemetic if needed**. See Nausea and vomiting, p. 40
- **Continuous cardiac monitoring**
- Give O_2 if SpO_2 < 90% or evidence of shock (aim for SpO_2 ≥ 96%):
  - use with caution if COPD. Aim for SpO_2 88–92% if known CO_2 retainer
  - titrate O_2 to SpO_2
- **Repeat ECG every 10–15 minutes** until pain free
- MO/NP may order chest x-ray

S2	Aspirin			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Dispersible tablet	300 mg	Oral	300 mg Chewed or dissolved in water	stat
Offer CMI: May cause GI irritation or bleeding				
Contraindication: Allergy to aspirin or NSAIDs, aspirin sensitive asthma, active or high risk of internal bleeding, or major bleeding				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,7]				

S3	Glyceryl trinitrate (GTN)			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	600 microg	Subling	300–600 microg	stat Repeat every 5 minutes up to 3 doses providing sBP ≥ 90
Spray	400 microg/spray		1–2 sprays (400–800 microg)	
Offer CMI: May cause headache, flushing, palpitations, hypotension, dizziness or fainting. Advise to get up gradually from sitting or lying				
Note: Sit or lie before giving. If unopened spray, prime by pressing nozzle 5 times into the air, or if › 7 days since used, press once				
Contraindication: Hypotension (sBP ‹ 90), patient has taken PDE5 inhibitors eg sildenafil (eg Viagra®), vardenafil (Levitra®) ≤ 24 hours or tadalafil (eg Cialis®) ≤ 48 hours				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,8]				

3. Clinical assessment[5]

- MO/NP will assess if reperfusion indicated - with cardiologist advice if needed
- Use *Suspected acute coronary syndrome clinical pathway* appropriate to your facility or local pathway if outside of Qld (summarised below)



4. Management

- **If reperfusion IS indicated** - arrange urgent retrieval:
  - **OPTION 1,** p. 107
    - if access to a cardiac lab for stent (primary PCI) **IS possible within ≤ 120 minutes** of first diagnostic ECG - MO/NP to immediately contact on call interventional cardiologist
  - **OPTION 2,** p. 107
    - if primary PCI **is NOT possible within ≤ 120 minutes** of first diagnostic ECG - assess for thrombolysis at rural or remote facility
- **If reperfusion NOT indicated** - see **OPTION 3,** p. 109

OPTION 1: Urgent retrieval for stent (primary PCI)[5]

- STEMI + reperfusion indicated + **ABLE** to access cardiac lab within 120 minutes

Use *Reperfusion for STEMI clinical pathway*
https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways
or local pathway if outside Qld

- MO/NP will urgently:
  - contact on call interventional cardiologist
  - arrange urgent retrieval
  - order **antithrombotic therapy:**
    - aspirin 300 mg - if not already given
    - ticagrelor 180 mg oral - or alternative if advised by interventional cardiologist
    - enoxaparin OR unfractionated heparin/heparin sodium - to confirm with interventional cardiologist
- Continuous cardiac monitoring
- Frequently monitor vital signs
- Continue to liaise with MO/NP for further management until retrieval

OPTION 2: Thrombolysis at rural or remote facility[9]

- STEMI + reperfusion indicated + **NOT ABLE** to access cardiac lab within 120 minutes

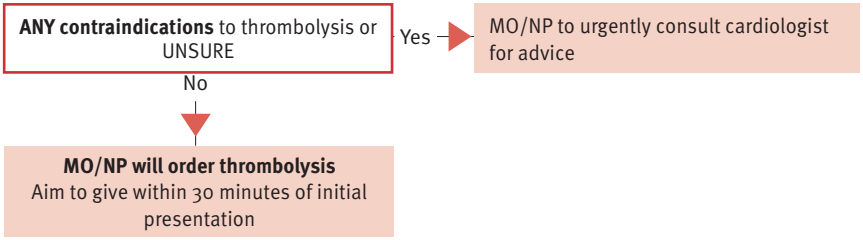
Use *Reperfusion for STEMI clinical pathway*
https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways
or local pathway if outside Qld

MO/NP to assess if suitable for thrombolysis at rural or remote facility

Check for **Contraindications for thrombolysis**

Absolute contraindications	Relative contraindications
☐ Active bleeding or bleeding tendency (excluding menses)	☐ Current anticoagulants, including novel anticoagulant agents
☐ Suspected aortic dissection	☐ Non-compressible vascular puncture
☐ Significant closed head or facial trauma ≤ 3 months	☐ Recent major surgery (< 3 weeks)
☐ Any prior intracranial haemorrhage	☐ Traumatic or prolonged (> 10 minutes) CPR
☐ Ischaemic stroke ≤ 3 months	☐ Recent internal bleeding - within 4 weeks/active peptic ulcer
☐ Known cerebral vascular lesion	☐ Suspected pericarditis
☐ Known malignant intracranial neoplasm	☐ Advanced liver disease/advanced metastatic cancer
	☐ History of chronic, severe, poorly controlled hypertension
	☐ Severe uncontrolled hypertension on this presentation - systolic BP > 180 or diastolic BP > 110
	☐ Ischaemic stroke > 3 months ago, known intracranial abnormality (not covered in absolute contraindications)/dementia
	☐ Pregnancy or ≤ 1 week postpartum

Note: use checklist in *Reperfusion for STEMI Clinical Pathway* for up-to-date absolute/relative contraindications



Pre thrombolysis

- Informed verbal consent required
- Insert IVC x 2 if not in situ
- Record baseline:
  - vital signs + continuous cardiac monitoring
  - circulation observations ie for bleeding
  - neurological observations - GCS, p. 550
- Weigh patient

Thrombolysis medication

- **Note:** patient should be monitored by staff trained in ALS with access to a defibrillator:
  - significant arrhythmias including VF can occur after reperfusion - have pads on chest
- On MO/NP order ONLY, give:
  - aspirin 300 mg - if not already given
  - clopidogrel 300 mg - orally, or 75 mg if ≥ 70 years
  - tenecteplase - IV bolus as per weight adjusted dose guide - give ½ dose if ≥ 70 years old
  - enoxaparin (if severe renal failure, MO/NP may order unfractionated heparin/heparin sodium):
    - if < 70 years - loading dose 30 mg IV. **Omit loading dose if ≥ 70 years**
    - 15 minutes after loading dose, give 1 mg/kg subcut (max. 100 mg), or if ≥ 70 years 0.75 mg/kg (max. 75 mg)

S4	Tenecteplase						Prescribing guide
RIPRN and RN only. Must be ordered by an MO/NP							
Form	**Strength**	**Route**	**Dose**				**Duration**
Injection	50 mg (10,000 units)	**IV**	**Weight**	**units**	**mg**	**mL**	stat Inject over 10 seconds Flush line before and after with sodium chloride 0.9%
			< 60 kg	6,000	30	6	
			≥ 60– < 70 kg	7,000	35	7	
			≥ 70– < 80 kg	8,000	40	8	
			≥ 80– < 90 kg	9,000	45	9	
			≥ 90 kg	10,000	50	10	
Preparation: Reconstitute with diluent provided. **Reconstituted strength = 5 mg/mL (1,000 units/mL) Swirl to dissolve - do not shake**							
Offer CMI: May cause bleeding at injection sites, intracerebral bleeding, internal bleeding eg GI/ genitourinary, or transient hypotension							
Note: If ≥ 70 years old, give ½ dose to ↓ risk of intracranial bleeding							
Contraindication: See Contraindications for thrombolysis, p. 107. Severe active bleeding disorders or disease states with an increased risk of bleeding. Allergy to gentamicin							
Management of associated emergency: Contact MO/NP. See Shock, p. 60/Anaphylaxis, p. 80 [9-11]							

S4	Enoxaparin (Clexane®)			Prescribing guide
RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Prefilled syringe	60 mg/ 0.6 mL	IV*	**Loading dose** **< 70 years** 30 mg **≥ 70 years** omit loading dose	stat **Loading dose** Flush line before and after injection with sodium chloride 0.9%
	80 mg/ 0.8 mL	Subcut	**Maintenance dose** **< 70 years** 1 mg/kg (max. 100 mg) **≥ 70 years** 0.75 mg/kg (max. 75 mg)	**Maintenance dose** Give 15 minutes after loading dose
Preparation: IV Expel air bubble + excess enoxaparin before injecting. *Use Microbore® extension set/ or similar to give IV (has a Y-injection port to put needle in), see QAS Drug Therapy Protocol *Enoxaparin (priming of the microbore extension set)* https://www.ambulance.qld.gov.au/clinical/cpm/drug-therapy-protocols **Subcut** Do not expel air bubble				
Offer CMI: May cause bleeding, bruising or pain at injection site				
Note: Use with caution if severe hepatic or renal impairment (heparin preferred)				
Management of associated emergency: Contact MO/NP. See Shock, p. 60/Anaphylaxis, p. 80 [9,12-14]				

Post thrombolysis

- Prepare for urgent retrieval to PCI capable hospital:
  - send copies of ECGs with other documentation
  - keep under direct observation of RN until retrieved
- Continuous cardiac monitoring:
  - be alert to arrhythmias including VF
- Monitor frequently:
  - vital signs
  - circulation and neurological observations - to detect bleeding[1]
- Repeat ECG at 30 minutes, 60 minutes and 90 minutes - to be reviewed by MO/NP
- Continue to liaise with MO/NP
- **If failed reperfusion** ie unresolved pain and ST-elevation has not reduced › 50% at 60 minutes:
  - MO/NP will urgently consult on call interventional cardiologist for further advice

OPTION 3: Reperfusion NOT indicated[5]

- Possible NSTEACS or STEMI + does not meet criteria for reperfusion

Use *Suspected acute coronary syndrome clinical pathway* appropriate to your facility **AND** *Acute coronary syndrome pathway* https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/cardiac-clinical-pathways or local pathway if outside Qld

- MO/NP will:
  - risk stratify as per the *Suspected acute coronary syndrome clinical pathway*
  - if patient is high risk commence *Acute coronary syndrome pathway*
- Be guided by MO/NP for further management, which may include:[5]
  - urgent retrieval to cardiac interventional facility
  - continuous cardiac monitoring + repeat ECGs
  - repeat troponin as per *Suspected acute coronary syndrome clinical pathway* appropriate to your facility + CHEM20, FBC, coagulation studies, HbA1c, lipid profile
  - BGL
  - frequent monitoring of:
    - vital signs + SpO_2, circulation and neurological observations

- **If assessed as low risk**, MO/NP may advise patient can be discharged home if:
  - repeat ECG normal
  - repeat troponin(s) indicate low risk
  - no further chest pain

5. Follow up

- As per MO/NP - may require further investigations eg angiography, echo, stress test

6. Referral/consultation

- Always consult MO/NP

HMP Acute pulmonary oedema (cardiac causes) - adult

Recommend[1]

- **Medical emergency**. Acute pulmonary oedema (APO) is the rapid accumulation of fluid in the alveoli from the pulmonary circulation. Fluid impairs gas exchange and decreases lung compliance leading to difficulty breathing and hypoxia

Background

- Causes include ACS, p. 104, valve dysfunction. **Note:** can be non-cardiac causes eg Sepsis, p. 62, Drowning, p. 98

1. May present with[1,2]

- Rapid onset of severe SOB - often first occurring at night
- ↑ RR, ↑ HR
- Ashen colour, sweaty, cool peripheries + ↓ capillary refill time
- Agitation + restlessness, tripod position/leaning forward - indicating respiratory distress
- Cough (pink frothy sputum in severe cases)
- Chest pain
- Cyanosis (late sign), exhaustion, altered LOC
- Oedema

2. Immediate management[1,2]

- **DRSABCD.** Be prepared for rapid deterioration ± cardiorespiratory arrest
- Call for help
- **Sit patient as upright as possible** - do not lay them down
- **Consult MO/NP urgently** + urgent retrieval
- Do vital signs +
  - capillary refill time
  - LOC. See GCS/AVPU, p. 550
  - continuous cardiac monitoring
- Give O_2 if SpO_2 < 94%. Titrate to SpO_2
  - use with caution if COPD. Aim for SpO_2 88–92% if known CO_2 retainer
- **Insert IVC x 2** eg 16 G
- **Take bloods** - i-STAT (CHEM8+, VBG, troponin) + FBC, TSH
- **Give** subling GTN if sBP > 110. Give 2–5 minutely being guided by clinical response **AND** IV furosemide
- **Do ECG** - review by MO/NP within 10 minutes

3. Clinical assessment[1,2]

- **Get rapid history,** including:
  - **A**llergies
  - **M**edicines - are they taken correctly
  - **P**ast history:
    - heart problems eg angina, MI, heart failure, palpitations, RHD, arrhythmias
    - hypertension, renal failure, COPD, diabetes
    - alcohol/drug use
    - recent infection
    - currently pregnant[2]
  - **L**ast ate
  - **E**vents related:
    - onset, any chest pain
    - other signs/symptoms
    - recent ↑ weight
- **Do physical examination**, including:
  - listen to chest - air entry, widespread crackles - occasionally only wheezing may be detected[1]
  - general appearance eg ashen/cyanosed, sweaty, WOB
  - skin temperature - compare trunk with limbs; are peripheries cool
  - oedema - check legs/ankles + if able sacrum with patient sitting up and forward (oedema + enlarged liver may co-exist as a sign of right heart failure)
  - weight (if possible)
- MO/NP may order chest x-ray

4. Management[1,2]

- MO/NP may order:
  - GTN infusion - titrate to BP and clinical effect. See Hypertensive emergency, p. 113 for drug box
  - **if infusion not practical in the rural/remote area**, GTN transdermal patch(es)[3]
  - + other treatment specific to cause (if known)[2]
- Monitor closely until retrieval:[2]
  - airway, LOC, vital signs, SpO_2
  - continuous cardiac monitoring
  - symptoms
  - urine output. IDC not routinely recommended. **Do not lie patient down in APO**

If no improvement/deteriorating, MO/NP may consider:

- **Non-invasive ventilation** - CPAP, p. 53 (or BiPAP if CPAP not available):
  - monitor for nausea/vomiting as ↑ risk of aspiration if altered LOC
  - although morphine not routinely recommended, if patient anxious/distressed or not tolerating CPAP, MO/NP may consider:[2]
    - IV morphine 1–2.5 mg - single dose. Use cautiously as may ↑ need for ventilation[2]
    - if given, monitor nausea, RR/depth and LOC. See Sedation score, p. 35
- **Intubation** if still continues to deteriorate + skilled staff eg:
  - exhaustion, ↓ LOC, ↑ confusion/agitation
- **CPR if needed.** See ALS, p. 46

S3 S4	Glyceryl trinitrate (GTN)			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, RIPRN and RN may proceed for **tablet/spray (S3)**				
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP for **patch (S4)**				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	600 microg	Subling	300–600 microg	stat Repeat every 2–5 minutes if sBP ≥ 110 If no improvement consult MO/NP - may need higher doses
Spray	400 microg/ spray		1–3 sprays (400–1200 microg)	
Patch	5 mg/24 hours	Transdermal	5–15 mg	stat **note:** remove before defibrillation
	10 mg/24 hours			
Offer CMI: May cause headache, flushing, palpitations, hypotension, dizziness or fainting. Advise to get up gradually from sitting or lying				
Note: Subling sit before giving. If unopened spray, prime by pressing nozzle 5 times into the air, or if › 7 days since used, press once. **Transdermal** write date + time on patch before applying to clean, dry skin on chest area or upper arm				
Contraindication: Hypotension (sBP ‹ 90), patient has taken PDE5 inhibitors eg sildenafil (eg Viagra®), vardenafil (Levitra®) ≤ 24 hours or tadalafil (eg Cialis®) ≤ 48 hours				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

S4	Furosemide			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case **give up to 40 mg** and notify the MO/NP as soon as circumstances allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	20 mg/ 2 mL	IV	**20–40 mg** **OR** if patient already taking oral furosemide, give at least equivalent dose IV*	stat Give undiluted over 2–5 minutes Repeat in 20 minutes if needed on MO/NP order
Offer CMI: May cause dizziness, fainting or dehydration				
Note: Check BP first - check with MO/NP if hypotensive. *If › 80 mg required, give via slow IV infusion to reduce risk of ototoxicity (max. rate 4 mg/minute)				
Contraindication: If known anuria or sodium depletion				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,5,6]				

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Hypertensive emergency - adult

1. May present with[1,2]

- BP ≥ 180/110 ±
  - headache, dizziness, visual disturbances
  - SOB, lung crackles, nausea, vomiting
  - chest pain
  - altered LOC, Stroke, p. 127 (↓ sensation, movement)
  - ↓ urine output

2. Immediate management[1-3]

- Do pregnancy test if reproductive age. If +ve, see Hypertension in pregnancy, p. 367
- If trauma related, urgently contact MO/NP
- Do vital signs +
  - check BP on both arms (+ a lower limb if Aortic dissection, p. 101 suspected)[1]
  - if automated BP machine, check manually
- Get rapid history, including:[1]
  - **A**llergies
  - **M**edicines - for BP, aspirin, anticoagulants, other - are they taken correctly
  - **P**ast history - prior ↑ BP, heart problems, renal disease, aneurysm
  - **L**ast ate
  - **E**vents related:
    - any chest pain, SOB, headache, visual change, neurological symptoms
    - recent drug use eg cocaine, ice/amphetamines
- **Rapidly assess severity** and manage as per table (next page)

3. Clinical assessment[1,2]

- MO/NP may advise (depending on severity):
  - ECG + continuous cardiac monitoring
  - listen to chest for air entry, crackles or wheeze
  - IVC + bloods/i-STAT - CHEM20, VBG, troponin, FBC
  - urinalysis (protein, blood) + urine microscopy
  - chest x-ray

4. Management

- Continue to manage according to clinical condition involved, as guided by MO/NP
- If acute pulmonary oedema, also see APO, p. 110
- If discharged, support patient to take oral antihypertensive medicine(s) correctly

Rapidly assess severity[1,2]

Severely elevated BP	Hypertensive urgency	Hypertensive emergency
• **BP ≥ 180/110** • No symptoms • No signs of acute organ damage[1]	• **BP ≥ 180/110** • Persistently elevated BP • Minor symptoms eg headache, dizziness	• **High BP - often ≥ 200/120 but may be lower** • **PLUS symptoms of acute organ damage** eg: – SOB/signs of APO, p. 110 – altered LOC/stroke – seizures, lethargy, vision changes – ↓ urine output – chest pain – aortic dissection

- Do not usually need immediate treatment
- If patient already on BP medicine and has not taken, give usual dose

Consult MO/NP who may advise[1]

- Observe and re-check BP several times over 1–2 hours to see if it settles
- Initiating or ↑ oral anti-hypertensive medication
- Home with follow up over next 2–3 days to see if BP reduces + review at next MO/NP clinic
- Or hospitalisation if risk factors/concerns

- If patient already on BP medicine and has not taken, give usual dose

Urgently consult MO/NP who may advise[1]

- If not on BP medicine give oral anti hypertensive eg nifedipine (slow release)[1] or amlodipine[2]
- Aim for a slow controlled reduction of BP[1]
- Monitor BP and symptoms for at least 2 hours[1]
- If sBP reduced (ideally < 160) AND symptoms gone, may consider home with review next day
- Or hospitalisation/retrieval if symptoms ongoing, BP difficult to control, or risk factors/concerns

Life-threatening

Urgently consult MO/NP who may advise[1]

- Urgent retrieval
- **BP 5 minutely**
- ± medicine as per cause
- It may be harmful to ↓ BP too rapidly or too much
- MO/NP may seek specialist advice for target BP
- Insert IVC x 2
- Continue BP 5 minutely until stabilises

Hypertensive emergency - on MO/NP order only[1]		BP reduction rate/target[1]
Acute pulmonary oedema Acute coronary event	• Subling/IV GTN or patch if IV not available in rural or remote area.[4] See APO, p. 110	• **Immediate reduction of BP** • Aim for sBP < 140
Stroke	• MO/NP may seek specialist advice	• **Avoid aggressive BP reduction** - can worsen ischaemic stroke[1]
Aortic dissection	• Beta blocker eg esmolol • Subling/IV GTN • Analgesia[1]	• **Immediate reduction of BP and HR** • Aim for sBP < 120 and HR < 60
Hypertensive encephalopathy	• IV labetalol if available • MO/NP may seek specialist advice	• **Immediate reduction of BP**
Malignant hypertension ie advanced retinopathy	• Aim to ↓ mean arterial pressure by 20–25%	• **Reduce BP over several hours**
Adrenergic crisis	eg from stimulant misuse (rare). MO/NP to seek specialist advice[2]	

S3	Glyceryl trinitrate (GTN)			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	600 microg	Subling	300–600 microg	stat Repeat every 2–5 minutes until desired BP obtained
Spray	400 microg/ spray		1–3 sprays (400–1200 microg)	
Offer CMI: May cause headache, flushing, palpitations, hypotension, dizziness or fainting. Advise to get up gradually from sitting or lying				
Note: Sit before giving. If unopened spray, prime by pressing nozzle 5 times into the air, or if › 7 days since used, press once				
Contraindication: Hypotension (sBP ‹ 90), patient has taken PDE5 inhibitors eg sildenafil (eg Viagra®), vardenafil (Levitra®) ≤ 24 hours or tadalafil (eg Cialis®) ≤ 48 hours				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

S4	Glyceryl trinitrate (GTN)			Prescribing guide
RIPRN and RN only. Must be ordered by an MO/NP. **Use local protocol if available**				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	50 mg/ 10 mL	**IV**	**Start infusion** 10 microg/minute **Titrate until target BP reached** increase by 5 microg/ minute, every 5 minutes (max. 100 microg/minute)	**Infusion** As per MO/NP instruction
Preparation: Dilute to 500 mL in sodium chloride 0.9% to make a concentration of 100 microg/mL. GTN is absorbed onto some plastics. **Use glass or non-PVC containing bottle or bag eg Braun Ecoflac®**				
Offer CMI: See GTN drug box above				
Note: Onset of action: 1–2 minutes. Duration of effect: 3–5 minutes				
Contraindication: See GTN drug box above				
Management of associated emergency: Contact MO/NP. See Anaphylaxis, p. 80 [1,2,4,5]				

S4	Hydralazine			Prescribing guide
RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	20 mg	IV	**Intermittent bolus dose** 1 mg Repeat every minute as required to max. 10 mg	stat
Preparation: Reconstitute with 1 mL of water for injections. Then dilute with sodium chloride 0.9% to facilitate dosing				
Offer CMI: May cause tachycardia, headache, flushing or palpitations				
Note: Where urgent BP lowering is required + GTN infusion not immediately available. Monitor BP and HR continuously during administration and until stable				
Contraindication: SLE, severe tachycardia, myocardial insufficiency and right ventricular heart failure				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,6,7]				

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Arrhythmias - adult

Recommend[1]

- Anyone who presents with an arrhythmia should be investigated for a cause
- Opportunistically screen patients aged ≥ 65 for atrial fibrillation (AF) by pulse palpation and do ECG if irregular
- ECG flash is available in some Qld remote facilities https://qheps.health.qld.gov.au/caru/clinician-engagement/networks/cardiac/ecg-flash/about (Qld Health intranet only)

Background

- Sinus tachycardia (↑HR with normal ECG) can occur secondary to most injuries and illnesses eg anxiety, fever, infection, blood loss/shock, dehydration

1. May present with[2]

- Fast, slow or irregular pulse
- ± symptoms eg:
  - palpitations, sensation of 'missed beats'
  - SOB, fatigue, dizziness, light-headedness, syncope/fainting, non-accidental falls
  - chest pain/discomfort, hypotension/shock

2. Immediate management[2]

- **DRSABCD**
- If needed see BLS, p. 44 and ALS, p. 46
- If chest pain go to Chest pain assessment, p. 100 and ACS, p. 104
- Vital signs
- ECG - **to be reviewed by MO/NP promptly - within 10 minutes if symptomatic:**[3]
  - if difficult to interpret, MO/NP may send to cardiologist using ECG Flash if available
- Attach cardiac monitor
- Give O_2 if needed to maintain SpO_2 ≥ 94%
- Insert IVC x 2
- Take bloods:[3]
  - i-STAT - FBC, UE, troponin, TSH ± VBG
  - ASOT in Aboriginal and Torres Strait Islander people/other groups at high risk of ARF, p. 498

If unstable/deteriorating urgently consult MO/NP for urgent retrieval +

- Attach defibrillator pads (consider anterior/posterior if pacing may be needed)
- Look for reversible causes eg ACS, AF, hypothermia, hypovolaemic shock, electrolyte abnormalities, hypoxaemia, infection, acidosis, hypothyroidism
- **If tachyarrhythmia** - MO/NP will advise management
- **If bradyarrhythmia** - MO/NP will advise. May include:[3]
  - check if taking beta blockers, calcium channel blocker (diltiazem or verapamil) or digoxin (drug toxicity)
  - medication (depending on cause) eg:
    - atropine (for vasovagal bradycardia), or
    - isoprenaline (if available), or
    - other medication(s) if drug toxicity
    - external cardiac pacing if deteriorates/haemodynamically unstable - as per local policy

3. Clinical assessment[2,3]

- Get rapid history, including:
  - onset, associated symptoms
  - frequency, timing, duration, severity, longevity, circumstances, triggers, alleviating factors
  - relationship of symptoms to - medications, meals, emotional distress, exertion, positional changes, triggers (eg urination, defecation, cough, prolonged standing, shaving, tight collar, head turning)
  - previous episode(s)
  - medications
  - recent drug/alcohol use
  - cardiovascular disease, renal disease
  - risk factors for cardiovascular disease eg hypertension, diabetes, hyperlipidaemia, smoking, family history
- Listen to chest for air entry + added sounds - crackles or wheeze
- Any oedema - check legs/ankles + if able sacrum (with patient sitting up and forward)

4. Management

- Consult MO/NP for all arrhythmias, who may advise:
  - further investigation and management of any underlying cause
  - referral to cardiologist
  - retrieval/hospitalisation if required

5. Follow up

- If patient not retrieved/hospitalised advise to be reviewed at next MO/NP clinic, or sooner if indicated

6. Referral/consultation

- As above

HMP Acute lower leg ischaemia - adult

Background[1]

- **Medical emergency**. Caused by a sudden blockage of blood supply to limb

Related topics

Compartment syndrome, p. 159 DVT, p. 119

1. May present with[1,2]

- Sudden onset intense pain in 1 leg ±
  - limb is pale, no pulse, pins and needles/paralysis, cold

2. Immediate management[1,2]

- **Contact MO/NP urgently + urgent retrieval** - a longer transfer time = higher risk of limb loss
- Get rapid history, including:
  - leg + any other symptoms
  - past medical history - allergies, current medicines, including recent anticoagulants, antiplatelets or thrombolytic agents eg warfarin, aspirin, clopidogrel[3]
  - prior thromboembolic events, active bleeding, ↑ risk of bleeding/bleeding disorders eg haemophilia[3]
- Do vital signs + ECG[2] + weight
- Offer analgesia. See Acute pain, p. 32
- Assess limb - Neurovascular observations, p. 150 - compare to other leg[4]
- Insert IVC + take bloods for baseline APTT (not on i-STAT), FBC

3. Clinical assessment

- As above

4. Management

- MO/NP will consult vascular surgeon for advice, which may include IV heparin bolus ± infusion[2]
- **Note:** heparin is a high risk medicine and APTT has to be monitored (baseline + 4–6 hourly):
  - if APTT not able to be done on-site DO NOT give infusion, or only start immediately prior to retrieval[5]
  - if retrieval likely to be › 6 hours, a stat dose of enoxaparin (Clexane®)(1 mg/kg) may be considered in lieu of IV heparin[6]
  - use local heparin protocol/heparin order form for doses eg for Qld Health[3] https://qheps.health.qld.gov.au/medicines/medication-safety/forms-charts (Qld Health intranet only)
- Monitor vital signs + neurovascular observations until retrieval
- Protect limb. Use cage and heel pad if available - **do not elevate**[1]

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Deep vein thrombosis (DVT) - adult

Background[1]

- DVT is a blood clot in the deep vein of the leg or pelvis. If not detected and treated can lead to a life-threatening pulmonary embolism

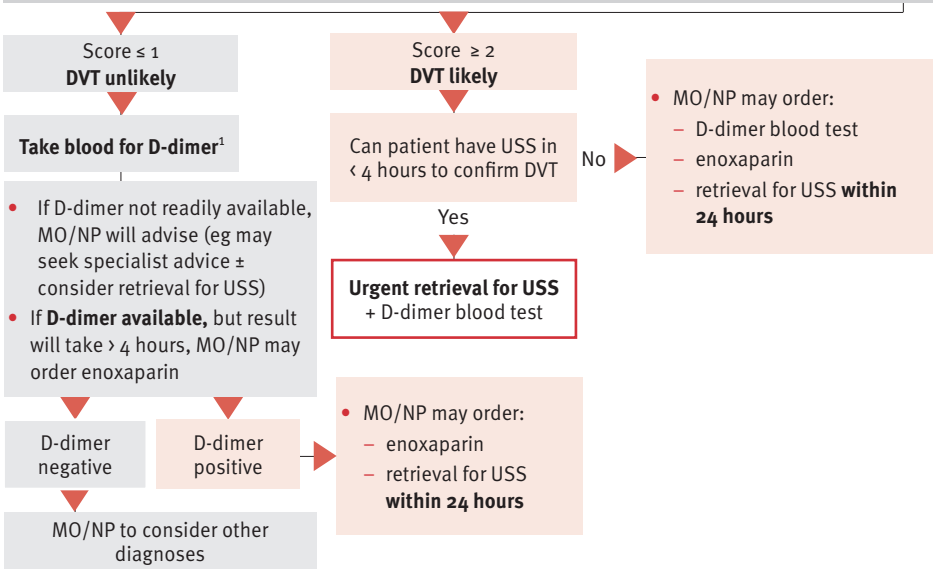
1. May present with[1]

- Calf swelling
- Pain/tenderness in 1 leg
- Distension of surface veins over foot and leg

2. Immediate management[1]

- **If DVT suspected** contact MO/NP urgently +
  - in collaboration with MO/NP assess using **Wells score if DVT suspected** below

Wells score if DVT suspected[1]			
Active cancer - treated within ≤ 6 months, or palliative	1	Calf swollen ≥ 3 cm more than the other leg	1
Paralysis, muscle weakness or recent plaster to immobilise lower leg	1	Pitting oedema of the leg	1
Recently bed ridden for ≥ 3 days, or major surgery within 3 months	1	Superficial veins in same leg standing out (not varicose veins)	1
Entire leg swollen	1	Previous DVT	1
Tenderness along distribution of deep venous system	1	Could patient have an alternative diagnosis at least as likely as DVT	– 2
		Score	



Note: D-dimer not currently available on PoCT in Qld. Specimen needs freezing if not processed within 4 hours

3. Clinical assessment

- Ask about leg symptoms + past history:[1]
  - onset of pain, severity, associated symptoms eg fever
  - pregnant or postpartum, oestrogen therapy
- Do physical examination, including:
  - vital signs
  - pregnancy test if reproductive age[2]

4. Management[1]

- MO/NP may advise:
  - enoxaparin
  - take blood first - FBC, coagulation studies, CHEM20[1-3]
  - urgent retrieval as needed
- Offer analgesia. See Acute pain, p. 32

S4	**Enoxaparin** (Clexane®)			**Extended authority** ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Prefilled syringe	Various as available	**Subcut** Do not expel air bubble	1–1.5 mg/kg	stat
Offer CMI: May cause bleeding, bruising and pain at injection site				
Note: Inject into abdomen while patient seated or lying down. Do not rub injection site				
Contraindication: Use with caution if severe hepatic or renal impairment (heparin preferred). Active bleeding, bleeding disorders				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,5]				

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Pulmonary embolism (PE) - adult

Background[1]

- PE is a life-threatening blood clot in the lung

1. May present with[2]

- Acute onset SOB
- Hypotension, ↑HR, ↑RR, ↓SpO_2
- Chest pain - sharp/pleuritic, usually 1 sided ±
  - signs of DVT, p. 119
  - coughing up blood
  - shock, collapse (massive PE)

2. Immediate management[3]

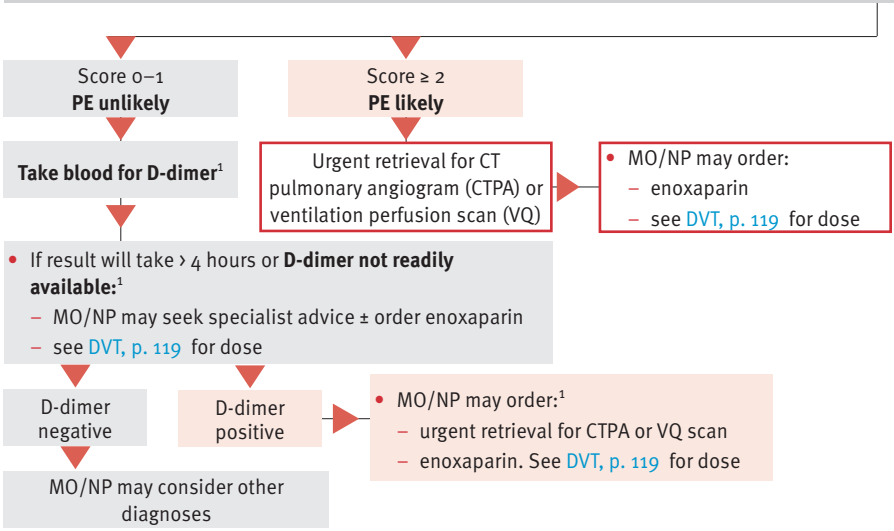
- **May have massive PE** if sBP ‹ 90, tachy/bradycardia, RR › 20, SpO_2 ‹ 94% (‹ 88% if COPD)
  - send for help
  - **contact MO/NP urgently + urgent retrieval**
  - insert IVC x 2
  - MO/NP may seek specialist advice ± order IV bolus Tenecteplase, p. 108
  - CPR as needed. See BLS, p. 44

3. Clinical assessment[1]

- Do Chest pain assessment, p. 100
- Ask about risk factors:
  - cancer, recent surgery or hospitalisation, current/prior DVT, pregnant, 6 weeks postpartum, recent immobilisation, oestrogen use eg contraceptive pill
- Do vital signs:
  - give O_2 if SpO_2 ‹ 94% or 88% if COPD
- Pregnancy test if reproductive age[2]
- ECG within 10 minutes + continuous cardiac monitoring
- **Contact MO/NP urgently**
- If NO signs of massive PE:
  - in collaboration with MO/NP assess likelihood of PE using **Wells score for PE** below

Wells score for PE[1]

Signs/symptoms of DVT, p. 119	1	Coughing up blood	1
Immobility or surgery in prior 4 weeks	1	Alternative diagnosis less likely than PE	1
Previous DVT or PE	1	Cancer	1
HR › 100	1	**Score**	



4. Management

- Continue management as per MO/NP
- If enoxaparin ordered - take bloods first - FBC, coagulation studies, CHEM20[1-3]
- Offer analgesia. See Acute pain, p. 32
- Closely monitor vital signs until retrieval

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Neurological emergencies

HMP Headache - adult/child

Recommend

- Aim to identify **Red flags** of serious causes of headaches[1]
- If child, also see QPEC guidelines *Headache - emergency management in children*

1. May present with[1]

- Headache

2. Immediate management[1]

- Do vital signs + GCS/AVPU, p. 550
- Consult MO/NP urgently if any:
  - **sudden onset severe headache** 'thunderclap headache' or 'worst headache of life' - suspect subarachnoid haemorrhage
  - **confusion, drowsiness or neurological changes**
  - **BP ≥ 180/110.** Also see Hypertensive emergency, p. 113
  - **fever, rash, neck stiffness or other signs of systemic illness**. Also see Meningitis, p. 70
- If fever, screen for Sepsis, p. 62
- MO/NP may advise:
  - urgent retrieval
  - insert IVC, analgesia
  - closely monitor:
    - vital signs + conscious level. See GCS/AVPU, p. 550
    - neurological observations

3. Clinical assessment[1-3]

- Assess for ANY **Red flags**

Red flags[2,3]

- Worsening headache with fever
- New onset neurological signs or personality change
- Head trauma in previous 3 months
- Frequency/severity ↑ over weeks to months
- HIV, cancer or is immunocompromised
- Triggered by - cough, exercise, valsalva, sneeze or posture change eg lying down
- Vomiting without obvious cause
- › 50 years
- Headache causing night wakening, or early morning headache ± vomiting
- Recent onset in young obese female

- **Get history of headache:**
  - pain - nature, intensity, impact on normal activities
  - is this a 'typical' headache
  - onset - when, sudden/slow
  - provoking factors eg exercise, cough, sneeze, sexual activity
  - exacerbating factors eg erect position, exertion/valsalva, worse in mornings, food eg caffeine
  - other symptoms:
    - fever, vomiting
    - aura, visual symptoms, photophobia
    - neck pain, facial pain/tenderness
  - recent travel, infection in neck or head area, sun/heat exposure
  - pregnant or recently postnatal
  - drug/alcohol use
- **Past medical history:**
  - recent medication change
  - hypertension
- **Do physical examination + check:**
  - for neck stiffness - with patient lying down, put hand behind head + gently raise. **Note:** may not complain of neck stiffness, but with passive or active flexion - cannot touch chin to chest
  - Hydration assessment - adult, p. 202 or child, p. 522
  - pregnancy test if reproductive age

4. Management[1-3]

- Consult MO/NP promptly if:
  - any **Red flags**
  - headache is atypical or not 'usual' for patient
  - persistent headache, despite treatment with oral analgesia
- If pregnant assess for Preeclampsia, p. 370

Migraine[2,4]

- If child consult MO/NP
- If adult says headache is typical of a migraine (that they have previously had) offer:
  - ibuprofen with paracetamol, avoid opioids. See Acute pain, p. 32
  - **AND** metoclopramide - even if not nauseous as improves absorption of analgesia. See Nausea and vomiting, p. 40
- Consider:
  - cold packs over forehead and back of skull; hot packs to neck and shoulders
  - neck stretches
  - rest in a dark room
  - **Lifestyle habits**

Tension type headache[2,5]

- Usually bilateral, feels like pressure or tightness in head, mild to moderate intensity (not severe enough to prevent walking or climbing stairs), ± photophobia, sensitivity to noise, not usually nauseous:
  - offer ibuprofen ± paracetamol. See Acute pain, p. 32
  - consider advice on **Lifestyle habits**

Lifestyle habits - to help prevent migraines and tension type headaches[4,5]

- Regular sleep schedule
- Minimise variations in BGL eg eat regular meals, avoid excess sugary food/drinks
- Stay hydrated eg drink 1.5–2 L of water/day
- Limit caffeinated drinks to 1–2 cups/day
- Regular exercise
- Relaxation techniques to manage stress eg mindfulness, yoga, breathing techniques
- Avoid known triggers eg alcohol, citrus fruit, chocolate, preserved meats, perfume
- If posture problems or neck muscle tightness, refer to a physiotherapist

5. Follow up

- If not retrieved, advise to return if headache does not improve or if concerned

6. Referral/consultation

- As above

Dizziness/vertigo - adult

Recommend

- Dizziness and vertigo are common symptoms, with many causes. Aim to identify serious causes

Background[1]

- **Dizziness** common causes - postural hypotension, arrhythmias, syncope, anaemia, hypoglycaemia, hypercalcaemia, ↓vitamin B12, medicine side effect, anxiety,[2] hyperventilation[3]
- **Vertigo** - can be central (brain stem or cerebellum) or peripheral (inner ear) related

1. May present with[1]

- Dizziness, faintness or feeling like body or surroundings are moving eg spinning

2. Immediate management[1,2,4,5]

- Check for **Red flags:**
  - if any, get rapid history and **contact MO/NP urgently.** Suspect Stroke, p. 127
  - MO/NP may consider retrieval for CT/MRI ± referral to neurologist

Red flags

- Facial weakness/numbness
- Arm ± leg weakness, ataxia
- Speech difficulty/slurred
- Visual field loss, double vision
- Difficulty swallowing
- Sensory loss eg in 1 side of body
- Confusion
- Headache
- New sudden unilateral hearing loss with 1st onset of continuous dizziness/vertigo

3. Clinical assessment[1,2,4,5]

- Get history of dizziness/vertigo, including:[2]
  - timing - episodic or continuous; gradual or sudden onset

  - first attack or prior episodes - when occurred, are episodes ↑ in severity or frequency[4]
  - duration of episodes - seconds/minutes/hours/days
  - character:
    - **vertigo** - spinning, rocking or tilting[2]
    - **dizziness** - off balance, giddiness (light headed), faint (presyncope)
  - spontaneous or triggered by eg head movement, sitting, standing, rolling over, tipping head back, lying down, loud noises, anxiety/stress
- Any associated symptoms eg:
  - nausea, retching/vomiting, sweating[2]
  - new hearing loss - 1 or both ears, fluctuating/continuous
  - tinnitus - noise or ringing in ears OR ear discharge/pain or 'full' sensation of ear
  - vision issues eg bouncing, bobbing or jerking of still objects (oscillopsia)[6]
- Get past history - including migraines, Ménière's disease, current medicines
- Any recent:
  - change of medicine eg for BP
  - illness eg URTI
  - ear trauma or infection
  - head trauma - even minor
  - alcohol or drug use, exposure to toxin(s)
  - diving or other pressure change (that may cause barotrauma)
- Do physical examination + assess:
  - vital signs + lying and standing BP - does BP drop when standing, how much
  - BGL, ECG
  - eyes - any **nystagmus** - quick jerky eye movements (vertical or horizontal), either spontaneous or only when looking in a specific direction
  - Examine ears, p. 506
  - observe patient's ability to stand and walk. Are they unsteady

If no red flags, consider additional assessments (as below) in consultation with MO/NP

- **Dix-Hallpike test** if:[1,2,5,7]
  - vertigo is episodic **+**
  - is only triggered by specific head movement **+**
  - lasts only seconds **+**
  - nystagmus not occurring spontaneously **+**
  - no other symptoms
- **HINTS plus exam** if:
  - vertigo has continued for hours/days **+** nystagmus occurring spontaneously[3-5,8]

Dix-Hallpike test[4]

See video https://www.youtube.com/watch?v=LxD-lgqix-s

Offer to show patient video 1st, so they know what to expect. Warn patient it can provoke vertigo

- Get patient to sit at the edge of the bed. Turn their head with your hands 30–45° to 1 side
- Patient to keep eyes open + focus on a stable point. Then quickly assist patient to lie supine and hyperextend the neck 30–45° below level of bed, while still holding head. Look for nystagmus
- If no nystagmus seen, return to seated position, then test the other side

If patient gets nystagmus and reproduction of positional symptoms, test is +ve for **Benign paroxysmal positional vertigo (BPPV)**[1] - a common (not harmful) cause of vertigo due to disturbance of tiny crystals in inner ear[1]

HINTS plus exam[2,4,5]	
See video https://collections.lib.utah.edu/ark:/87278/s6bp04fo Can assist in determining if vertigo has a central or peripheral cause. **Discuss findings with MO/NP**	
Head impulse test	• Sit opposite patient and ask them to stare at your nose • Hold the patient's head with both of your hands and turn head slowly side to side 10–20⁰ then back to midpoint. Repeat but rapidly rotate the head to 1 side and pause. Patient's eyes should stay on the examiners nose with the rapid head turn • Repeat again but this time rapidly rotate to the opposite side • If eyes do a series of 'catch-up' movements to re-fixate on nose, test is +ve • Document the direction the head was rotated to when the 'catch-up' movement occurred - eg if catch-up movement was seen when head was quickly rotated to the patient's left, then document '+ve left head impulse test'
Nystagmus	• Ask patient to follow your finger as you slowly move it right to left • Observe **direction of the fast phase of nystagmus** - horizontal, vertical, rotates, unidirectional or direction changing • Does nystagmus stop if patient stares at object
Test of skew	• Ask patient to look straight ahead. Cover 1 of their eyes with your hand. Then, quickly move your hand to cover the other eye • During this process, observe uncovered eye for any vertical/diagonal corrective movement (if present, test is +ve)
Plus acute hearing loss	• Rub fingers next to both ears and ask if new unilateral hearing loss. If new and 1st onset of acute continuous vertigo, this is a +ve for a central sign[9]

4. Management[1,5]

- If Qld Health, consider calling vertigo hotline Dial-a-Dizzy ✆ 1300 4 DIZZY, for advice (office hours)
- If BPPV likely:
  - offer to do **Epley manoeuvre** (see video for Dix-Hallpike test for instructions). It may relieve vertigo immediately
  - offer advice and exercises to help, as per fact sheet eg https://www.safercare.vic.gov.au/best-practice-improvement/clinical-guidance/emergency/vertigo
- If already diagnosed with Ménière's disease and acute attack, offer prochlorperazine[10]
- In all other cases of dizziness or vertigo consult MO/NP:
  - + if nausea/vomiting, offer prochlorperazine or promethazine

S4	Prochlorperazine			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	5 mg	Oral	5–10 mg, 6 to 8 hourly	Up to 2 days
Injection	12.5 mg/mL	IM	12.5 mg	stat Plus single oral dose in 6 hours if needed
Offer CMI: May cause drowsiness and increase effects of alcohol. Avoid driving/operating machinery if affected. Avoid prolonged use - risk of neurological side effects				
Pregnancy: Safe in early pregnancy. Avoid in late pregnancy. Safe in breastfeeding				
Contraindication: CNC depression, avoid in Parkinson's disease				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,10,11]				

S3	Promethazine			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN may proceed. RN may administer, for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	10 mg, 25 mg	Oral	25 mg, 8 to 12 hourly	Up to 2 days
Offer CMI: May make you sleepy - avoid driving/operating machinery if affected. Avoid alcohol or other medication that may cause sedation				
Pregnancy: Safe to use. Avoid close to delivery				
Note: Avoid use or use lower dose in elderly people. Avoid in Parkinson's disease. Use with caution in epilepsy - lowers seizure threshold				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,12]				

5. Follow up

- In all cases, if not retrieved, advise to see MO/NP at next clinic, or to return if symptoms worsen/change

6. Referral/consultation

- As above

Transient ischaemic attack (TIA) and stroke - adult/child

Recommend[1,2]

- TIA + stroke are **medical emergencies**. Urgent retrieval + timing of treatment is critical
- Advise community about FAST stroke recognition message:
  - **F**acial weakness, **A**rm ± leg weakness, **S**peech difficulty, **T**ime to act fast

Background[1,3]

- A stroke occurs when the arteries to the brain become blocked (ischaemic stroke/cerebral infarction) or rupture (intracerebral haemorrhage), disrupting blood supply leading to brain damage
- TIA - transient episode of neurological dysfunction, most are brief eg < 1 hour + resolve in 24 hours with no brain infarction
- See *Transient ischaemic attack (TIA)/stroke clinical pathway* https://clinicalexcellence.qld.gov.au/resources/clinical-pathways (Qld)

1. May present with[1,3]

- Suspect stroke if abrupt onset of ≥ 1 of:
  - asymmetric:
    - face weakness
    - arm weakness
    - leg weakness
  - speech disturbance eg slurred speech
  - visual field defect/vision loss
- **Note:** any abrupt change in neurological function could represent stroke

2. Immediate management[1-4]

- **DRSABCD**
- Do BGL - if ‹ 3.5 contact MO/NP urgently + treat as per MO/NP
- **If persistent symptoms for ‹ 9 hours - patient may be thrombolysis candidate - avoid delays**
- Get rapid history, including:
  - symptoms + time of onset. If unknown, the last time the patient was seen to be well
  - are symptoms resolving or persisting
  - current medicines eg anticoagulant/antiplatelet medications
  - any seizures, loss of consciousness or syncope
- Suspect TIA if symptoms have resolved. Ask about duration:[1]
  - ‹ 10 minutes, 10 minutes–1 hour or › 1 hour
- **Contact MO/NP urgently in all cases of suspected stroke/TIA + urgent retrieval**
- Do vital signs + GCS, p. 550
- **Only give O_2 if SpO_2 ‹ 92%**
- ECG only if does not cause delay. If new atrial fibrillation, send copy of ECG with patient
- Continuous cardiac monitoring
- Insert IVC x 2
- Take bloods - FBC, UE, LFT, coagulation studies, group and hold for x-match

3. Clinical assessment[3]

- Get past history + any TIA/stroke or similar symptoms
- Do physical examination + weight (if possible)

4. Management[1-3]

- **Ongoing management as per MO/NP** which may include:
  - reduction of BP if sBP › 220
  - monitor BGL - avoid aggressive management/IV fluids with glucose
  - paracetamol if fever
  - aspirin - **do not give** until brain imaging excludes intracranial haemorrhage
- Keep nil by mouth
- Brain imaging eg CT scan/MRI required to determine cause eg ischaemic, haemorrhagic, TIA
- Monitor closely until retrieval:
  - vital signs + GCS, p. 550

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Delirium - adult

Recommend[1]

- Promptly assess for delirium if presenting with cognitive impairment or has a sudden decline in cognitive function or behaviour eg difficulty with memory, thinking, concentration

Background[2]

- Delirium is a temporary, severe mental disorder of rapid onset commonly caused by acute illness, often coexisting with dementia

1. May present with[1,3]

- Acute deterioration of mental state with fluctuating symptoms of impaired attention, cognition + consciousness
- Other symptoms eg rapid/unpredictable mood changes, sudden change to sleeping habits, new incontinence, hallucinations/paranoid symptoms. Family may state "not their normal self"

2. Immediate management[1,3]

- **If you suspect delirium, contact MO/NP urgently.** It is a symptom of a potentially life-threatening illness
- If significantly distressed or considered a threat to themselves/others, see Mental health emergency, p. 328
- Do not leave patient alone, give reassurance + take to a quiet room to reduce distress if possible
- Do vital signs + SpO_2 + BGL to exclude hypoxia or hypoglycaemia
- Screen for Sepsis, p. 62

3. Clinical assessment[1,2,4]

- Do rapid assessment using **4AT - assessment test for delirium & cognitive impairment** (Qld Health). If outside of Qld use local approved screening tool

4AT - assessment test for delirium & cognitive impairment			
[1] Alertness	• Observe patient. If asleep, attempt to wake with speech or gentle touch on shoulder • Ask patient to state full name and address to assist rating	Normal (fully alert, but not agitated, throughout assessment)	**0**
		Mild sleepiness for < 10 seconds after waking, then normal	**0**
		Clearly abnormal	**4**
[2] AMT4	Ask: • Age; date of birth; place (name of clinic or building); current year	No mistakes	**0**
		1 mistake	**1**
		≥ 2 mistakes/untestable	**2**
[3] Attention	Ask "*Please tell me the months of the year in backwards order, starting at December.*" To assess initial understanding 1 prompt of "*What month is December?*" is permitted	≥ 7 months correct	**0**
		Starts but scores < 7 months/refuses to start	**1**
		Untestable (cannot start as unwell, drowsy, inattentive)	**2**
[4] Acute change or fluctuating change	Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg paranoia, hallucinations) arising over last 2 weeks and still evident in last 24 hours	No	**0**
		Yes	**4**
4 or above: possible delirium ± cognitive impairment **1–3:** possible cognitive impairment **0:** delirium or severe cognitive impairment unlikely (but delirium still possible if [4] information incomplete)		**4AT score**	

- **Ask about usual mental status + recent changes eg:**
  - confusion or worsened concentration, agitation or restlessness
  - sleepiness, any altered LOC
  - less communicative or less responsive than usual
  - difficulty cooperating with reasonable requests or other alterations in mood
- **Delirium may be confused with dementia**. **Important to note they can co-exist,** differences with delirium are:
  - ↓ LOC, impaired attention
  - rapid onset within hours of a day
  - fluctuation

Any key risk factors for developing delirium[1]

- Age ≥ 65 years (≥ 45 years if Aboriginal and Torres Strait Islander)
- Known cognitive impairment or dementia
- Prior delirium
- Severe medical illness (clinical condition that is deteriorating/at risk of deteriorating)
- Current hip fracture
- **Plus consider Causes below**

- Look for **Causes** in consultation with the patient + family/carer eg:
  - **D**rugs/medicines (see Best possible medication history, p. 548), including:
    - known to contribute to delirium eg anticholinergics, sedative properties, alcohol, cannabis, amphetamines. If Qld Health, see https://qheps.health.qld.gov.au/caru/networks/cognitive-impairment-toolkit/medication-review for list
    - polypharmacy, adverse reactions, pain management needs
  - **D**iscomfort eg constipation, urinary retention; withdrawal states eg alcohol, benzodiazepines; depression
  - **E**lectrolyte eg hyponatraemia, hypo/hyperglycaemia, hypercalcaemia
  - **L**ow O_2 eg cardiac event eg arrhythmia, heart failure, MI; intracerebral event eg subdural haematoma, stroke, haemorrhage, head injury, brain tumour
  - **I**nfection eg pneumonia, sepsis, UTI
  - **R**estraints, restricted movement, renal failure
  - **I**njury, intoxication, seizure/postictal states
  - **U**nder/malnutrition/dehydration. See Hydration assessment - adult, p. 202
  - **M**etabolic disturbance - organ failure eg kidney, liver, respiratory failure/hypoxia
- Do ECG +
  - bloods/i-STAT - BGL, FBC, LFT, UE, Ca, creatinine, VBG, lactate
  - urinalysis ± MSU for MCS
- MO/NP may advise - drug screen, chest x-ray

4. Management[1,3]

- **Contact MO/NP in all cases - will most likely need** retrieval/hospitalisation + treatment of underlying cause(s) when known. **Note:** antipsychotics are not recommended
- Monitor regularly for changes in cognition + behaviour, including clinical deterioration
- Delirium is a frightening, distressing/isolating experience. Ensure gentle/friendly approach:
  - involve family/carer during interventions, continue to reassure + reorientate patient
  - where possible consider physical activity/movement, environmental control + relaxation/music

5. Follow up

- As per MO/NP/specialist + cause of delirium

6. Referral/consultation

- As above

Traumatic injuries

HMP Traumatic injuries - adult/child

Recommend[1,2]

- **Early notification for transfer**. See Criteria for early notification of trauma for interfacility transfer (inside front cover). If outside Qld follow local policy
- Assume possible spinal injury in all blunt trauma or multiple injuries. Use caution when moving
- Systematic evaluation of all trauma patients (minor and major)

Background

- Common causes of preventable death in trauma: airway obstruction, tension pneumothorax and haemorrhage[2]
- Hard/semi-rigid cervical collars are not recommended[3,4]

1. May present with

- Trauma

2. Immediate management - Primary survey and resuscitation DRSCABCDE[1,5-7]

Danger - eg body fluids, toxins, traffic, perpetrators of crime, < 10 m from fallen powerlines, p. 186

- If there is immediate threat to a person's life and rapid movement is needed, make all efforts to limit spinal movement without delaying treatment. If you are by yourself and patient needs moving out of danger, you may need to drag them via ankle or under arm/shoulder

Response

Send for help - ideally 1 or more assistants are needed

Catastrophic haemorrhage - control before checking airway[8]

- Do NOT remove penetrating/impaled objects eg knife
- Use **direct firm pressure** - with hands + combine pads and bandages. If not working, check pads are over bleeding point/use firmer pressure with 1 or 2 pads over smaller area
- If unable to control:
  - use **haemostatic dressing** - hold against bleeding point, then bandage
  - or **arterial tourniquet** (if limb):
    - apply firmly 5 cm above the injury/amputation (not over a joint/wound)
    - tighten until bleeding stops - if not stopping, try 2nd tourniquet proximal (above) the 1st[9]
    - record application time + tell retrieval team. Do not cover with bandage/clothing

Airway + cervical spine (c-spine)[3-5]

- If needed, roll a face down non-responsive person onto back to assess airway[5]
- **Assess for airway stability** - attempt to get a response from patient +
  - look - signs of airway obstruction eg oedema, foreign body
  - listen - absent or ↓ breath sounds, snoring, gurgling, stridor, hoarse voice
  - open/clear airway as needed - chin lift/jaw thrust ±
    - airway adjunct eg oro/nasopharyngeal (not NPA if suspect base of skull fracture), LMA, p. 54
    - suction/remove loose foreign bodies eg blood, vomit, teeth
    - if excessive bleeding into the airway that suction cannot remove, roll onto side
- **Maintain c-spine in-line immobilisation:**
  - support head in a neutral position in line with torso - avoid twisting/angular movements
  - consider soft collar + support neck eg sand bags/rolled towels
- **If wearing helmet** - remove while assistant restricts movement of c-spine[2,6]

Breathing[1,7]

- Fully expose chest. Assess:
  - RR, effort, open wounds, bruising, deformity
  - circumferential neck/chest burn; airway burn eg singed facial hair, soot in mouth/nose
  - use of accessory muscles, chest movements - asymmetrical, paradoxical (chest goes in on inhaling/out on exhaling)
  - auscultate for breath sounds/air entry (axillary area); palpate for subcutaneous emphysema[#]
- **If suspect tension pneumothorax** do immediate Needle decompression, p. 138. **Life-threatening**

Suspect tension pneumothorax if any of[10]

- ↑WOB, ↓SpO_2, cyanosis
- Agitation, confusion, ↓LOC
- ↑HR, ↓BP
- Hyper-expansion + absent or ↓breath sounds on affected side

- **If open/sucking chest wound** - apply occlusive 3 sided dressing, p. 137/vented chest seal
- If any abnormalities, see Chest injuries, p. 137 for possible causes + immediate management
- Give O_2 to maintain $SpO_2 \geq 94\%$
- Start bag-valve-mask ventilation if indicated

Circulation + haemorrhage control[1,7,8,11]

- Control external bleeding by direct pressure/bandaging
- HR, capillary refill time, skin eg pale, cool, clammy
- Insert IVC x 2 largest bore possible OR Intraosseous, p. 55
- **If shock** (pale, sweaty, ↑HR, capillary refill › 2 seconds ± ↓LOC):
  - IV fluid bolus (warmed if possible) - sodium chloride 0.9% or Hartmann's:
    - **adult** 1 L (250 mL increments, aim to **maintain sBP at 90**). **Child** 10–20 mL/kg
  - consider source of haemorrhage eg chest, abdomen, pelvis, long bones
  - if hypotensive multi-trauma patient not responding to fluids, treat for tension pneumothorax[10]

Disability - basic neurologic evaluation[1,11]

- **A**lert, **V**oice, **P**ain, **U**nresponsive/GCS, p. 550
- BGL
- Pupils - size, symmetry + light response
- Motor response in limbs, fontanelle in infant (bulging/depressed)

Exposure, environment, early notification[1,7]

- Remove all clothing to check for life-threatening injuries
- If possible, log roll, p. 146 to check back
- Keep warm/maintain normothermia eg use blankets/space blanket
- Consider environment eg move to safety

Assess ± notify using Criteria for early notification of trauma for interfacility transfer, (inside front cover)

3. Clinical assessment - Secondary survey[1,7,11]

- Start only after lifesaving interventions/management have been initiated
- If ongoing bleeding/life-threatening injury - consult MO/NP urgently
- **Secondary survey consists of:**
  - vital signs, history + head to toe assessment
  - if sufficient staff, may occur simultaneously

Vital signs[1,7]

- Full vital signs + consider eFAST if trained/available
- Attach cardiac monitor

History from patient/witnesses[1,7]

- **S**igns and symptoms + offer analgesia. See Acute pain, p. 32:
  - if head injury - avoid NSAIDs eg ibuprofen + consult MO/NP before giving opioid
- **A**llergies + check for medical alert eg jewellery, key ring, USB stick, shoe tag, anklet, watch, tattoo
- **M**edications + anticoagulation/antiplatelet therapy
- **P**ast medical history + bleeding disorder, Tetanus immunisation, p. 545, last menstrual period, possible pregnancy
- **L**ast ate/drank
- **E**vents related to:
  - time of incident
  - mechanism of injury eg:
    - **blunt** - speed of patient/objects, seatbelt use, air bag deployment, direction of impact, damage to car/bike, ejection from vehicle, height of fall/body part landed on
    - **penetrating** - type/length of blade, type of firearm/distance from, number of shots heard
    - **blast** - distance from, magnitude of explosion, open/closed space
  - any loss of consciousness + duration
  - amnesia
  - alcohol/drug use
  - social issues eg domestic and family violence

Head to toe assessment - search everywhere for injuries[1,7,11]

Head to toe assessment	
CHECK for - pain, deformities, bruising, swelling, lacerations, abrasions, burns, impaled object(s) eg knife (do NOT remove impaled objects)	
General appearance	• Position found • Posture, guarding/self-protection movements • Odours - alcohol, petrol, chemicals, vomit, urine, faeces
Head and face If ANY trauma to head: – see Head injuries, p. 140 – assume cervical spine injury	• **Inspect** face and scalp for lacerations/bruising/penetrating injury + check: – **eyes** - pupil size, equal + reacting, foreign body/contact lenses, subconjunctival haemorrhage, hyphaema, irregular iris, penetrating injury, protruding eyeball – movements - follow moving finger in all directions. See Eye injury, p. 273 – **nose** - deformity, bleeding, CSF leak. Look for asymmetry of septum ± bluish/reddish swelling (may be septal haematoma). Also see Epistaxis, p. 193 – **mouth** - lacerations to gums, lips, tongue, palate, broken teeth, bite malocclusion. May be Fractured jaw, p. 155 – **ears** - bleeding, blood behind eardrum, CSF leak - do NOT pack to stop drainage – **bruising behind ears or periorbital bruising** = base of skull fracture • **Palpate** - skull, orbit, nose and jaw, noting: – depression(s) in skull, boggy swelling of scalp, bony tenderness, subcutaneous emphysema#, fontanelle in infant • **Scalp lacerations can result in major blood loss** - close with staples or sutures prior to transfer if able (or tie hair to close) as per Acute wounds, p. 160. Tell retrieval team, as may need to be re-opened ± explored later

Neck[1,6,7]	• Inspect/palpate neck gently while maintaining C-spine in-line immobilisation, p. 144 (head and neck immobilised with 2 hands by assistant): – pain, deformity – bony/laryngeal tenderness or crepitus/step, subcutaneous emphysema[#] • **Assume c-spine injury until excluded.** See NEXUS tool in Spinal injuries, p. 144
Chest[1,6,7,11]	• Inspect + palpate entire chest wall - including clavicles, sternum, ribs, axilla (do NOT spring rib cage). Check: – expansion, paradoxical movement, accessory muscle use – tenderness, crepitus, subcutaneous emphysema[#] • Auscultate: – breath sounds/lack of, wheeze, crackles (listen in axillary area) – heart sounds (if skilled) - muffled sounds, murmurs, friction rubs • If significant chest injury suspected - auscultate BP in both arms. If sBP difference › 10–15 mmHg may indicate aortic injury • If any abnormalities, see Chest injuries, p. 137 • **Haemothorax can result in major blood loss**
Abdomen and flanks[1,2,7,9]	• Inspect for lacerations, seat-belt bruising/red marks • Auscultate bowel sounds - present/absent (before palpating) • Palpate - tenderness, guarding, rigidity, rebound tenderness, masses: – especially over liver, spleen, kidneys and bladder • **Assess regularly - injury may not be obvious.** See Abdominal injuries, p. 147
Pelvis[1,7]	• Gently palpate for tenderness. **Do NOT spring pelvis** • If pelvic injury suspected **apply pelvic binder** - see Pelvic injuries, p. 149 • **Fractured pelvis can result in rapid major blood loss**
Perineum, genitalia[1,7]	• Inspect for bruising/bleeding • If bleeding from urethral opening/scrotal haematoma - suspect pelvic fracture • Priapism (persistent erection) - symptom of spinal injury
Limbs[1,7,9]	• Inspect and palpate entire length of limbs: – tenderness, deformity, swelling, open fractures – movement of joints and strength/range of motion (passive and active) – distal colour, pulses, warmth, movement, sensation, capillary refill • If fracture, straighten/align the limb. Apply splint(s) as per Closed fracture of limbs, p. 152 + continue Neurovascular observations, p. 150 • Monitor for signs of Compartment syndrome, p. 159 • If discrepancy in leg length or rotational deformity in leg without obvious fracture, suspect Fractured pelvis, p. 149 • **Fractured femur and any open long bone fractures can result in major blood loss**
Inspect back[1]	• Log roll, p. 146 if assistance available (may be best achieved at time of transfer). Roll onto side of least significant injury • Ask patient to squeeze buttocks if awake • Inspect and palpate - back/chest, flanks, buttocks, perineum and posterior thighs: – deformity, bruising, swelling, tenderness/deformity/step (along spine) – subcutaneous emphysema[#] • Auscultate for air entry, abnormal sounds

[#]**Subcutaneous emphysema** - air trapped under the skin (skin crackles when palpating)

4. Management[1,7,11]

- **Continually reassess primary survey + monitor for signs of airway compromise**:
  - + reassess all interventions applied
- **Ongoing management in collaboration with MO/NP/RSQ,** which may include:
  - analgesia ± antiemetic. See Acute pain, p. 32 and Nausea and vomiting, p. 40
    - if head injury suspected, consult MO/NP before giving opioid
  - O_2 to maintain SpO_2 ≥ 94%, capnography
  - vital signs 5–15 minutely + neurological observations
  - ECG
  - bloods - FBC, UE, LFT, BGL, lactate, lipase, troponin, group + hold, coagulation studies, blood gases ± pregnancy test[12]
  - IV fluids
  - keep warm/normothermic
  - nil by mouth
  - tranexamic acid (within 3 hours) if haemorrhage
  - antibiotics eg if open fracture, penetrating trauma
  - naso/orogastric tube - not NGT if suspect base of skull fracture
  - IDC + urinalysis, pregnancy test. Monitor urine output hourly
  - x-ray(s)
  - treat wounds - remove gross contamination/irrigate + cover
  - **do NOT remove penetrating/impaled objects eg knife** - can cause catastrophic haemorrhage. VERY CAREFULLY pack around with gauze and secure
  - Tetanus immunisation, p. 545 if indicated
  - C-spine in-line immobilisation, p. 144 + spinal immobilisation until retrieved or as advised by MO/NP/RSQ
  - **for guidance on moving trauma patient** see Spinal injuries, p. 144
- As relevant see/consider:
  - Burns, p. 178, Electrocution, p. 186, Compartment syndrome, p. 159
  - **Other considerations in trauma** (next page) - **pregnancy, amputated body part, crush injury**
  - non-accidental injury (if injury/presentation inconsistent with history) eg self inflicted injury, elder abuse, Domestic and family violence, p. 232 + Child protection, p. 539
- **If not retrieved** but affected by drugs/alcohol:
  - encourage to stay under observation until not affected, or if discharged, ensure it is into the care of a responsible adult

S4	Tranexamic acid			Extended authority ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1,000 mg/10 mL	IV	**Adult** 1,000 mg	stat
			Child 15 mg/kg	Infuse over 10 minutes
Preparation: Dilute in 100 mL sodium chloride 0.9% (concentration 10 mg/mL). Rapid administration may cause hypotension, dizziness				
Contraindication: Active intravascular clotting. Use with caution if subarachnoid haemorrhage or if predisposition to thrombosis. Reduce dose if renal impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [13-15]				

Other considerations in trauma	
Pregnancy [7,16]	• **First priority is to treat the pregnant woman/person** • Can lose a significant amount of blood before ↑HR, ↓BP, signs of shock evident • If › 20 weeks pregnant (uterus at level of umbilicus): – if supine or spinal precautions - position with left lateral tilt. Right side up 15–30⁰ Place wedge under hip/spinal board. Baby can compress the vena cava causing hypotension if lying flat • Routinely give O_2 to maintain SpO_2 › 95% • Additional bloods - group and antibody screen, Kleihauer test • Have high index of suspicion for Abdominal injuries, p. 147 even with minor trauma • Also see Qld Clinical Guideline *Trauma in pregnancy*
Amputated body part [7]	• Thoroughly wash with sodium chloride 0.9%, then wrap in moist sterile dressing eg combine • Further wrap in moistened sterile towel • Place in plastic bag. Transport with patient in cooler box eg Esky® with crushed ice • Do not freeze
Severe crush injury [17,18]	• **Urgently consult MO/NP/RSQ for advice** • Part of body is crushed or compressed by eg falling debris, farm accident etc • Remove crushing force as soon as possible regardless of length of time trapped. Development of crush injury syndrome is directly related to the compression time. Unlikely in 1st hour • **MO/NP/RSQ may advise before ± immediately after removal of force:** – IV sodium chloride 0.9% bolus 20 mL/kg – cardiac monitoring - arrhythmias can occur eg peaked T waves/widened QRS (may indicate hyperkalaemia) – IV sodium bicarbonate – ± IV calcium gluconate ± salbutamol NEB if hyperkalaemia – ± tourniquet to limb if life-threatening bleeding likely to occur once force removed – monitor urine output

5. Follow up

- As guided by MO/NP. Support family/friends as appropriate

6. Referral/consultation

- Consult MO/NP as above

HMP Chest injuries - adult/child

Background[1-3]

- **Life-threatening emergencies** include - tension pneumothorax, massive haemothorax, open pneumothorax, flail chest, pulmonary contusions, great vessel injury, diaphragm rupture

1. May present with

- Chest trauma

2. Immediate management[1-3]

- Do primary survey **DRSCABCDE** as per Traumatic injuries, p. 131 + initiate any lifesaving measures
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
- Use **Chest trauma** table below for possible chest injuries + immediate management

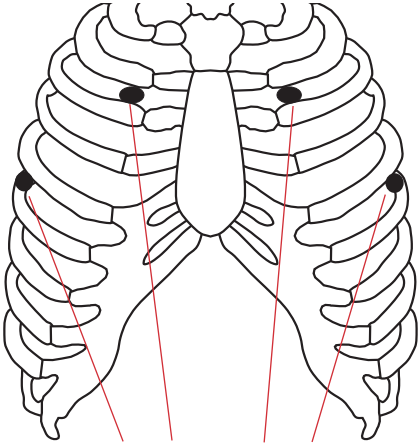
Chest trauma[1-4]

Signs and symptoms	Consider	Immediate management
• ↑WOB, ↓SpO_2, cyanosis • Agitation, confusion, ↓LOC • ↑HR, ↓BP • Hyper-expansion + absent or ↓ breath sounds on affected side	**Tension pneumothorax**	• Immediate **needle decompression** (next page) • Observe after decompression for signs of recurrence[5]
• ↓BP, shock, ↑WOB, hypoxia • ↓air entry/dull percussion on affected side • ± diagnosed via eFAST/CXR	**Massive haemothorax**[5]	• Treat hypovolaemia - IV sodium chloride 0.9% or Hartmann's 1 L (20 mL/kg if child) • If ↑respiratory distress, treat as tension pneumothorax
• Paradoxical movement - segment of chest wall goes in on inhaling/ out on exhaling	**Flail chest**	• Ventilation support as needed • MO/NP may intubate prior to retrieval
• Chest wall opening • Air sucking in/sucking chest wound	**Open pneumothorax**[5]	• Cover with **vented chest seal OR** occlusive **3 sided dressing** overlapping wound edges, taped on **(opening at bottom)** - provides flutter-valve (air moves out but not in)[5] • Observe for tension pneumothorax
• Penetrating wound/impalement eg knife	Possible **haemothorax** or **pneumothorax**	• **Do NOT remove any object sticking out of wound** eg knife. VERY CAREFULLY pack around with gauze and secure
• ↓air entry, ↑percussion on affected side ± unequal chest movement	**Simple pneumothorax**	• Be alert to ↑WOB - may be tension pneumothorax
• ↑WOB, hypoxia, abnormal breath sounds/crackles	**Pulmonary contusion**	• Ventilation support as needed
• Chest wall tenderness/swelling • Pain worse on inspiration/cough	**Broken rib(s)**	• If minor and no other injuries/concerns, MO/NP may advise review next day
• Tender sternum	May have **lung or cardiac injury**	• ECG • MO/NP will advise further

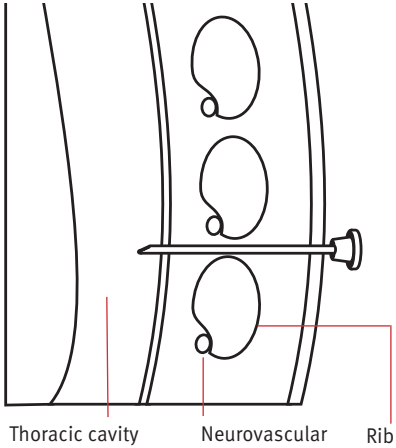
Other life-threatening injuries: cardiac tamponade (can be detected with eFAST), great vessel injury, tracheobronchial/oesophageal injury, diaphragm injury, blunt cardiac injury[2,3]

Needle decompression - tension pneumothorax[1,5]

- Use chest decompression needle eg PneumoDart® (adult or › 50 kg):
  - if not available, use longest IVC available (without blood control technology)
- Insert at **5th intercostal space, mid axillary line** (preferred):
  - OR, if unable to access, **2nd intercostal space, mid-clavicular line**
- Air may escape with a rush + respiratory distress should ↓
- If not working check:
  - positioning correct; is the needle long enough; has IVC kinked; try alternative site (as above)
  - has tension pneumothorax recurred/another on the other side
- **Note:** will need chest tube - MO/NP may insert prior to retrieval



Needle decompression sites



3. Clinical assessment[1,4]

- Do secondary survey as per Traumatic injuries, p. 131 including **examination of chest**
- Do eFAST if trained/available
- Suspect concurrent Abdominal injuries, p. 147

Red flags for deterioration[2]

- ↑WOB, ↑RR, ↓SpO_2
- Uncontrolled pain
- Shallow breathing, unable to cough
- ≥ 3 fractured ribs
- Age › 65 years
- Smoker, COPD, asthma, obesity

4. Management[1-3]

- Give O_2 to maintain SpO_2 ≥ 94%
- **Ensure adequate analgesia**. See Acute pain, p. 32
- Consult MO/NP in all cases, who may advise:
  - urgent retrieval
  - close monitoring of vital signs + WOB
  - chest x-ray
  - ECG + cardiac monitoring
  - nil by mouth
  - bloods - FBC, group and hold

- **Note:** if critical, MO/NP may advise finger thoracostomy (if skilled). Usually only if ventilated
- MO/NP may insert chest tube prior to retrieval. Attach to ambulatory chest drain system for retrieval eg Rocket®

5. Follow up[6]

- If discharged eg after minor injury:
  - advise to return if SOB, fever, ↑ pain/cough or any other concerns
  - offer fact sheet eg *Chest injury and rib fracture* https://www.townsville.health.qld.gov.au/patients-and-visitors/brochure-portal/

6. Referral/consultation

- As above

HMP Head injuries - adult/child

Recommend[1]

- Always consider:
  - non-accidental injury in all children presenting with head trauma. See Child protection, p. 539
  - Domestic and family violence, p. 232

Background

- If child, also see QPEC guidelines *Head injury - emergency management in children*
- Use head injury clinical pathways if available eg https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/head-injury (Qld)

1. May present with

- Trauma to head

2. Immediate management[1-4]

- Do primary survey **DRSCABCDE** as per Traumatic injuries, p. 131 + initiate any lifesaving measures
- Consider need for C-spine in-line immobilisation, p. 144
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
- Do GCS/AVPU, p. 550 (AVPU if child) + neurological observations:[5]
  - pupil size, symmetry + light response
  - motor response in limbs - compare sides
  - fontanelle in infant - bulging/tense/soft/sunken
- Vital signs + BGL - if altered LOC
- Give O_2 to maintain $SpO_2 \geq 98\%$
- **Consult MO/NP urgently if:**[6]
  - GCS < 15 (or AVPU ≤ **V**oice). If GCS include breakdown of score eg **E**$_2$**V**$_4$**M**$_3$
  - seizure(s)
  - suspect/could have:
    - penetrating injury or skull fracture (depressed/open)
    - basal skull fracture - black eye with no damage around eyes, bleeding from ear(s), clear fluid (CSF) from ear(s) or nose, bruising behind ear(s)
    - focal neurological deficit eg ↓ sensation/weakness/tingling in arms or legs, double vision, ataxia, clumsiness, gait abnormality, difficulty understanding/talking
    - any **Red flags for deterioration/↑ intracranial pressure (ICP)**

Red flags for deterioration/↑ intracranial pressure (ICP)[2]

- Headache, vomiting, irritability/altered LOC
- GCS/AVPU decreasing/diminished
- Abnormal posture (decorticate/decerebrate)
- Abnormal breathing pattern
- Abnormal pupil responses, pupil dilation (1 or both), upward gaze
- ↑ BP + ↓ HR + breathing abnormalities - 'Cushing's triad' (late sign)

3. Clinical assessment[1-4]

- Do secondary survey as per Traumatic injuries, p. 131
- Ask about:
  - time/date of injury, witnessed or not
  - mechanism of injury
  - current drug or alcohol intoxication + any bleeding disorders/taking anticoagulants

- Any:
  - loss of consciousness - witnessed/unwitnessed, duration
  - vomiting - how many episodes
  - headache - mild, moderate, severe, worst headache ever had
  - amnesia - duration (anterograde - loss of new learning; retrograde - loss of already known)
  - seizure(s) post injury - when/duration
  - double vision, ataxia, clumsiness, gait abnormality, weakness/tingling in arms or legs
  - abnormal behaviour eg drowsiness, agitation, restlessness, not interested in things around them, not themselves (as reported by parent in child/infant)
- **Examine head** as per Traumatic injuries, p. 131. Note size/location of bruise, swelling/laceration
- Assess using **Head injury risk stratification** tables below

Child - head injury risk stratification[2]

Low risk ALL of the following	**Intermediate risk** No high risk features + ≥ 1 of the following **MAY need urgent CT scan**	**High risk** ≥ 1 of the following **Urgent CT scan**
• Well appearing child • GCS 15 **or** AVPU = **A**lert • No intermediate or high risk features present	• Severe headache • Vomiting • Amnesia • Post-traumatic seizure • Altered mental status (drowsiness, agitation, repetitive questioning, slow verbal response) • Significant mechanism of injury eg: – fall from significant height (≥ 1 m if aged < 2 years, or > 1.5 m if ≥ 2 years)[1] – vehicle accident - high speed, ejected from vehicle or with others significantly injured in crash – pedestrian/cyclist impacted by car – impact from high speed object eg golf ball, ceiling fan	• GCS < 14 **or** AVPU ≤ **V**oice • Focal neurological deficit • Clinical suspicion of: – basal skull fracture (raccoon eyes, blood behind eardrum, Battle's sign, clear fluid leaking from ear or nose (CSF) – depressed skull fracture (boggy haematoma, palpable depressions) – penetrating injury – open skull fracture – large haematoma, laceration or bulging fontanelle in young child – non-accidental injury – extensive other injuries

Adult - head injury risk stratification[6]

'High risk' any of the following

- Anticoagulant/antiplatelet therapy (+ aspirin)
- Age > 65 years
- Known coagulopathy eg liver disease, factor deficiency
- Loss of consciousness > 5 minutes
- Dangerous mechanism of injury
- Unwitnessed head injury
- Known previous neurosurgery/neurological impairment
- Intoxicated (alcohol ± other drugs)
- Persistent vomiting
- Persistent severe headache
- Persistent abnormal level of alertness, behaviour and/or cognition
- Multi-system trauma
- Delayed presentation or re-presentation
- Multiple comorbidities or combination of worrying factors

Urgent/early CT scan if below

- Deterioration in GCS
- Clinical suspicion of skull fracture
- Post traumatic seizure
- Focal neurological deficit
- Anterograde or retrograde amnesia > 30 minutes
- Persistent GCS < 15 at 2 hours post injury
- Other clinical concern

4. Management[1,3,4]

- Offer paracetamol (not ibuprofen). See Acute pain, p. 32. Consult MO/NP prior to opioids
- If intoxicated at presentation (drug or alcohol), treat as if the neurological findings are due to the head injury until proven otherwise
- If scalp laceration, control bleeding - **can result in major blood loss**:
  - easily controlled by closing with staples/sutures/tying hair. See Acute wounds, p. 160
  - ± combine + pressure bandage

If symptoms/unstable, high/intermediate risk or fractured skull suspected

- Urgently consult MO/NP who may advise:[2-4,6]
  - urgent retrieval for CT scan
  - monitor closely for signs of deterioration +
    - GCS/AVPU + neurological observations
    - vital signs
    - pain and sedation score as needed
  - IVC x 2 or Intraosseous, p. 55
  - O_2 to maintain SpO_2 ≥ 98%.[4] Capnography if available
  - analgesia ± antiemetic - only on MO/NP orders

If raised intracranial pressure (ICP)[2,4]

- Elevate/tilt head of the bed 20–30º
- Support airway/ventilation
- Keep warm/avoid hypothermia
- Analgesia/sedation as per MO/NP
- If seizures, see Seizures, p. 84

- **MO/NP/RSQ may consider:**
  - IV fluid bolus 10–20 mL/kg sodium chloride 0.9% to avoid hypovolaemia
  - sodium chloride 3% or mannitol to ↓ raised ICP

If GCS ≤ 8 **or** AVPU = **U**nresponsive, patient is in a coma/has severe injury
Consider airway adjunct until intubation possible[4]

If asymptomatic, fully awake and alert, no neurological abnormalities + low risk[1,2]

- If baby < 6 months, consult MO/NP promptly
- If child and **very low risk** - no need to monitor ie:
  - trivial injury ie ground level fall, walking/running into stationary object(s), no loss of consciousness, AVPU = **A**lert, AND no signs or symptoms of head trauma other than an abrasion, discharge with **Head injury advice**
- Otherwise, in collaboration with MO/NP, monitor neurological observations for 4–6 hours **from time of injury:**[6]
  - 1/2 hourly for 1st 2 hours, then hourly for 2–6 hours/until discharged
  - if ↓ LOC, symptoms develop/persist, or any abnormal observations, **urgently consult MO/NP**[3]
- Consider discharge in ≥ 4–6 hours if:[6]
  - remains **A**lert/GCS at 15
  - neurological observations remain normal + no symptoms develop
  - no concerns of:
    - non-accidental injury in child
    - alternative/concurrent illness
  - no clinician or parent/carer concerns
  - patient has responsible adult to observe them for 24 hours + can return promptly if needed
  - not under the influence of drugs or alcohol
  - have been given **Head injury advice** + know when to return to clinic[4,6]

Head injury advice - give verbal and written advice[2,7-9]

- Adults and children should be observed by someone responsible for next 24 hours

Give fact sheets eg:

- **Adult** - *Minor head injury* https://clinicalexcellence.qld.gov.au/resources/emergency-department-patient-information-sheets
- **Child** - *Head injury - ED discharge advice* https://www.childrens.health.qld.gov.au/health-a-to-z/head-injury

General advice

- Rest quietly for next 48 hours
- Eat a healthy diet, drink lots of fluids
- Avoid activities that make symptoms worse
- Use ice packs on swollen or painful areas
- Use paracetamol for headache (not ibuprofen/aspirin)
- Do not take sedatives/other medicines unless instructed
- Do not drive for at least 24 hours and only once you can concentrate properly
- Return to exercise after a few days rest

Return to the clinic immediately if

- Severe headache, especially if getting worse
- Dizziness or unsteady walking, poor coordination
- Nausea, vomiting or poor feeding (child) or frequent vomiting (adult)
- Unexpected drowsiness or weakness
- Disorientation or confusion
- Restlessness (adult), irritability, continued crying or unusual agitation (child)
- Slurred speech or double/blurred vision
- Seizure (fit) or spasms of face or limbs
- Difficult to wake up
- If you or carer(s) are worried for any reason

Concussion

- Symptoms over following days may include:
  - mild headaches, which settle with rest/paracetamol
  - mild dizziness, feeling tired, difficulty paying attention or remembering things
  - feeling emotional or moody
- Symptoms usually settle over time. Return to clinic if you or carer(s) are worried

5. Follow up

- If not retrieved advise to be reviewed the next day and at the next MO/NP clinic (1–2 weeks)[1]
- If on anticoagulants/has bleeding disorder, advise follow up within 72 hours as ↑ risk of delayed intracranial haemorrhage[6]

6. Referral/consultation

- Consult MO/NP as above

HMP Spinal injuries - adult/child

Recommend[1]

- Consider the possibility of a spinal injury in all trauma patients. Use caution when moving

Background

- Hard/semi-rigid cervical collars are not recommended[1,2]
- Cervical spine injury is relatively rare in children.[2] Also see QPEC guidelines *Cervical spine injury - emergency management in children*

1. May present with[1]

- History of trauma, in particular:
  - motor vehicle/bike or bicycle accident - occupant, rider or pedestrian
  - dive or jump into shallow water or being 'dumped' in the surf
  - sporting accident eg rugby, fall from horse, tumbling, trampolining[2]
  - fall from greater than twice standing height eg ladder, roof
  - fall in the elderly
  - significant impact to head

2. Immediate management

- Do primary survey **DRSCABCDE** as per Traumatic injuries, p. 131 + initiate any lifesaving measures
- **Maintain cervical spine (c-spine) in-line immobilisation**[1]
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
- Do vital signs + BGL

C-spine in-line immobilisation[1,2]

- If conscious, ask patient to stay still
- Manually support head in a natural, neutral position in line with torso
- Avoid twisting/angular movements
- Consider padding if needed to keep neutral eg:
  - **adult:** 2 cm under head, **child < 8:** use thoracic elevation device (TED)
- Use soft collar (as prompt to restrict movement) + sand bags/towels to support neck if unconscious
- Restrict spinal movement until patient can undergo appropriate examination ± imaging[3]
- Lay flat on firm supportive surface

3. Clinical assessment[1]

- Do secondary survey as per Traumatic injuries, p. 131 + note mechanism of injury
- Check for **Symptoms of spinal injury**

Symptoms of spinal injury

- **Pain in neck/spinal area**[2]
- Breathing difficulties - c-spine or thoracic injury can cause respiratory failure
- Signs of head injury, altered LOC, shock
- Altered/absent skin sensation. Tingling, numbness in the limbs and area below the injury
- Weakness or inability to move the limbs (paralysis)
- Nausea, headache or dizziness
- Head or neck in abnormal position
- Change in muscle tone (flaccid/stiff)
- Loss of bladder or bowel control
- Priapism (persistent erection in males)

- **Check basic motor and sensory function:**[3]
  - check movement. Ask patient to:
    - move ankles/toes - no movement, flicker, definitive
    - squeeze your hands - no movement, weak, strong
  - lightly touch patient to test sensation - none, altered, normal:
    - lateral side of ankle near foot
    - jugular notch - just above sternum
- If paraplegia/quadriplegia or a level of sensory loss on the chest or abdomen, presume spinal instability[3]
- Do not try to reduce/straighten an obvious deformity of the spine[2,4]
- Use **NEXUS criteria to assess risk of c-spine injury** (if no narcotics in prior 4 hours)[3]

	NEXUS criteria to assess risk of c-spine injury[3] - check for any
1	**Midline c-spine tenderness.** Or in child, complaint of neck pain[2] • Neck pain on palpation of the posterior midline neck area, from nuchal ridge to the 3rd thoracic prominence, or palpation of any cervical spinous process
2	**Altered mental status** eg: • GCS ‹ 15 **or** AVPU ‹ **A**lert • Disorientation to time, place, person or event • Inability to remember 3 objects at 5 minutes • Delayed or inappropriate response to stimulus
3	**Focal neurologic deficit** eg: • Motor weakness, numbness/loss of sensation, paraesthesia, other eg priapism
4	**Evidence of intoxication** - any of: • Patient or observer reports recent history of intoxication/consumption of intoxicating substances • Odour of alcohol, slurred speech, ataxia, lack of coordination, or other cerebellar findings • Behaviour consistent with intoxication • Tests of bodily fluids are +ve for drugs or alcohol which affect mental alertness
5	**Painful distracting injury** Any non-spinal related condition causing sufficient pain to distract patient from a possible c-spine injury eg: • Long bone fracture • Significant visceral injury • Large laceration; crush or degloving injury • Considerable burns • Other injury that could impair the patient's ability to appreciate cervical spine pain

Very unlikely to have c-spine injury if NONE of the above 5 criteria are present AND:

- NO neck pain, bruising or deformity of neck[2]
- Has full range of active neck movement without pain. Including 45° rotation to left and right + flexion/extension.[2,3] **Note:** ask to move themselves - never force the patient's neck[4]
- **NO other high risk factors:**[2]
  - age › 65 (↑ incidence of degenerative disease)[3,4]
  - fall + landing head first from a height eg diving, trampolining
  - forced neck hyperflexion (low speed, high force eg rugby scrum collapse)
  - high risk motor vehicle/bicycle accident eg head on collision, rollover, ejection from vehicle, death in same crash, speed › 88 km/hour
  - substantial torso injury - clavicles, abdomen, flanks, back, spine, pelvis; or face
  - respiratory distress, or ↓ SpO_2

- **Consult MO/NP for clearance before stopping c-spine precautions, regardless of NEXUS criteria**
  - generally, if patient is alert, without neurological deficit, sober, does not have additional painful injuries, and has no pain along spine or neck, it is unlikely they have c-spine injury[4]

4. Management[2,3]

- Consult MO/NP urgently in all cases of suspected spinal injury
- **If ANY NEXUS criteria, clinical examination is unreliable.** May need retrieval ± CT scan
- Offer analgesia + antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40
- If breathing difficulties - monitor SpO_2, capnography (if able) + VBG
- Continue to manage in collaboration with MO/NP until retrieval, which may include:
  - vital signs + neurological observations
  - monitoring respiration
  - keep warm/normothermic
  - nil by mouth
  - IVC ± IV fluids[4]
  - IDC
- If hypotensive (± bradycardia) consider neurogenic shock if hypovolaemia ruled out. **Note:** haemorrhage is most common cause of shock in trauma

Moving patient with suspected spinal injury[1]

- Provide C-spine in-line immobilisation, p. 144 during transfer and movement of the patient
- Use scoop stretcher or log roll onto spinal board/vacuum mattress
- Do NOT leave on rigid spinal board - remove as soon as possible. High risk of pressure ulcers/necrosis[4]
- If strapping required, do not over tighten - can restrict breathing
- Use sandbags/towels to maintain cervical alignment. DO NOT strap head as aspiration risk
- Straighten bedding and remove debris from under patient

How to log roll[4] *Min. of 3, preferably 5, people needed*

- 1 person takes the lead. They are positioned at the patient's head to provide manual in-line stabilisation (with 2 hands) to the head and neck. This person gives instructions to the rest of the team
- 3 people (if available) perform the roll:
  - position along the patient's body opposite to the direction that the patient's head is facing
  - 1 at shoulders/chest; 1 at hips; and 1 in control of the legs
- At 1st persons command, roll slowly maintaining spinal alignment. Avoid flexion, rotation, lateral bending, sagging of chest/abdomen. Keep patient's nose in line with the umbilicus at all times
- 5th person examines back, inserts/removes spinal board etc

Time log rolls to coordinate care/interventions to reduce need for repeated rolls

5. Follow up

- As advised by MO/NP

6. Referral/consultation

- As above

HMP Abdominal injuries - adult/child

Recommend[1,2]

- **Be vigilant - missed abdominal injuries are a major cause of avoidable death in trauma patients**
- The absence of abdominal pain/external trauma does not rule out the presence of significant abdominal injury

Background[1,2]

- Abdominal trauma can cause haemorrhage, organ/hollow viscus damage, contamination with visceral contents + peritonitis. Most common blunt trauma injuries - spleen, liver, small bowel

1. May present with[1]

- Abdominal trauma
- General trauma - suspect abdominal injury(s) in any multi-trauma patient

2. Immediate management[1-3]

- Do primary survey **DRSCABCDE** as per Traumatic injuries, p. 131 + initiate any lifesaving measures
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)

Suspect serious injury if

- Signs of shock - pale, sweaty, ↑ HR, capillary refill › 2 seconds ± ↓ LOC[4]
- sBP ↓ 90
- Guarding, rebound tenderness or distension
- Seatbelt sign/injury, bruising to torso
- Concomitant femur or pelvic injury
- Penetrating abdominal injury

3. Clinical assessment[1-3]

- Do secondary survey as per Traumatic injuries, p. 131 including **examination of abdomen**
- Do eFAST if trained/available:
  - significant blood loss can occur without change to size of abdomen
  - **note:** –ve eFAST is not accurate in haemodynamically stable patient
- **Repeated abdominal assessment needed** - life-threatening injuries may not be obvious on initial assessment
- Urinalysis + pregnancy test if reproductive age
- Consider concurrent femur or Pelvic injuries, p. 149

4. Management[1-3]

- Offer analgesia. See Acute pain, p. 32
- Nil by mouth
- Keep warm/normothermic
- Urgently consult MO/NP who may advise:
  - urgent retrieval
  - airway/ventilation support as needed + O_2
  - IV fluids to maintain sBP of 90
  - NGT if no signs of facial/base of skull injury - on free drainage/aspirate periodically
- **If impaled object(s) eg knife - DO NOT remove** - can cause catastrophic haemorrhage. If needed, VERY CAREFULLY pack around object with gauze and secure (handling can result in further injury)
- **If open wound** - pack with sodium chloride 0.9% soaked pack
- **If exposed bowel** - replace if able to be done gently, otherwise cover with soaked sodium chloride 0.9% packs. If contaminated, rinse with warm sodium chloride 0.9% first[5]

Pregnant woman/person with abdominal trauma[6]

- If › 20 weeks pregnant (uterus at level of umbilicus):
  - if supine or spinal precautions - position with left lateral tilt. Right side up 15–30º - place wedge under hip/spinal board. Baby can compress the vena cava causing hypotension if lying flat
- Can lose a significant amount of blood before ↑HR, ↓BP, signs of shock evident
- Blunt trauma (even minor) can cause placental abruption. See APH, p. 374
- **Seek obstetric advice** +
  - check for vaginal loss/bleeding
  - fetal heart rate (if skilled) + ask about baby's movements (normal or decreased)
  - assess uterus - tone, rigidity, tenderness, contractions
  - if Rh D –ve blood group, may require Rh D immunoglobulin, p. 355
  - if ≥ 23 weeks pregnant, CTG (if available) for at least 4 hours
- **Be alert to** Domestic and family violence, p. 232 **as a cause of trauma**. DFV can ↑ during pregnancy. Abdomen is most common body area struck. Ask all women (without partner present)[5]
- Also see Qld Clinical Guideline *Trauma in pregnancy*

5. Follow up

- If not retrieved, MO/NP may advise discharge after a period of observation eg 4 hours.[1] Be cautious of discharge overnight, lives alone or is remote from medical care
- Advise to be reviewed:
  - immediately if symptoms worsen eg increased pain
  - if pregnant - vaginal bleeding/discharge, change in fetal movements or abdominal cramping[6]
  - the next day, or sooner if concerned

6. Referral/consultation

- Consult MO/NP with any findings as above or if at high risk of serious injury because of circumstances

HMP Pelvic injuries - adult/child

1. May present with[1]

- Trauma - especially high impact eg pedestrian/car/motorbike/bicycle accident, fall from height, crush, elderly, blast

2. Immediate management[2-4]

- Do primary survey **DRSCABCDE** as per Traumatic injuries, p. 131 + initiate life-saving measures
- Consult MO/NP/RSQ urgently - suspected fractured pelvis requires Early notification of trauma for interfacility transfer (inside front cover)
- **Do NOT spring pelvis (handle minimally)**. Can dislodge clots + cause catastrophic haemorrhage
- **If pelvic tenderness, multi-trauma or asymmetry/shortening of limb:**
  - suspect fracture until proven otherwise
  - **apply pelvic binder urgently** to stabilise pelvis + control haemorrhage

Pelvic binder application[1,3-7]

- Remove clothing (cut off gently)
- Minimise movement when putting on eg slide binder under the legs up to buttocks
- Apply **centre of binder** over greater trochanters/symphysis pubis area. **Not above iliac crests**
- Secure firmly. Should be able to insert 2 fingers between patient + binder
- Use folded sheet if binder not available
- Bind ankles together

- Insert IVC x 2
- Give analgesia. See Acute pain, p. 32
- Only log roll if essential eg to clear airway if suction ineffective
- Move patient with aid of scoop stretcher

3. Clinical assessment[1]

- Do secondary survey as per Traumatic injuries, p. 131
- Likely to have other injuries eg genitourinary + Abdominal injuries, p. 147
- Also check:
  - lower legs - pulses, power, sensation - any ↓
  - for blood at urethral opening + perineal/scrotal bruising
  - vaginal or rectal bleeding
  - urine - for blood if possible

4. Management

- MO/NP will advise further management eg:
  - x-ray - important if available
  - keep warm/normothermic
  - closely monitor:
    - vital signs + signs of shock - pale, sweaty, ↑HR, capillary refill › 2 seconds ± ↓LOC[8]
    - lower legs - pulses, power, sensation + pain
- If needed, gently insert IDC - **on MO/NP advice only**

5. Follow up

- As per MO/NP/RSQ advice

6. Referral/consultation

- As above

Fractures, dislocations and sprains

HMP Musculoskeletal injuries - adult/child

1. May present with[1,2]

- Injury with pain ± swelling, bruising, loss of function, deformity
- **Note:** if no history of injury (or minor), consider Swollen/painful joint adult, p. 320/child, p. 537, or ARF, p. 498

2. Immediate management[1,3]

- **DRSCABCDE** + secondary survey as per Traumatic injuries, p. 131. If elderly + fall, always check for other injuries
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
- Offer analgesia. See Acute pain, p. 32
- Do vital signs
- Remove rings, bracelets + other restricting items eg clothing, from affected limbs[4]

3. Clinical assessment[1,4]

- **Get history:**
  - mechanism of injury eg roll of ankle, twisting, fall onto outstretched hand, direct blow, fall
  - timing + events surrounding the injury; any clicking, popping, radiating pain, joint locking
  - if ankle/knee - could they weight-bear immediately after injury[5,6]
  - any witnesses/first aid
- **Inspect:**
  - location, wounds, deformity, swelling, bruising, asymmetry - compare with other limb
- **Palpate:**
  - point tenderness (pain at site when palpated), crepitus (grating/crunching), deformity
  - joints above and below injury for tenderness/instability eg elbow if fall onto outstretched hand
- **Move:**
  - gently test range of motion (ROM) - **active** (patient controlled), **passive** (clinician controlled). Be cautious if significant swelling, deformity, or movement exacerbates pain[4]
  - may be best done after x-ray. Compare with other limb
- If limb, do **Neurovascular observations** - urgently consult MO/NP if any compromise

Neurovascular observations - assess distal to injury. Compare to unaffected limb[7,8]	
Pain	• Most important indicator of compromise • Assess pain at rest and active + passive movement of the extremity
Colour	• Mottled/dusky, pale, natural
Temperature	• Hot, cold, warm/cool. Use back of hand to assess
Sensation	• ↓ or loss of, numbness, tingling, pins and needles. Use tip of your index finger to touch top + bottom of hands/feet, including web spaces between thumb and index finger, and between little finger and ring finger
Capillary refill + pulses	• Use doppler if pulses difficult to palpate (and available)
Motor function	• **Upper limb** - extend + bend wrist and fingers (at knuckle joint); abduct (splay) all fingers; bring thumb and little finger together; extend thumb **Lower limb** - flex ankle and toes (up and down)

- **Neurovascular compromise** - numbness, ↓ or absent pulses, CRT › 2 seconds, changes in colour or T
- **Compartment syndrome, p. 159** - pain disproportionate to injury/not responding to analgesia or on passive stretch (flexion or extension) of affected muscle

- **Get past history**, including:
  - previous fractures/injuries, when, treatment, orthopaedic surgery
  - comorbidities eg osteoporosis, arthritis, diabetes
  - at risk of complications eg elderly, immunocompromised, PVD, alcohol misuse,[3] anticoagulants
- Consider Domestic and family violence, p. 232 + Child protection, p. 539 if presentation is inconsistent with history/explanation, is unexpected, or you suspect abuse or non-accidental injury

4. Management

Differential diagnoses	
Suspect	**Management**
Fracture if ≥ 1 of: • Pain, swelling, bruising, loss of function, deformity, crepitus[2]	• **For any suspected fracture or dislocation, consult MO/NP** who may advise x-ray + further management eg backslab, p. 153/retrieval • **Additionally, if:** – limb - immobilise ± splint.[4] See Closed fracture of limbs, p. 152 – shoulder, clavicle, scapular - immobilise with sling[1] – jaw, see Fractured jaw, p. 155 – bone has broken skin or acute wound on same limb segment treat as Open fracture, p. 154
Sprain[2] • As above, but no deformity or crepitus	• See Sprains/soft tissue injury, p. 157 • Common sites - thumb, ankle, knee • If unable to weight-bear immediately after trauma, suspect fracture
Dislocation • Joint is visibly out of place	• See Dislocations, p. 156 + consult MO/NP • Common sites - shoulder, finger, patella, elbow, hip
Do **VTE screen for all immobilised lower limbs**, as at risk of DVT. Use local tools	

If acute lower back pain[9]

- If trauma related, see Spinal injuries, p. 144
- If not trauma related eg caused from sudden awkward movement or repeated heavy lifting:
  - x-ray/CT/MRI not usually needed
  - assess for **Red flags**. If any consult MO/NP
  - offer analgesia, advise to use heat ± cold packs, stay active (avoid bed rest) and continue with normal activities
  - advise likely due to muscle or ligament injury. Offer fact sheet eg *Acute lower back pain* https://www.townsville.health.qld.gov.au/patients-and-visitors/brochure-portal/
  - **advise to see MO/NP at next clinic for further assessment**, or sooner if **Red flag**(s) develop

Red flags - lower back pain

- Age < 20 or > 50 years
- History of trauma
- Numbness/weakness in lower limbs or sensation change in 'saddle area'
- Change in bladder/bowel or sexual function
- Fever, night sweats, unplanned weight loss
- IV drug use history
- History of malignancy or immunosuppression
- Long-term steroid use or osteoporosis
- Pain at night or not affected by movement
- Pain not responding to appropriate treatment

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above or as per MO/NP

HMP Closed fracture of limbs - adult/child

Background[1]

- Long bone fractures can result in major blood loss

1. May present with[2]

- Injury + pain ± swelling, bruising, deformity, ↓ range of motion (ROM)

2. Immediate management

- Assess as per Musculoskeletal injuries, p. 150
- If bone has broken skin or acute wound on same limb segment, treat as Open fracture, p. 154
- Offer analgesia. See Acute pain, p. 32
- **Immobilise/apply splint:**[2]
  - do Neurovascular observations, p. 150 before + after splinting
  - splint in neutral position if possible. If significant deformity get advice from MO/NP
  - immobilise joints above + below suspected fracture eg use vacuum splint
  - if upper arm, use sling
  - if femur/fracture above knee - use traction splint eg femoral splint **or** use other leg as a splint
- **Consult MO/NP urgently if:**
  - significant soft tissue damage[3] - at risk of Compartment syndrome, p. 159
  - skin over fracture site is white or stretched/blistering - ↑ risk of becoming open fracture, requires urgent reduction[1,3]

3. Clinical assessment

- Do vital signs + continue Neurovascular observations, p. 150

4. Management[3,4]

- Consult MO/NP who will advise further management eg:
  - x-ray, backslab, p. 153, shoulder immobiliser sling, collar and cuff, wrist splint
  - ± retrieval/orthopaedic review
  - **note:** after a fall on outstretched hand a **scaphoid fracture** may not be seen on x-ray. If tenderness, immobilise until follow up x-ray/CT scan in consultation with MO/NP
- To reduce pain + swelling:
  - elevate upper limb above level of heart eg with sling, and lower limb above the hip eg pillows
  - apply ice pack ie over bandage that secures splint, for 20–30 minutes every 1–2 hours
- If not retrieved, ongoing management as per MO/NP:
  - advise patient it may take 4–6 weeks to heal
  - as needed provide crutches + show how to use eg https://aci.health.nsw.gov.au/networks/eci/clinical/ed-factsheets/crutches

5. Follow up

- If not retrieved advise to be reviewed next day or sooner if needed:
  - if ↑ pain or swelling, numbness, tingling or skin colour changes to blue or white[5] - urgently contact MO/NP
  - if backslab applied, ensure **Plaster care advice** is given

6. Referral/consultation

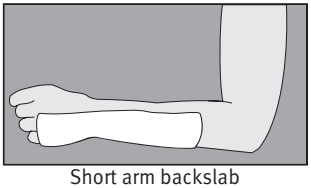
- Physiotherapist where possible

Plaster backslab[1]

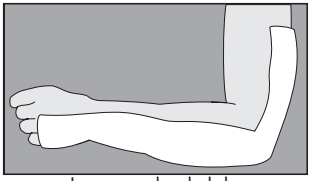
ALERT pressure injuries can occur with casts

Red flags: pain/burning/numbness - localised, persistent › 3 days, new or not near fracture site, needs strong analgesia, in heel; patient re-presents; non-attendance at follow-up; nonverbal person/child[2]

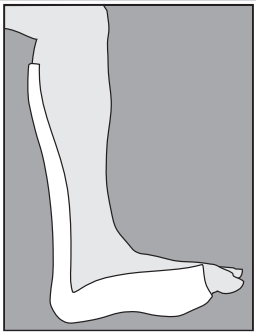
Positioning	• Discuss with MO/NP + see **diagrams** below for guidance • Do Neurovascular observations, p. 150 before + after applying[3]
Equipment	• Purpose made stockinette (optional). **NOT Tubigrip**[4] • Undercast/cotton padding 7.5–10 cm width (slightly narrower than arm/leg) • Plaster bandages 15–20 cm width (slightly wider than arm/leg) • Trauma scissors, bowl of cold water, crepe bandages, tape ± sling
How to do Immobilise fracture above and below the joint	• Apply stockinette to arm/leg without creases - beyond margins of plaster by 2–3 cm • Apply 2–3 layers of padding beyond plaster margins overlapping itself by 25–50% with minimal creases • Estimate plaster length by laying it next to the arm/leg • Fold the roll in about 10–12 layers to the same length • Submerge in water until bubbling stops, remove + squeeze out excess • Smooth on flat surface • Apply to limb - leave 3 finger widths between cast and joint • Mould to the contours of limb in a neutral position. Advise patient they will feel heat • **Plaster must NOT fully encircle the limb** • Turn back padding over ends of plaster + apply crepe bandage



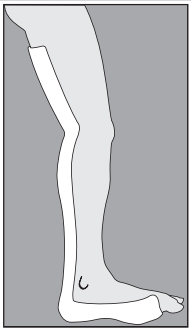
Short arm backslab



Long arm backslab



Short leg backslab



Long leg backslab

Give plaster care advice[5]

- **Keep elevated to prevent swelling** - particularly in 1st 48 hours (use sling/pillows)
- Frequently move/wiggle fingers or toes + other joints that aren't covered by the plaster
- Rest for a couple of days to allow cast to set. Do not put weight on cast (use crutches)
- Keep the plaster dry - use plastic bag while showering
- Do not stick objects down plaster, cut or interfere with it. Do not smoke - delays healing process
- **Return immediately if any of:**[2,4]
  - pain (can be burning or numbness) eg for 3 days or more; new; requires strong pain relief; in heel
  - continuous pressure at 1 point beneath cast
  - ↑ swelling even if elevated for 20 minutes
  - colour changes/unable to move to fingers/toes, numbness/pins and needles
  - cast damaged/wet/tight
- **Give handout** eg *Fracture* https://clinicalexcellence.qld.gov.au/resources/emergency-department-patient-information-sheets

HMP Open fractures - adult/child

1. May present with

- Bone has broken the skin or mucous membrane ± visible bone[1]
- Any open wound on same limb segment as an associated fracture[2]- may be small eg puncture

2. Immediate management[1]

- Stop any bleeding by putting pressure on wound, not on exposed bone
- Assess as per Musculoskeletal injuries, p. 150
- Check if contaminated environment eg agricultural, sewage, fresh or salt water
- Do vital signs + screen for Sepsis, p. 62
- Offer analgesia. See Acute pain, p. 32
- **If significant deformity** or **neurovascular compromise** contact MO/NP urgently - needs urgent reduction
- Otherwise, immobilise/apply splint as per Closed fracture of limbs, p. 152:
  - remove any easily identified non-penetrating foreign objects or contamination[2-5]
  - do not actively wash out the wound; do not probe
  - apply sodium chloride 0.9% soaked gauze and bandage/occlusive dressing
- Insert IVC

3. Clinical assessment[1]

- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545

4. Management[1,5]

- **Urgently consult MO/NP who may order/advise:**
  - retrieval for surgical debridement and irrigation +
  - IV antibiotics as soon as possible - ideally **within 3 hours of injury:**
    - cefazolin. Add metronidazole if severe + heavily contaminated
    - other antibiotics may be indicated if water related or allergy to penicillins - MO/NP will advise
  - nil by mouth, x-ray, backslab, Neurovascular observations, p. 150

S4	Cefazolin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	IV	**Adult** 2 g **Child** 50 mg/kg (max. 2 g)	stat Inject slowly over at least 5 minutes
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6,7]				

S4	Metronidazole			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 mg/100 mL	IV	**Adult** 500 mg **Child** 12.5 mg/kg (max. 500 mg)	stat Infuse over 20 minutes
Offer CMI: May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness, headache or thrombophlebitis				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,8,9]				

5. Follow up

- As per MO/NP advice

6. Referral/consultation

- All open fractures require consultation with local orthopaedic services

HMP Fractured jaw - adult/child

Recommend[1]

- Be alert to airway obstruction from bleeding or swelling

1. May present with[2]

- Trauma to face + pain, swelling, bruising, deformity, bleeding, drooling

2. Immediate management[1,3]

- Do **DRSCABCDE** as per Traumatic injuries, p. 131
- Assess against Criteria for early notification of trauma for interfacility transfer (inside front cover)
- Consider need for c-spine immobilisation, p. 144

3. Clinical assessment[1]

- **Ask about mechanism of injury +**
  - timing + events surrounding the injury
  - any witnesses, any first aid
- Do vital signs + GCS, p. 550
- Do secondary survey in Traumatic injuries, p. 131, including:
  - **head and face examination** to assess for other injuries +
  - assess as per Head injuries, p. 140
- **Check for signs of fractured jaw:**[2,3]
  - clenched teeth not 'fitting together' as usual/misaligned; asymmetry of jaw
  - limited or painful mouth opening
  - unable to maintain bite on tongue depressor while twisted
  - flattening, swelling of cheeks
  - difficulty swallowing
- Get patient to feel for broken/damaged teeth with their tongue
- Keep any knocked out teeth for possible replacement. See Trauma to teeth, p. 245
- Check tetanus vaccination status + give booster if indicated.[4] See Tetanus immunisation, p. 545

4. Management

- Offer analgesia + antiemetic. See Acute pain, p. 32 and Nausea and vomiting, p. 40
- Elevate head and apply ice packs[1] + soft collar for comfort
- **Consult MO/NP who may consider:**
  - retrieval for surgical review - most fractures will require internal fixation[1]
  - x-ray, nil by mouth ± IV antibiotics
  - closely monitor until retrieval + frequent airway checks[4]
- Consider Domestic and family violence, p. 232 + Child protection, p. 539 if presentation is inconsistent with history/explanation, is unexpected, or you suspect abuse or non-accidental injury

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Dislocations - adult/child

Background[1]

- Injury where bone is forced out of its normal position

1. May present with[1]

- Injury + severe pain that is worse on movement + very apprehensive to move joint
- Deformity ± associated fracture(s)
- Reports of popping or joint rolling out of place eg shoulder dislocation[2]

2. Immediate management[1,2]

- Assess as per Musculoskeletal injuries, p. 150
- Offer analgesia. See Acute pain, p. 32
- Support limb using pillows as tolerated + apply ice packs
- If simple dislocation eg patella, digit, **and skilled** - quickly reduce (with appropriate analgesia) to alleviate pain
- Contact MO/NP if signs of Neurovascular compromise, p. 150 distal to the site

3. Clinical assessment[1,2]

- Get past history:
  - previous dislocations, when, was it reduced, if so how/which manoeuvre
  - any orthopaedic surgery or underlying conditions eg osteoporosis

4. Management[1,2]

- Consult MO/NP who may advise:
  - x-ray to check for fracture + assess type of dislocation eg anterior, posterior, inferior
  - if it can be reduced locally or retrieval required
- Collaborate with MO/NP on reduction manoeuvres **if skilled + appropriate**. Consider:
  - nil by mouth
  - IV analgesia/sedation or methoxyflurane or nitrous oxide + O_2 (Entonox®)

- monitor Neurovascular observations, p. 150 before + after reduction:
  - if shoulder - check sensation over deltoid muscle, nerve can be damaged during reduction
- after care eg x-ray + immobilise joint/limb
- patient advice/fact sheet on care post reduction eg:
  - *Shoulder dislocation* https://aci.health.nsw.gov.au/networks/eci/clinical/ed-factsheets/shoulder-dislocation#heading-2

5. Follow up

- As per MO/NP

6. Referral/consultation

- Physiotherapist where possible

HMP Sprains/soft tissue injury - adult/child

Background[1]

- Sprain is an injury to the ligament

1. May present with[1]

- Injury + pain, swelling, bruising

2. Immediate management[1]

- Assess as per Musculoskeletal injuries, p. 150
  - most ankle sprains occur when foot is pointing downwards and twists inwards
  - ensure to assess joints above and below
- If child, consider Infection of joint, p. 537 and ARF, p. 498 as differential diagnoses - both often present with a history of injury
- Offer analgesia. See Acute pain, p. 32

3. Clinical assessment[1]

- Do vital signs
- History of similar injury(s), ankle/knee pain, injury or joint disease eg osteoarthritis
- X-ray not usually needed. **Do x-ray to rule out fracture if:**
  - delayed or re-presentation **or**
  - pain at the base of the 5th metatarsal **or**
  - indicated by **Ottawa Ankle or Knee Rule** assessment

Ottawa Ankle or Knee Rule. X-ray required if:[1]

- Inability to weight-bear both immediately after injury and for 4 steps when examined **or**
- **If ankle injury** - bone tenderness at the posterior edge or tip of either the lateral or medial malleolus - see diagrams eg https://aci.health.nsw.gov.au/ecat/appendices/ottawa-ankle-adult (adult) https://aci.health.nsw.gov.au/ecat/appendices/ottawa-ankle-paediatric (child)
- **If knee injury** - age ≥ 55, isolated tenderness of patella, tenderness of head of fibula, or inability to flex 90⁰

- **Assess severity of ankle sprain:**[1,2]
  - **minor** - minimal function limitation, normal ROM, minimal swelling, localised pain with palpation
  - **moderate** - significant pain, considerable swelling, ↓ ROM, slight instability
  - **severe** - complete tear of ligament. Audible 'pop' may have been heard at time of injury, considerable swelling + bruising, loss of ROM, instability, inability to weight-bear

4. Management[3,4]

- Consult MO/NP if:
  - **x-ray** indicated
  - **severe sprain** - may advise short term immobilisation eg with plaster cast/semi-rigid bracing for a few days
  - **knee injury** - further assessments needed to diagnose injuries eg anterior/posterior cruciate ligament (ACL/PCL) injury/rupture, meniscal injury[5]
- **Advise to help reduce pain/swelling, for first 2–3 days:**
  - **R**est - avoid activities that cause excessive pain. Minimise amount of walking. If unable to weight-bear comfortably/walk normally, use crutches to assist
  - **I**ce - wrap ice in damp towel. Apply for 15–20 minutes every 1–2 hours while awake
  - **C**ompression - apply firm, but not tight bandage. Remove when sleeping at night
  - **E**levate - when resting, raise foot so it is above level of heart
- Advise:
  - **avoid 'HARM'** - **H**eat, **A**lcohol, **R**e-injury (protect joint), **M**assage. Can ↑ swelling
  - after 2–3 days, there should be no further swelling or bruising
  - start gentle weight-bearing/mobilisation as tolerated + exercising to restore full ROM[3,5]
  - offer fact sheet eg *Ankle sprain* https://clinicalexcellence.qld.gov.au/resources/emergency-department-patient-information-sheets
  - most sprains recover within 30 days. Severe sprains may take longer

5. Follow up

- Advise patient to be reviewed if symptoms worsen eg:
  - changes to limb/joint eg T, pallor, numbness, pins + needles or swelling
  - pain continues, increases or is not relieved by analgesia
  - if any of above, contact MO/NP urgently
- Otherwise, advise review in 4–5 days if required:
  - reassess severity. If no improvement, or no x-ray done + pain persists, consult MO/NP[3-5]

6. Referral/consultation[5]

- Refer to physiotherapist, if available, for moderate + severe ankle sprains and all knee injuries to avoid developing a stiff joint

HMP Compartment syndrome - adult/child

Recommend[1-3]

- **Limb threatening emergency.** Urgent retrieval for surgical management
- Be alert in all limb injuries eg closed leg + forearm fractures, crush injuries or treatment causing compression/constriction eg casts/splints, circumferential bandaging, high voltage electrical injury, high pressure injection injuries eg hydraulic fluid under pressure

Background[1-3]

- Caused by bleeding or oedema into a closed muscle compartment resulting in compression/constriction, leading to muscle/nerve ischaemia

1. May present with[1-3]

- Limb injury **OR** treatment causing constriction eg **circumferential cast/splint/bandage +**
  - **pain disproportionate to injury** or difficult to control with analgesia
  - pain brought on by passive flexion or extension of hands/toes
  - if child - anxiety, agitation, unable to rest comfortably[2,3]

2. Immediate management[1,4]

- **Contact MO/NP urgently + retrieval** even if low suspicion of compartment syndrome
- Remove circumferential bandaging/casts/splints to relieve pressure. Leave a portion to stabilise fracture[3]
- Elevate limb to heart level + apply ice packs. Do not elevate above heart[5]
- **Rapidly assess + closely monitor:**[2]
  - pain + offer analgesia. See Acute pain, p. 32. Including:
    - pain on passive flexion/extension of digits of limb
    - response to analgesia
  - entire limb for swelling + palpate for firm, tense to hard, tender areas[1,3]
  - Neurovascular observations, p. 150:
    - **note:** peripheral pulses + capillary refill are normally present in compartment syndrome[1,3,4]
- Insert IVC
- Nil by mouth

3. Clinical assessment

- Ask about:
  - mechanism of injury, when, treatment so far
  - underlying bleeding disorders, anticoagulants[2]

4. Management[1-4]

- As per MO/NP who may arrange urgent retrieval for surgical decompression/fasciotomy
- All high pressure injection injuries require urgent surgical referral (even if looks minor)

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Acute wounds

HMP Acute wounds - adult/child
Wound repair

1. May present with

- Acute/recent traumatic wound eg laceration, abrasion, tear, scrape

2. Immediate management[1-3]

- **Control bleeding** - apply direct pressure for 10–15 minutes:
  - if bleeding persists, consider suturing/stapling (or using Hair tie, p. 162 for scalp)
  - see Traumatic injuries, p. 131 as relevant
- **Do not remove any penetrating object** eg knife, unless advised by MO/NP to do so
- **If shock from blood loss** (cool, HR › 100, capillary refill › 2 seconds):
  - insert IVC x 2
  - IV fluid bolus (warmed if possible) - sodium chloride 0.9% or Hartmann's:
    - **adult** 1 L (250 mL increments, aim to maintain sBP at 90). **Child** 10–20 mL/kg
- **If bat bite or scratch, see** Bat bite/scratch, p. 177. **Needs urgent treatment**
- Offer analgesia. See Acute pain, p. 32 ± consider local anaesthetic

3. Clinical assessment[1,2,4]

- Get history including:
  - mechanism of injury/how it happened
  - time/date of injury
  - where did it occur eg dirt, oil, water, mud, other contaminated area
- Get past history, including:
  - diabetes, smoking, PVD, immunocompromised (↑ risk of poor healing)
  - bleeding disorder/anticoagulants
- Do vital signs
- **Assess wound:**
  - site:
    - if chest or abdomen, be wary of penetration through the body wall - consult MO/NP as needed
  - size - length + depth
  - skin or tissue loss
  - direction of entry. This will help track the wound
  - bony tenderness - suggests an underlying fracture. See Open fractures, p. 154
  - swelling - suggests bleeding into the tissues
  - any bones, joints, vessels, nerves, muscles damaged[2]
  - if stab wound, evaluate for depth/underlying damage + consult MO/NP[1]
- **Could there be a foreign body (FB).** Suspect if:[1]
  - stepped on anything eg glass, wood/stick, metal, fish barb, bone
  - projectiles thrown by machinery
  - assault eg knife, bottle, glass, spear, arrow
  - limb going through glass

- **Check:**
  - colour, warmth and pulses distal to the wound
  - sensation around and below the wound (before putting in anaesthetic)
  - movement of joints above and below the wound
- **If arm or hand injury:**[5]
  - assess tendons of the hand through range of motion (compare with other hand):
    - extensors - straighten the fingers against resistance
    - flexors - make a fist
    - thumb - raise it to the ceiling (palm up) + make an 'O' with the little finger, both against resistance
- **X-ray or USS may be indicated if:**[1,2]
  - underlying fracture suspected
  - FB suspected but cannot be identified visually. **Note:** no FB on x-ray does not exclude a FB in the wound, unless you are sure it would be radio-opaque
- **If wound looks infected** take swab for MCS.[6] See How to take a wound swab, p. 318

4. Management[2]

- If tetanus prone wound, p. 545 check vaccination status and give booster if indicated
- **Consult MO/NP if:**[1]
  - damaged tendons, nerves, vessels
  - wound over a fracture. Also see Open fractures, p. 154
  - penetrating wound into a joint eg fish hook into knuckle
  - significantly contaminated eg through footwear,[6] stab wound, or requiring surgical management
  - systemic infection eg fever, malaise
  - localised infection involving deeper tissues eg over bones, joints or tendons
- Remove rings, watches etc from the affected limb
- **Clean wound thoroughly** - important to prevent infection:[1]
  - consider local anaesthetic prior to cleaning
  - use sodium chloride 0.9% or tap (drinking) water[2,7]
  - ensure dirt, grass, other contamination is removed
  - **deeper wounds** need irrigation to get dirt out:
    - use running tap water, or 20–50 mL syringe + 18 G IVC without stylet
    - repeat a number of times. May need ≥ 500 mL
  - **gravel rash** - if bitumen and dirt ground into skin with abrasion, after anaesthetic, scrub with a brush to remove ground in dirt[8]
- **If FB possible:**
  - explore wound - use small probe or forceps. Can often feel FB before seeing it
  - do not explore deep wounds with spurting blood or near large vessels eg neck, groin, armpits
  - if glass - may be fragments remaining. Consult MO/NP[1,8]

Antibiotics[6]

- Not usually needed for recent clean wounds, especially if cleaned properly
- **MAY be needed if:**
  - sustained in water eg coral cuts, stingray barb, fish hook. See Water related wounds, p. 168
  - bite or tooth knuckle injury. See Bites, p. 174
- **ARE needed if** localised infection eg redness, pus (+ consider retained FB):
  - give antibiotics as per mild Cellulitis, p. 291 OR as appropriate, Water related wounds, p. 168 OR Bites, p. 174

Wound management options[1,8]

- Leave open to the air eg grazes and superficial cuts in clean dry areas of the body
- Simple dressings eg for grazes and small cuts, not gaping
- Wound closure/repair
- Healing by secondary intention (no formal closure) eg if a deep stab/puncture wound, infection, contaminated or › 24 hours old
- Delayed primary closure - delay repair for 3–5 days to allow for proper cleaning eg for contaminated/complex wound. Usually needs debridement before closure. Consult MO/NP
- Also see Special sites/considerations, p. 165

Wound closure/repair[1,2,4]

- Consider if minor clean wound ‹ 12–18 hours old (or up to 24 hours if head wound)
- Do not close if - contaminated, infected/high risk of infection eg deep puncture wound, bite, sustained in water, retained FB, delayed presentation. Get MO/NP advice as needed

Wound closure options

Goal is to stop bleeding and achieve optimal cosmetic results without increasing risk of infection[2]

Option	Indications
Adhesive strips[8] eg Steri-Strip®	• Simple lacerations with slightly separated wound edges • Not suitable if movement/tension across the wound or if oozing blood • Skin tears in the elderly/wounds over the shin, even large ones • Benzoin compound tincture on the skin helps them stick
Tissue adhesive[2,8]	• Wounds ‹ 3 cm, with clean edges that are easily held together • DO NOT use around eyes, on mucosal surfaces, or if oozing blood
Sutures[4]	• Larger wounds, areas with high skin tension, over joints/moving areas • Do not suture if a lot of tension needed to bring it together eg tissue loss
Staples[9]	• Useful for linear wounds on scalp, trunk, arms, legs • DO NOT use on face, neck, hands or feet • Align + evert wound edges. Staple across wound, about 0.5–1 cm apart • Need staple remover on hand
Hair tie technique[2] If hair ≥ 3 cm long	• Scalp laceration repair ‹ 10 cm (cost effective, fast, less painful approach) • Twist together 3–7 strands of hair on 1 side of wound. Do the same on the other side. Interlock by twisting together 360°. No need to tie a knot • Secure intertwined hair bundles with a few drops of tissue adhesive

Preparation for wound repair[2,4]

- **Local anaesthetic** options:
  - lidocaine 1% - use for most wounds
  - lidocaine 1% with adrenaline (epinephrine) 1:100,000 - longer lasting effect + ↓ bleeding
  - topical lidocaine + tetracaine + adrenaline (epinephrine) eg Laceraine® gel - eg in children
  - Digital nerve block, p. 164 for fingers/toes
- **Debride as needed** - remove dead/dying tissue from in/around wound. Use scalpel or scissors
- **Do NOT** shave. Do not remove hair unless it interferes with wound closure or suture knots[1]

Once repaired

- Cover with occlusive/semi-occlusive dressing eg transparent film, gauze with petroleum gel, etc

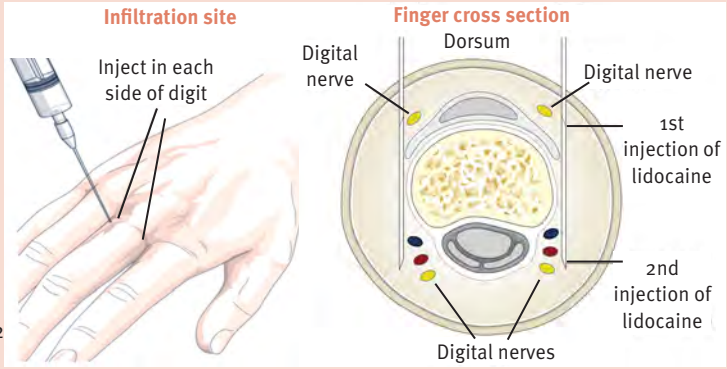
S4	Lidocaine			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1% 50 mg/5 mL	Subcut	up to 3 mg/kg (max. 200 mg)	stat
Offer CMI: It will hurt as it goes in. Report any drowsiness, dizziness, blurred vision, vomiting,tremors				
Note: Use lowest dose that results in effective anaesthesia. Inject via wound (less painful than through the skin)				
Contraindication: Local inflammation or infection				
Management of associated emergency: Ensure resuscitation equipment readily available. Consult MO/NP. See Anaphylaxis, p. 80 [10]				

S4	Lidocaine + adrenaline (epinephrine)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	Lidocaine 1% (50 mg) + adrenaline (epinephrine) 1:100,000/5 mL	Subcut	**Adult and child › 12 years** up to 7 mg/kg (max. 500 mg) *Dose as per lidocaine component*	stat
Offer CMI: It will hurt as it goes in. Report any drowsiness, dizziness, blurred vision, vomiting, tremors or anxiety. May cause pallor, tachycardia, hypertension, sweating or arrhythmias				
Note: Use lowest dose that results in effective anaesthesia. **Use with caution in fingers, toes + ears**				
Contraindication: Avoid in Raynaud's phenomenon or if PVD. Do not use on penis or tip of nose. Local inflammation or infection				
Management of associated emergency: Ensure resuscitation equipment readily available. Consult MO/NP. See Anaphylaxis, p. 80 [11]				

S3	Lidocaine + tetracaine + adrenaline (epinephrine) eg Laceraine®			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Gel	Lidocaine 4.2% + tetracaine 0.5% + adrenaline (epinephrine) 0.2% (4 mL)	Topical	**Adult** 0.5 mL/cm laceration (max. 3 mL) **Child** 0.1 mL/kg **1–3 years** max. 2 mL **› 3 years** max. 3 mL	stat
Offer CMI: Stinging can occur initially. Anaesthesia lasts for 45–60 minutes				
Note: Apply to open wound directly or with a cotton tipped applicator, then cover with occlusive dressing. Leave for 20–30 minutes (max. 60 minutes), then remove dressing and gel. Do not apply to intact skin - not effective. **No more than 4 doses in 24 hours**				
Contraindication: Child ‹ 1 year, use on eyelids, extremities (eg fingers, toes, ears, nose), mucous membranes, burns, wound › 7 cm or involving deep structures, contaminated wounds, bites/puncture				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [12]				

Digital nerve block[1,4]

- Using 25–27 G needle, infiltrate lidocaine 1% near the digital nerve on each side of the dorsum of the finger, avoiding the joint. Keep infiltration as close to the bone as possible
- Use approx. 1–2 mL of lidocaine on each side, drawing back regularly to avoid injecting into a blood vessel
- Wait at least 5 minutes for the anaesthetic to take effect
- **If toe** - use similar technique
- **If big toe** - also infiltrate lidocaine horizontally across dorsum of toe ie between the other 2 injection sites[13]



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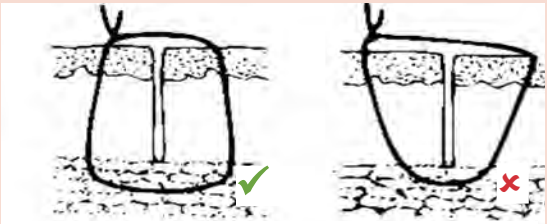
Suturing[2,4]

- For skin use polypropylene eg Prolene® or nylon eg Ethilon®

Area	**Size** (approx.)	**Removal**
Face, neck	5/0	3–5 days
Scalp	3/0	7–10 days
Digits, palm, sole	4/0, 5/0	10–14 days
Legs, trunk	3/0, 4/0	
Arms		7–10 days

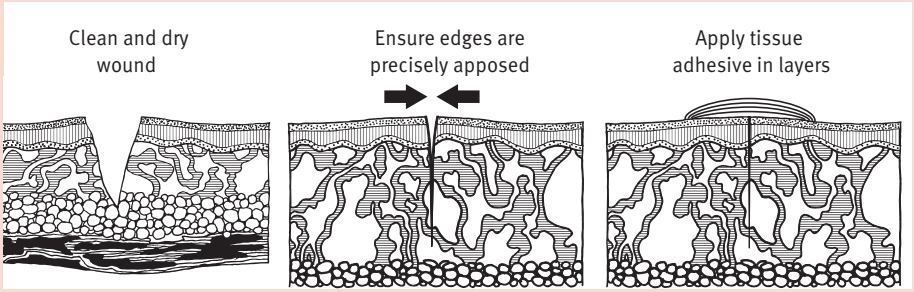
- Use smallest suture that will give sufficient strength to bring edges together and support the wound
- **Placing sutures:**
  - aim to evert skin edges, like puckered lips
  - enter skin at 90° angle, about 5 mm from the wound edge. Go straight down, across, then straight up and exit the skin about 5 mm from the other edge
  - place first suture halfway along the wound and continue to divide the wound in half. The first suture may lose tension when the others are completed. If so, take it out and re-insert new suture
  - when suturing a 'V' or 'Y' shaped wound, align the point of the 'V' first
  - if the wound crosses wrinkles or skin creases, line up as well as possible
- Take sutures out if they are in the wrong place and re-insert
- **If you are not happy repairing any wound, don't do it. Consult MO/NP**
- **Note:** sutures can cause a pink foreign body inflammation around the wound



Correct and incorrect methods of making a simple suture

Tissue adhesive[8] eg Dermabond®

- Do NOT allow adhesive to get into the wound - will act like a foreign body
- Bring wound edges together and apply very small amount of adhesive to surface
- Hold edges together for 30 seconds
- Repeat with layers of adhesive (at least 3), allowing time for drying between each application
- **Note:**
  - avoid contact around eyes - if applying to forehead pad the eye to avoid adhesive dripping into eye
  - do not use over bleeding wounds
  - avoid gluing yourself eg gloves, to the patient
- Does not require removal - comes off in 1–2 weeks



Special sites/considerations[4]	
Face[2]	• Only repair if confident of getting a good cosmetic result • Limit debridement - increased blood supply to face helps healing + could cause ↑ scarring • Be aware that there may be damage to facial nerves
Nose or ear[2]	• Consult MO/NP. Cartilage has poor circulation and prone to infection + necrosis
Lips[2,8]	• Lips swell +++ when wounded • Lacerations to inner lips will usually heal without intervention • If the wound crosses the edge of the lip onto normal skin (vermilion border), ensure it is realigned exactly. Place 1st suture at this border + mark border prior to anaesthetic, as may blur border
Inside mouth and tongue[8]	• Sutures not usually needed unless large laceration - consult MO/NP • Will look grey and sloughy after a few days. Advise mouth rinses after each meal
Eyelid and Eyebrow[2,8]	• If eyelid, consult MO/NP - may need ophthalmology referral. Also see Eye injury, p. 273 • Do not use tissue adhesive near eyes. Do NOT remove eyebrows • Use edges of eyebrow as landmarks. Put single suture at each margin first to ensure good alignment[2]
Hand and forearm[2]	• If suspected tendon, nerve, muscle, vessel, bone or nail bed injury, consult MO/NP - may need specialist review[2] • Take rings off - fingers swell after injury • Keep sutures to fingers a minimum, as they will pull out of the tissue as the finger enlarges. Most finger lacerations can be treated without sutures. Use Steri-Strips® carefully to keep wound edges approximated: – circumferential or tightly tensioned Steri-Strips® can cause vascular occlusion – apply a nonadherent dressing + bandage the whole finger so that it stays in a functional position of minimal flexion

Special sites/considerations (continued)	
Small laceration to finger tip	• Skin flap not lost: – reapply the flap over the wound and secure it loosely with Steri-Strips® – cover with a nonadherent dressing and bandage the finger to keep it straight – review in 2–3 days. Hopefully the flap will 'take' and act as a graft onto the wound. More often the flap will die off, but at least it covers the wound well until it heals • Skin loss - if ≤ 1 cm square treat with dressings, usually heal well. If › 1 cm consult MO/NP[8]
Crush injury or partial amputation of finger eg in hinge of door, hammer[8,14]	• **Consult MO/NP** • If nail lacerated/lifted - where/how much. MO/NP will advise if nail should be removed or replaced. If removed, keep nail as possible splint • Assess integrity of nail bed - if damaged needs meticulous repair. Poor technique results in a permanently split or deformed nail • Consider x-ray to look for an underlying fracture • Clean and apply sodium chloride 0.9% dressing to keep moist • If needed, put amputated part in a clean plastic bag and seal it. Put bag in a mix of crushed ice and water for transport. Do not get it wet/frozen. Send with patient when retrieved

5. Follow up

- Advise:[4]
  - if Steri-Strips® keep dry for 72 hours[8]
  - if wound repaired, leave dressing in place for 24 hours, then leave open to air.[4] Do not soak the wound (eg bath/swimming). Can have shower[9]
  - if wound at higher risk of infection or patient has diabetes/immunocompromised:
    - review in 2–3 days
  - elevate as needed to lessen pain/swelling
  - to return if signs of infection eg redness, pus, swelling, fever
  - when to return for sutures/staple removal. Tissue adhesive (including if used for hair), will come off by itself[2]
- If swab for MCS done, check results ± modify antibiotics if needed in consultation with MO/NP[6]

6. Referral/consultation

- Consult MO/NP as above

Subungual haematoma (blood under nail)[1]

- If significant pain drain blood from under the nail. Otherwise treat with ice and analgesia[2]
- To drain blood, put hole through nail - use needle or hot cautery method
- **Needle method:**
  - twirl 18–21 G needle with slow downward pressure until loss of resistance and drainage is seen (avoiding nail bed injury). Multiple holes may be needed for adequate drainage
- **Hot cautery method (do NOT use if acrylic nails, may combust):**
  - straighten the end of a paper clip and heat with a flame
  - place the hot end on the nail over the centre of the haematoma until hole formed
- Gently squeeze tip of finger to facilitate drainage
- Irrigate wound with sodium chloride 0.9%

Removal of small fish hook[1-3]

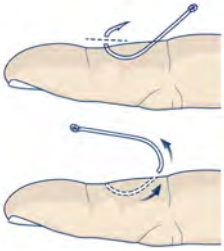
- Assess as per Acute wounds, p. 160, including tetanus status
- **Consult MO/NP** if involves - eye, large hook, deeper structures eg tendons, joints, nerves, vessels
- Clean with povidone iodine or chlorhexidine ± sodium chloride 0.9% irrigation prior to removal
- May need local anaesthetic ± antibiotics. See Acute wounds, p. 160
- Wear protective eye wear (patient + clinician) if pulling/cutting hook. Cover exposed barbs if multiple prongs ie in addition to the embedded hook

Method 1 - Push through and cut off

- Always have grip on at least 1 end of the hook with forceps, so as not to lose it

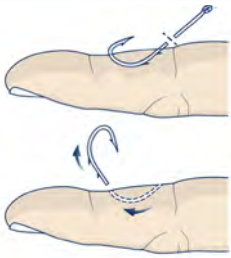
Single barb embedded

Push hook through skin until barb exposed, cut barb off and pull hook back out as it went in



Multiple barbs embedded/lure

Cut eye of hook off and push then pull hook all the way through



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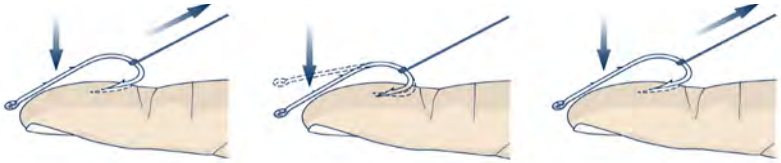
Method 2 - String yank eg if superficially embedded

- Do not use on body part that is not fixed eg earlobe
- Stabilise finger/body part on flat surface
- Loop a length of string/fishing line around the bend in the hook
- Push down on the shank (long arm) of the hook, to disengage the barb, thereby moving it into the original path of the barb
- Maintaining downward pressure, use a quick, firm tug on the string to remove the hook
- In most cases local anaesthesia is not needed



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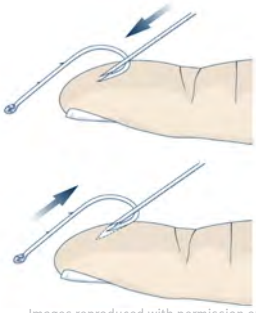
Method 3 - Needle cover

- Insert an 18 G needle along the barbed side of the hook, with the bevelled part pointing towards the inside of the hook's curve (along same puncture wound of hook)
- Pull gently on the shank to disengage the barb inside of the hook's curve
- Then push the needle gently downwards until its hole locks over the barb
- Rotate the hook shank slightly downward and the hook curve upwards until the needle and hook are removed through the original wound



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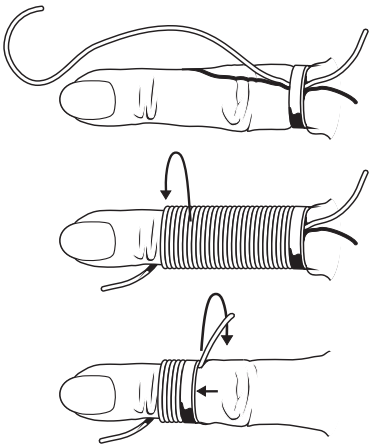
Removal of tight ring[1,2]

- Elevate + apply ice until ring removal initiated to ↓ swelling
- Use thread eg 2–3/0 nylon suture material, string, dental floss or thin elastic
- Feed 1 end of thread under ring (a paper clip makes a good hook)
- Tightly wrap the finger with the thread - from proximal to distal end, while keeping tension on the thread
- Pull the proximal end of the thread towards the tip of the finger - the thread will start to unwind as you pull it and push the ring towards the tip
- Gradually the ring will slide over the compressed finger
- Several repetitions of the process may be required
- If unsuccessful use ring cutter



HMP Water related wounds - adult/child

Recommend[1]

- Monitor wound infections related to water immersion closely. Can progress rapidly

Background[1]

- Includes wounds immersed in:
  - **fresh water or brackish water/mud** eg creeks, estuaries, mangrove swamps, aquariums
  - **sea water** including coral cuts

1. May present with[1]

- Wound sustained with water immersion or mud eg boat propeller, prawn/crayfish shells, fish spines, coral cut, aquarium objects, surfing, fish hook
- Marine animal bite eg shark, crocodile
- ± signs of infection eg redness, pus, fever

2. Immediate management[1]

- Initial management as per Acute wounds, p. 160
- Do vital signs
- Screen for Sepsis, p. 62
- As needed, also see Penetrating marine injuries, p. 172

3. Clinical assessment[1]

- Get history and examine wound as per Acute wounds, p. 160, including:
  - when/how the wound occurred
  - type of water immersion eg fresh water/brackish/mud or sea water
  - look for signs of infection eg fever, redness, swelling, pus, Cellulitis, p. 291
- Get past history, including **risk factors for severe infection** eg:
  - immunocompromised (eg from diabetes, cancer, liver disease), iron overload
- If wound infection suspected, take swab for MCS. See How to take a wound swab, p. 318

4. Management[1]

- Offer analgesia. See Acute pain, p. 32
- Manage as per Acute wounds, p. 160 +
  - irrigate/clean well and debride as needed - **important to prevent infection**
  - do not suture - allow to heal by secondary intention. Consult MO/NP as needed for advice
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- **Consult MO/NP promptly (may order IV/oral antibiotics ± retrieval) - if any of:**
  - systemically unwell eg malaise, fever, chills (insert IVC + blood cultures)
  - deeper tissues (eg bones, tendons or joints) involved, or unsure
  - risk factors for severe infection (as above)
- **Otherwise, give oral antibiotics if:**[1]
  - mild/localised wound infection **OR** ↑ risk of infection eg:
    - traumatic wound and significantly contaminated, or needs surgical management, OR
    - marine bite, especially if:
      - on hand, feet, face or puncture wound OR
      - › 8 hours delay to medical care

Oral antibiotics if indicated[1]

Fresh water/brackish

Trimethoprim + sulfamethoxazole

If soil or sewage contaminated eg floods, natural disasters **ADD** metronidazole

Sea water

Doxycycline if ≥ 8 years OR ciprofloxacin if ‹ 8 years

PLUS

If remote community in North Qld, NT, WA **OR** previous MRSA infection/endemic setting → Trimethoprim + sulfamethoxazole

OR

If non-remote community **and NO** prior MRSA infection → Flucloxacillin# OR cefalexin if a child*

#If allergy to penicillins replace flucloxacillin with cefalexin (if hypersensitivity eg rash), or trimethoprim + sulfamethoxazole if severe or immediate allergic reaction
***If unable to swallow capsules, as cefalexin liquid tastes better than flucloxacillin liquid

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 320 + 1600 mg bd **Child ≥ 1 month** 8 mg/kg (max. 320 mg) bd *Dose as per trimethoprim component*	5 days
Oral liquid	40 + 200 mg /5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2]				

S4	Metronidazole	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Tablet	200 mg, 400 mg	Oral	**Adult** 400 mg bd	5 days
Oral liquid	200 mg/5 mL		**Child** 10 mg/kg (max. 400 mg) bd	

Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take tablet with food to reduce stomach upset. Take oral liquid 1 hour before food for better absorption. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]

S4	Doxycycline	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose			Duration
Tablet	50 mg 100 mg	Oral	**Adult** 100 mg bd			5 days
			Child ≥ 8 years			
			‹ 26 kg	50 mg	bd	
			26–35 kg	75 mg		
			› 35 kg	100 mg		

Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity

Pregnancy: Safe in the first 18 weeks

Contraindication: Serious allergy to tetracyclines. Taking oral retinoids. After 18 weeks of pregnancy

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]

S4	Ciprofloxacin	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Tablet	250 mg 500 mg	Oral	**Child ‹ 8 years** 12.5 mg/kg (max. 500 mg) bd	5 days

Offer CMI: Take 1 hour before or 2 hours after meals. Drink plenty of fluids. Do not have dairy, zinc, iron or calcium within 2 hours. Avoid sun exposure. May cause rash, itch, nausea, vomiting, abdominal pain or indigestion. Stop taking if tendon pain or numbness/tingling in fingers or toes. Can cause severe diarrhoea (colitis) due to *C. difficile*

Note: If renal impairment, epilepsy seek MO/NP advice. **There is no liquid for children.** Disperse one 250 mg tablet in 5 mL water to make approx. concentration of 50 mg/mL. As it has a bitter taste, follow dose with flavoured drink eg juice

Contraindication: Serious allergy to quinolones, peripheral neuropathy

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5,6]

S4	Flucloxacillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days
Offer CMI: Take on an empty stomach ½ hour before or 2 hours after food. May cause diarrhoea, nausea or thrush. Can cause cholestatic hepatitis				
Contraindication: History of cholestatic hepatitis with dicloxacillin or flucloxacillin. Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,7]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg, 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days
Oral liquid	250 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,8]				

5. Follow up

- Follow up results of MCS if taken. If needed, modify antibiotics in consultation with MO/NP
- Advise return for review in 1–2 days +
  - monitor wound closely for signs of infection eg redness, swelling, increased pain. Infection can spread rapidly
  - **immediately return if:**
    - any signs of localised infection - start antibiotics if not already. Consult MO/NP if worsening
    - systemic features eg fever, malaise - **urgently consult MO/NP**

6. Referral/consultation

- Consult MO/NP as above

HMP Penetrating marine injuries - adult/child
Stingray, spiny fish, sea urchin

Background[1-3]

- **Stingray wounds to the trunk can be life-threatening** - do not remove barb
- Venom in stingray barbs + some spiny fish can cause severe pain in the wound eg stonefish, lionfish, catfish, bullrout, scorpion fish, rabbitfish, scat fish[4]

1. May present with[1,3]

- Puncture or open wound, usually on hands or feet ±
  - barb or spine(s) in situ
  - intense pain ± rapid swelling
  - systemic symptoms eg weakness, vomiting, headache[5]
- Sea urchin - multiple spines. Pain not usually severe
- Delayed presentation:
  - infection eg redness, pus, fever
  - rarely tissue necrosis (stingray barb)

2. Immediate management[1-3]

- **Do NOT remove embedded barb from chest or abdomen:**
  - VERY CAREFULLY place padding around barb. Apply pressure to control any bleeding
  - see Chest injuries, p. 137 or Abdominal injuries, p. 147
  - consult MO/NP urgently + arrange retrieval
- **For pain:**
  - hot water immersion - put affected limb in hot water for up to 90 minutes. First check temperature on other limb to avoid scald
  - offer analgesia - ibuprofen PLUS paracetamol. See Acute pain, p. 32
    - if above ineffective, consider:
      - lidocaine 1% infiltrated at wound site (do not use with hot water)
      - opioid

3. Clinical assessment[1,3,6]

- Do vital signs
- Do assessment as per Water related wounds, p. 168 +
  - type of marine animal if known
  - x-ray, or USS if available, to exclude retained barb/spines eg if sea urchin

4. Management[3-6]

- Consult MO/NP if:
  - ineffective pain relief or severe symptoms - MO/NP may consult toxicologist
  - penetrating wound to chest, abdomen or joints OR large/deep penetrating wound
  - retained barbs/spines
  - other indication(s) as per Water related wounds, p. 168
- Clean + irrigate wound thoroughly - **important to prevent infection:**
  - infiltrate lidocaine 1% prior to wound care
  - remove any spines/barbs with forceps - carefully as they break/disintegrate easily
  - incision/debridement as needed
  - do not suture

- Give antibiotics if indicated. See Water related wounds, p. 168
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- Discharge home if no systemic symptoms after 2 hours of observation + pain controlled[4]

S4	Lidocaine			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1% 50 mg/5 mL	Subcut	up to 3 mg/kg (max. 200 mg)	stat
Offer CMI: It will hurt as it goes in. Report any drowsiness, dizziness, blurred vision, vomiting, tremors				
Note: Use lowest dose that results in effective anaesthesia				
Contraindication: Local inflammation or infection				
Management of associated emergency: Ensure resuscitation equipment readily available. Consult MO/NP. See Anaphylaxis, p. 80 [7]				

5. Follow up[1,3,4]

- Follow up as per Water related wounds, p. 168 + check retained spines are removed

6. Referral/consultation

- As above

HMP Human and animal bites (and tooth knuckle) - adult/child

Recommend[1]

- Bites often become infected. Ensure thorough cleaning, irrigation, debridement, elevation and immobilisation

1. May present with[1]

- Tooth knuckle injury - hand is lacerated by another persons teeth eg a punch in the mouth
- Human or animal bite

2. Immediate management

- Initial management as per Acute wounds, p. 160
- Do vital signs
- Screen for Sepsis, p. 62
- If bite from a bat, or monkey (eg Bali), see Bat bite/scratch, p. 177 + **contact MO/NP urgently**
- If bite from marine animal, see Water related wounds, p. 168

3. Clinical assessment[1]

- Get history and examine wound as per Acute wounds, p. 160 +
  - how/when the bite happened. If animal, what type
  - carefully examine for:
    - deeper injuries, dead tissue, retained foreign bodies eg small teeth from animal
    - signs of infection eg fever, redness, swelling, pus, Cellulitis, p. 291
  - if human, was there any blood exposure - prophylaxis for hep B/HIV, p. 460 may be indicated
- Get past history including - diabetes, alcoholic liver disease, immunocompromised
- If suspected wound infection, take swab for MCS. See How to take a wound swab, p. 318

4. Management[1]

- Offer analgesia. See Acute pain, p. 32
- Manage as per Acute wounds, p. 160 +
  - irrigate/clean well and debride as needed - **important to prevent infection**
  - do not suture. Allow to heal by secondary intention. Consult MO/NP as needed for advice
  - elevate and immobilise affected limb
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- If human bite(s) consider Domestic and family violence, p. 232
- **Consult MO/NP promptly** (may order IV/oral antibiotics ± retrieval/surgical drainage) - **if any of**:
  - systemically unwell eg malaise, fever, chills, ↓ range of motion, pus (insert IVC + blood cultures)
  - deeper tissues (eg bones, tendons or joints) involved, or unsure
  - wound over fracture present/suspected
- **Otherwise, give oral antibiotics if**:
  - mild/localised wound infection **OR**
  - risk of wound infection high (**presumptive** treatment) ie:
    - › 8 hours delay to medical care
    - puncture wound that cannot be debrided adequately
    - is on hands, feet or face
    - diabetes, alcoholic liver disease or immunocompromised
    - cat bite

Oral antibiotics if indicated[1]

Remote community in North Qld, NT, WA OR if allergic to penicillins	Non-remote community[#] **and NOT** allergic to penicillins
Trimethoprim + sulfamethoxazole **AND** Metronidazole	Amoxicillin + clavulanic acid

#If prior MRSA infection or MRSA suspected treat as per Remote community in North Qld, NT, WA

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd **Child ≥ 1 month** 4 mg/kg (max. 160 mg) bd *Dose as per trimethoprim component*	**Presumptive** 3 days **Localised infection** 5 days
Oral liquid	40 + 200 mg /5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2]				

S4	Metronidazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg, 400 mg	Oral	**Adult** 400 mg bd	**Presumptive** 3 days **Localised infection** 5 days
Oral liquid	200 mg/5 mL		**Child** 10 mg/kg (max. 400 mg) bd	
Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take tablet with food to reduce stomach upset. Take oral liquid 1 hour before food for better absorption. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

S4	Amoxicillin + clavulanic acid			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	875 mg + 125 mg	Oral	**Adult** 875 + 125 mg bd **Child ≥ 2 months** 22.5 mg/kg (max. 875 mg) bd *Dose as per amoxicillin component*	**Presumptive** 3 days **Localised infection** 5 days
Oral liquid	400 mg + 57 mg/5 mL			
Offer CMI: Take with food. May cause rash, diarrhoea, nausea or thrush. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]				

5. Follow up[1]

- Follow up results of MCS if taken. If needed, modify antibiotics in consultation with MO/NP
- Advise to:
  - be reviewed daily if antibiotics given, **especially tooth knuckle injuries.** If swollen, decreased range of motion, pus or not improving consult MO/NP - may need retrieval
  - monitor for signs of infection eg redness, swelling, increased pain. Return to start antibiotics if localised infection. Consult MO/NP if worsening

6. Referral/consultation

- Consider referral to physiotherapist/occupational therapist for hand therapy after tooth knuckle injury

HMP Bat bite/scratch - adult/child
Australian bat lyssavirus (ABLV), rabies

Recommend[1]

- **Urgent Post-Exposure Prophylaxis (PEP)** - prompt wound management, rabies vaccine ± human rabies immunoglobulin
- **Don't pat the bat!** Assume all Australian bats (alive/dead) have lyssavirus which causes rabies
- Avoid land animals in rabies enzootic countries, including Bali, Indonesia eg dogs, cats + monkeys around temples

Background[1]

- If rabies develops, it is almost always fatal

1. May present with[1]

- Any scratch, bite, nibble or lick from:
  - bat in Australia or overseas (alive or dead)[2]
  - land dwelling mammal in rabies enzootic country eg monkey, dog, cat

2. Immediate management[1]

- Immediately wash bite wounds + scratches with soap and copious water **for at least 15 minutes**
- Wash with antiseptic with anti-virus action eg povidone iodine (Betadine®).[2] **Do not suture**
- If mucous membrane (eyes, nose, mouth) exposed, **flush with copious water**[1]

2. Clinical assessment[1,2]

- Get history, including:
  - type of animal, date, place, time of exposure (even if significant time has passed)
  - was the bat/animal displaying unusual behaviour; did it look sick/become sick
  - prior rabies vaccine(s), when
  - allergies, weight, immunocompromised
  - **type of exposure** + location, size, number of wounds:
    - minor scratch or abrasion - with or without bleeding
    - nibbling of uncovered skin
    - transdermal bite(s) or scratch(es)
    - contamination of broken skin **OR** mucous membrane (eye, nose, mouth) with saliva from licks
    - direct contact with bat(s) where bite or scratch may not be apparent

4. Management[1,2]

- **Get URGENT advice from Public Health Unit** ± MO/NP **in ALL CASES who will advise + arrange PEP:**
  - see rabies vaccine/immunoglobulin indications + doses and administration advice in the *Australian immunisation handbook*
- If possible (and safe), the bat should be tested for rabies - Public Health Unit will advise
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- Consider antibiotics if indicated, as per Bites, p. 174
- Offer fact sheet eg http://conditions.health.qld.gov.au/HealthCondition/condition/14/217/10/australian-bat-lyssavirus

5. Follow up

- As per Public Health Unit/MO/NP

6. Referral/consultation[3]

- Both clinical exposure and laboratory confirmed lyssavirus and rabies are notifiable ①

Burns

HMP Burns - adult/child

1. May present with

- Burn eg boiling water, fire, chemical, electrical, lightning

2. Immediate management[1-3]

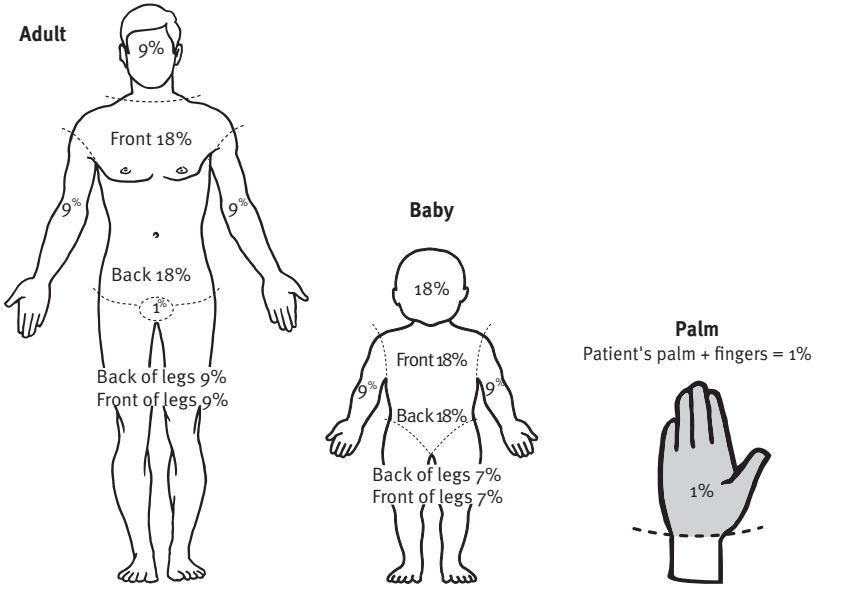
- **DRSCABCDE** as per Traumatic injuries, p. 131. Specific to burns, also check:

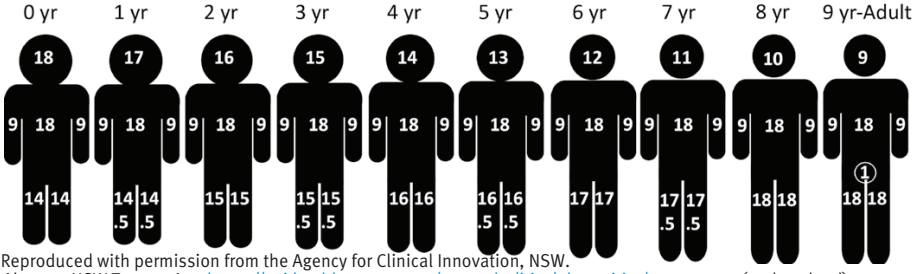
Danger	• **If chemical burn** eg acid/bitumen/cement - **use PPE** • If safe, stop burning process + remove injury source eg charred/contaminated clothing, hot water
Airway	• **Any** facial/neck burns, or signs of **inhalation injury** eg: – difficulty breathing, stridor, hoarse voice, SOB, harsh cough, wheeze – soot in saliva/sputum, around nose/mouth, singed nasal hair/eyebrows/lashes – burn in enclosed space • **If any of above, airway at risk**. Consider LMA, p. 54 ± early intubation • Maintain c-spine immobilisation, p. 144 especially if explosion or electrical burns
Breathing	• O_2 to maintain SpO_2 › 95% if needed • **Note:** SpO_2 can be unreliable if burn in enclosed space due to carbon monoxide. If carbon monoxide poisoning suspected - give O_2 100% • Fully expose chest - is RR, effort + expansion adequate • If circumferential chest/abdominal burn - can restrict breathing. **Urgently consult MO/NP/RSQ** - may need escharotomy
Circulation	• HR, BP, colour, T + capillary refill time of unburnt skin

- **Cool burn with cool running water for ≥ 20 minutes** - effective for 3 hours after:[4-6]
  - **if limited water/access** - immerse in water, spray with cool water, use wet towels/pads (ensure they remain cool). Do not use ice/iced water
  - **if chemical burn** - brush away powdered chemical. Irrigate with copious amounts of cool running water/shower - **for at least 60 minutes** + while pain persists. **Note:** avoid washing chemical over unaffected skin/eyes. See Chemical burns, p. 184
  - **prevent hypothermia** while cooling:
    - ↓ duration if large burn or multiple trauma. May cause rapid heat loss
    - keep rest of body warm eg space blanket/warm blankets + stop cooling if T ‹ 35
- **Remove jewellery and clothing as soon as possible eg rings, belt, watch:**[3]
  - to prevent ischaemic necrosis of limbs + to visualise burns
- **Get rapid history:**
  - how (mechanism), when + what were they burnt with[1]
  - any first aid, what/how long, were clothes removed
- **Offer analgesia.** See Acute pain, p. 32
- **Assess if severe burn ie:**
  - compromised breathing, inhalation injury, high voltage electrical injury
  - **Total body surface area (TBSA) of burn** (using **Rule of Nines**):[1-4,6,7]
    - › 10% TBSA **child** ‹ 18 months
    - › 15% TBSA **child** › 18 months
    - › 20% TBSA **adult**

Rule of Nines[1-4]

- **Note:** do not include epidermal burn in % TBSA. See **Burn depth** (next page)





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Also see NSW Trauma App https://aci.health.nsw.gov.au/networks/itim/about_itim/trauma-app (to download)

If severe burn[1-3]

- **Urgently consult MO/NP/RSQ + arrange retrieval**
- MO/NP will contact Burns Unit, p. 181 for early advice
- Insert IVC x 2 largest bore possible/Intraosseous, p. 55
  - burns are wet and slippery. Consider suturing IVC in situ + secure with bandage
  - insert through burn if necessary. Remove in 24 hours
- **Start fluid resuscitation in consultation with MO/NP if:**
  - adult › 20% TBSA, child › 10% TBSA
  - **note:** fluid resuscitation of inhalation burns may cause swelling of the airway - contact Burns Unit first
  - do weight if possible, or estimate eg if child, see Estimated weight/age, p. 47
- **Adult + child** - start IV Hartmann's, use modified Parkland's formula:
  - **4 mL x weight (kg) x %TBSA burn = total fluid for 1st 24 hours**
  - give 1/2 in 1st 8 hours post injury, then
  - 1/2 over next 16 hours

  - **note:** if child - additional maintenance fluids required. MO/NP will advise
  - keep strict fluid balance
- **Insert IDC - measure urine output hourly. Aim for:**[1-3]
  - adult 0.5 mL/kg/hour
  - child 1 mL/kg/hour
- **Titrate IV fluid rate based on previous hours output.** If urine:
  - ‹ 0.5 mL/kg/hour - ↑ IV fluids by 1/3 of current hourly amount **OR**
  - **adult** › 1 mL/kg/hour, **child** › 2 mL/kg/hour - ↓ IV fluids by 1/3 of current hourly amount
- **Assess Burn depth**[1]

Burn depth

Depth	Epidermal	Superficial dermal	Mid-dermal	Deep-dermal	Full thickness
Colour	Red Warm to touch	Pink	Dark pink	Pale pink, blotchy red	White Charred
Capillary refill time	‹ 2 seconds	Slower	Sluggish › 2 seconds	Sluggish to absent	None
Sensation	Painful	Very painful Raw, sensitive	Painful	↓ sensation	Nil
Blisters	No	Small	Yes	Large, rupture within hours	No

Note: aside from obvious epidermal or full thickness burns, it is difficult to accurately estimate depth + extent in first 48–72 hours[1,2]

- Assess + manage other injuries. See secondary survey in Traumatic injuries, p. 131
- **MO/NP/RSQ will advise ongoing management until retrieved.** May include:[1-4,6]
  - ECG, chest x-ray
  - NGT
  - bloods/i-STAT - FBC, UE, CK, LFT, BGL, group and hold, coagulation studies, lipase, carboxyhaemoglobin
- **If circumferential limb burn - keep elevated:**
  - monitor capillary refill time, pulse, warmth + colour distal to burn
  - if cool to touch, weak/no pulse, urgently contact MO/NP/Burns Unit, p. 181 - may need escharotomy
- **If head/neck burns** - nurse head up + elevate burnt limbs where possible[1]
- **Wound care prior to retrieval:**[1]
  - clean with sodium chloride 0.9% or chlorhexidine 0.1%
  - cover burns with plastic film eg Cling Wrap® - lay longways, **do not wrap circumferentially.** Suitable for up to 8 hours
  - use paraffin based dressing for face
- **Monitor closely until retrieval:**[1]
  - vital signs - be alert to RR ‹ 10 or › 20
  - pain level + analgesia
  - keep patient warm, cover to prevent heat loss

Referral to Burns Unit required (any burn - severe or minor)

- Adult › 10% TBSA
- Child › 5% TBSA
- Full thickness › 5% TBSA
- Inhalation burn injury
- Associated trauma
- Circumferential (limb or chest)
- Electrical burns, including lightning
- Chemical burns
- Burns to face, hands, feet, genitalia, perineum, major joints
- Non-accidental burn (including suspected)
- Pre-existing illness
- Pregnant
- Young child or elderly

Qld contacts (if outside of Qld, contact local Burns Unit)

- **Adult Burns Centre RBWH**. If urgent, page burns registrar ✆ 07 3646 8111
- **Qld Paediatric Burns Centre**. If urgent, page burns registrar ✆ 07 3068 1111
- **Townsville University Hospital** for all children North of Mackay with ‹ 50% TBSA. If urgent, page Paediatric or general surgical registrar ✆ 07 4433 1111

3. Clinical assessment

- See **Immediate management**
- Consider non-accidental injury, particularly if child or elderly. See Domestic and family violence, p. 232 + Child protection, p. 539 as indicated

4. Management[1-3]

- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- Refer to Burns Unit if indicated or for advice
- Ongoing management as per MO/NP/Burns Unit ±
  - Minor burns, p. 182 or
  - Chemical burns, p. 184

5. Follow up

- As per MO/NP/Burns Unit

6. Referral/consultation

- RBWH Adult Burns Centre resources/forms https://metronorth.health.qld.gov.au/rbwh/healthcare-services/burns

HMP Minor burns - adult/child

1. May present with[1,2]

- Minor burn - painful, moist, brisk capillary refill time ± blisters +
  - ‹ 10% TBSA in **adult**; ‹ 5% TBSA in **child**

2. Immediate management[1]

- Cool burn with cool running water ≥ 20 minutes within the first 3 hours

3. Clinical assessment

- Assess as per Burns, p. 178
- Contact Burns Unit if indicated, p. 181 or for advice for any burn

4. Management[1,2]

- Offer analgesia. See Acute pain, p. 32
- Clean with sodium chloride 0.9% or aqueous chlorhexidine 0.1%
- Remove debris + loose skin
- Rupture + debride blisters if thick walled, › 2 cm, or over joints. If already ruptured - carefully trim blister skin
- Assess:
  - Burn depth, p. 180 (should be painful + have brisk capillary refill)
  - moisture (to help select dressing)
  - **note:** if **'deeper' small burn**, contact Burns Unit, p. 181 for dressing advice
- Use table below to guide **Initial dressing options**
- Dress **as infrequently as possible** to allow healing (unless concerned about infection)

Initial dressing options

Burn	Primary dressing	Secondary layer
Epidermal – red, painful, skin intact	• **Moisturisers, gels to soothe** eg Vaseline®	• Not needed
Superficial dermal – pale pink to red – blisters – painful, raw – brisk capillary refill	• **Absorbent dressings** - foams, alginates, paraffin gauzes • **Silicone dressings** eg Mepitel® • **Silver products if contaminated*** eg Acticoat®	• Significant exudate expected in 1st 72 hours - use absorbent dressing eg gauze, to manage • Secure with crepe bandage, tubinet or tubigrip (ensure non-constrictive)

More information https://metronorth.health.qld.gov.au/rbwh/healthcare-services/burns
Note: *if contaminated eg dirt, river/dam water, consider silver/other antimicrobial dressings or silver sulfadiazine cream (if dressings not available) + frequent assessment in initial days for signs of infection[2]

- Advise patient:
  - keep dressing intact + dry until reviewed
  - elevate as appropriate to ↓ swelling
  - epidermal burns will mostly heal within 3–7 days, superficial burns should heal within 10–12 days
  - take paracetamol for pain as needed
  - stop smoking + eat a well-balanced diet to aid healing, offer fact sheet (link above)

S4	Silver sulfadiazine			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Cream	1%	Topical	**Adult and child › 2 months** Apply 3–5 mm thick layer	3 days max. after burn
Offer CMI: May cause burning, itch or rash. Avoid contact with eyes				
Note: Discard tube 7 days after opening. 1 tube per person				
Pregnancy: Avoid in last month of pregnancy				
Contraindication: Premature infants, ‹ 2 months of age, or serious allergy to sulfonamides				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,4]				

5. Follow up[1,2]

- **Advise return for review** in 7 days, or earlier if needed eg:
  - excess exudate/dressing strikethrough/dressing fallen off
  - infection suspected eg ↑ pain/exudate/redness, swelling, fever, chills, or rash:
    - consult MO/NP + take swab for MCS. See How to take a wound swab, p. 318
- **Dressing changes:**
  - offer analgesia prior, see Acute pain, p. 32
  - reassess Burn depth, p. 180 + moisture
  - consider low adhesive paraffin dressing once ↓ exudate/risk of infection
  - contact MO/NP/Burns Unit if:
    - slow to heal eg poor progression at 5–7 days; or unhealed at 10–14 days
    - depth looks deep dermal or full thickness

6. Referral/consultation

- As above

HMP Chemical burns - adult/child

Recommend

- Contact Poisons Information Centre (PIC) ✆ 13 11 26 (24 hours) or Burns Unit, p. 181 for burns caused by chemicals eg hydrofluoric acid, cement, phosphorus, bitumen, petrol, other alkalis + acids

1. May present with

- History of exposure to chemical agent + burn/excoriation ± pain, signs of exposure[1]
- **Systemic symptoms** eg if hydrofluoric acid - hypotension, arrhythmias, ↓ LOC, seizures[2]

2. Immediate management[1,2]

- **DRSCABCDE** as per Burns immediate management, p. 178
- **Strict use PPE eg protective overalls, gloves + glasses**
- Remove + bag contaminated clothing + brush away powdered chemical
- Irrigate with copious amounts of cool running water, consider shower:
  - avoid washing chemical over unaffected skin/eyes
  - continue irrigating for at least 60 minutes + while pain persists
- If eye(s), irrigate with tap water or sodium chloride 0.9% + go to Chemical burn to eye, p. 272
- Offer analgesia. See Acute pain, p. 32
- Get rapid history, including:
  - how, when + what were they burnt with
  - any first aid, what and for how long
  - identify **active ingredients and strengths** or refer to material safety data sheet (MSDS)
- Urgently consult MO/NP **+ PIC ✆ 13 11 26 (24 hours)** for management advice + details regarding product involved ie pH

Hydrofluoric acid[2,3]

- **Extremely toxic - maintain PPE standards**
- Ask about/check:
  - duration of exposure, body surface area exposed + has it been inhaled or ingested[2]
  - concentration %. **Note:** industrial strength can be fatal
  - onset of symptoms - can develop several hours after contact (up to 24 if < 10% concentration)
- MO/NP/PIC may order/advise:[2]
  - calcium gluconate - IV if systemic symptoms, NEB if inhalation, topical if dermal
  - i-STAT - K, Ca, Mg, VBG
  - ECG + continuous cardiac monitoring
  - retrieval/hospitalisation
- If not retrieved (dermal only, with low %, over small area) observe for 6 hours:
  - if asymptomatic + normal electrolytes, discharge in collaboration with MO/NP

Bitumen burns[4,5]

- Do not remove bitumen - removal may cause tissue injury
- If circumferential hardened bitumen, elevate limb + urgently contact MO/NP/Burns Unit - who may advise to soften ± split hardened areas eg with orange oil (De-Solv-It®) or petroleum jelly
- **Do not** remove bitumen from the eye. Urgent retrieval for specialist management
- Ongoing management as per MO/NP/Burns Unit

- If not retrieved, MO/NP/Burns Unit may advise:
  - remove small areas gently as above. **Note:** any remaining bitumen will naturally fall off in time due to re-epithelialisation

Unscheduled	**Calcium gluconate**			**Prescribing guide**
RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	2.2 mmol/ 10 mL	IV	**Adult** 30 mL **Child** 0.6 mL/kg (max. 30 mL)	stat Inject undiluted slowly over 3–10 minutes in **a large peripheral vein** with ECG monitoring
		NEB	1 mL	stat
Gel	2.5%	Topical	Apply thick coating	stat Repeat 15 minutely until pain has stopped
Preparation: NEB dilute with 3 mL of sodium chloride 0.9% and nebulise with air or O_2 **Topical** if gel not available - mix 1 ampoule with 30 g water soluble gel eg KY Jelly®				
Offer CMI: To counteract/offset the effects of hydrofluoric acid				
Note: High risk medicine - rapidly fatal in overdose. Extravasation can cause tissue necrosis				
Contraindication: Subcut and IM route				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,6-8]				

3. Clinical assessment

- As per **Immediate management**

4. Management

- If severe burn continue to manage as per Burns, p. 178
- See Minor burns, p. 182 for dressing options

5. Follow up

- As per MO/NP/Burns Unit

6. Referral/consultation

- As above

Environmental emergencies

HMP Electrocution/electric shock - adult/child

1. May present with[1,2]

- Electrical exposure
- Lightning strike
- Burns ± trauma
- Electrical weapons eg Taser® - negligible risk of injury in healthy person

2. Immediate management[1,3]

- **Call 000 immediately** if patient still in contact/near electrical source - assume source is live
- Emergency services will switch power off + give advice

Do NOT approach patient until SAFE

High voltage from powerlines, train lines, industrial generators - HIGH DANGER

- **Stay away at a safe distance - at least 10 m from electricity source (or > 25 m if fire nearby)** eg downed powerlines, or anything else in contact near the power (eg car, flood water), or as directed by emergency services:
  - high danger for rescuers to get electrocuted - without perceiving they are close to the source
  - electricity can travel through wet ground, and 'jump' across air and smoke for many metres
  - high voltage can cause instant death if a flash/arcing occurs
  - tell person to stay in a vehicle in contact with power source, as car will be 'live'. Rescuer not to approach vehicle until power off
- **Do not get closer until disconnection of power is confirmed** and the line is grounded on both sides. High voltage electrician, **fire and rescue or SES can provide this - not healthcare providers**

Household electricity

- Electrical source **must be turned off and protected against it being switched on again**:
  - ensure person or lock is at the fuse box where electricity has been switched off OR power plug pulled and loose end taken with the rescuer
- If not possible, ask for support to remove electrical cables from the patient using dry timber or rubber (non-conducting). This task is risky and **should ideally be performed by an electrician, fire and rescue person or SES - not healthcare providers**

- **DRSCABCDE as per** Traumatic injuries, p. 131
- **If cardiac arrest** see BLS, p. 44. Do prolonged CPR - more likely to recover than other causes[1]
- Urgently consult MO/NP for all electrical injuries
- Do:
  - vital signs + continuous cardiac monitoring
  - ECG
  - insert IVC
- **If hypotensive** - suspect internal injury:
  - give fluid bolus IV sodium chloride 0.9% 10–20 mL/kg
  - repeat as advised by MO/NP

3. Clinical assessment[1,2]

- **Ask patient/witness:**
  - type, duration and voltage of electrical exposure if known
  - other circumstances of injury eg fall, in water
  - loss of consciousness or seizures
- Do:
  - **Head to toe assessment** as per secondary survey in Traumatic injuries, p. 131
  - look for entry and exit wound
  - urinalysis - check for blood

4. Management[1]

- MO/NP will guide management. Retrieval/hospitalisation if:
  - ECG changes, arrhythmias
  - high voltage exposure
  - loss of consciousness, seizures
  - entry and exit wound present - **suspect serious deep tissue injury** even if looks minor
  - severe pain/tenderness over limb - monitor closely for Compartment syndrome, p. 159
  - numbness or palsy - indicates critical injury
  - visual disturbance - indicates eye injury
  - trauma/secondary injury/burns
  - patient has pacemaker or implantable defibrillator (will need function checking before discharge)
- Treat injuries/Burns, p. 178 as needed. Refer all electrical burns to Burns Unit, p. 181
- Offer analgesia. See Acute pain, p. 32

If brief low voltage exposure (eg household electric current) + no water contact

- MO/NP may advise discharge if:[2]
  - asymptomatic
  - no loss of consciousness
  - ECG + urinalysis normal

5. Follow up

- If not retrieved advise:
  - possibility of delayed complications - memory deficit, mood and sleep disturbance, sensory loss, poor concentration, cataracts and macula diseases[1]
  - review at next MO/NP clinic

6. Referral/consultation[1,2]

- Neurology or ophthalmology referral if progressive or delayed onset neurological or eye complications

HMP Decompression illness (DCI/bends) - adult/child

Recommend[1,2]

- All divers who become unwell should be discussed with a diving medicine physician. Assume symptoms are dive related until proven otherwise
- If transport by air is required, movement at lowest possible safe altitude or in pressurised cabin is recommended

Background[2,3]

- DCI/bends is bubble formation in the blood/tissues due to the changes in pressure while diving. It can affect anyone who has dived breathing compressed gas in the previous 24 hours or has travelled to altitude eg by aircraft ≤ 24 hours of diving
- Also see *Assessing potential diving related illness* https://qheps.health.qld.gov.au/__data/assets/pdf_file/0026/335294/sw210.pdf If outside of Qld Health, see local protocol

1. May present with[1,2]

- Mild symptoms eg tingling + joint pain, to stroke like symptoms
- Consider DCI in anyone feeling unwell after diving

2. Immediate management[2-4]

- **DRSABCD**
- Do vital signs + give 100% O_2 via non-rebreather mask at 15 L/minute **regardless of SpO_2**
- If early-onset DCI is suspected ie ≤ 30 minutes from surfacing:
  - lay the patient flat if possible
  - if conscious + difficulty breathing when flat, place in a comfortable position
- Urgently contact MO/NP for all unwell divers regardless of time since last dive
- GCS, p. 550 + neurological observations. Note any confusion

3. Clinical assessment

- **Ask about symptoms:**[2,3]
  - chest pain, SOB, cough
  - joint/muscle pain - most common symptom
  - numbness/tingling
  - extreme fatigue
  - dizziness/vertigo
  - headache, nausea, vomiting
  - muscle weakness in arm(s) ± leg(s)
  - ensure passing urine normally
- **Get dive(s) details, including:**[1-3]
  - time of surfacing + onset of symptoms/what phase of dive did symptoms start
  - any first aid + response
  - number of recent dives + duration, bottom time, depth, decompression/safety stops, speed of ascent, surface interval between dives
- Ask about any alcohol/drugs in last 24 hours + other causes of dehydration eg sea sickness
- Relevant past history eg hole in the heart, HTN, cardiac disease
- Check for barotrauma eg pneumothorax, ruptured eardrum:
  - chest - equal breath sounds + chest wall movement
  - eardrums - any redness, bulging, retraction or blood

- Also check:[1-3]
  - sensation changes + reflexes
  - balance + coordination
  - skin - mottled/blotchy rash

4. Management[1,2]

- MO/NP will advise further management eg IDC, ECG, chest x-ray, rehydration with oral or IV fluids:
  - **note:** IV glucose containing solutions **should NOT be given**
- Monitor closely until retrieval +
  - **keep flat** + during retrieval if possible
  - continue 100% O_2 ± air breaks as per MO/NP
  - keep warm, not hot - avoid sun exposure, unnecessary activity + excess clothing[1-3]
- Offer ibuprofen. See Acute pain, p. 32

5. Follow up

- As per MO/NP/specialist

6. Referral/consultation

- Hyperbaric Medicine Unit:
  - Townsville University Hospital ✆ 07 4433 1111
  - Royal Brisbane + Women's Hospital ✆ 07 3646 8111
- Divers Alert Network ✆ 1800 088 200

Hypothermia - adult/child

Recommend[1]

- Do not rewarm in bath or shower, it risks precipitating collapse
- Can be difficult to measure accurate T - **observe clinical signs to help determine severity**

1. May present with[1,2]

	Following exposure to cold ±
Mild	• Shivering, ↑ muscle tone • Pale, cool skin • Impaired coordination, slurred speech, delayed responses
Moderate to severe	• ↓ shivering, ↑ muscle stiffness • Confusion, ↓ LOC, ↓ RR, ↓ HR, ↓ BP

2. Immediate management[1,2]

- **DRSABCD:**
  - take up to 1 minute to detect carotid pulse + breathing if **severe hypothermia**
  - **do prolonged CPR** - still do CPR if fixed dilated pupils, perceived rigor mortis or pooling of blood in lower extremities. Complete recovery is possible
- **Handle GENTLY to prevent arrhythmias:**
  - the hypothermic heart is very sensitive to movement. Rough handling may precipitate arrhythmias including VF or asystole
  - **note:** most arrhythmias resolve spontaneously with rewarming

- Keep patient lying flat (or for at least 30 minutes if mild)
- Remove wet clothing + dry patient, place in warm, wind free environment + allow to shiver
- Do vital signs + BGL
- Continuous cardiac monitoring
- Start rewarming eg warm blankets, heating pads + warming devices if available:
  - monitor + aim for ↑ 1–2°C/hour
  - consider reflective blanket once warm
- Contact MO/NP, **urgently if moderate to severe hypothermia**
- If fully conscious - give warm sweetened drinks (not alcohol or caffeine) ± food

3. Clinical assessment[1]

- Ask about:
  - duration of exposure
  - any first aid + witnesses
- If not exposure related, look for other causes eg:
  - drug intoxication/stimulants
  - recent neurological events, illnesses, infections
  - underlying endocrine disorders eg diabetes
- Do physical examination while limiting exposure to prevent further heat loss, including:
  - ECG
  - look for other injuries + any muscle stiffness
  - check facial area + extremities for localised cold injuries (frostbite) - any numbness, pain, do they look pale + waxy:
    - remove any jewellery that could limit blood flow + elevate affected part
  - i-STAT - UE

4. Management[1]

- Consult MO/NP who may advise:
  - IV glucose if ↓ BGL. See Hypoglycaemia, p. 89
  - warmed sodium chloride 0.9% if fluid resuscitation required - give cautiously as per MO/NP
  - take bloods - coagulation studies, FBC
  - retrieval/hospitalisation
- Monitor closely until retrieval:
  - vitals signs + continuous cardiac monitoring
  - keep warm
- If mild hypothermia + patient spontaneously rewarms once removed from the cold:
  - discuss discharge with MO/NP

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Hyperthermia - adult/child
Heat stroke, heat exhaustion

Recommend[1]

- A patient with altered mental state in a hot environment has heat stroke until proven otherwise

Background[1]

- **Heat stroke is life-threatening.** Core T › 40 + can result in organ failure
- Heat exhaustion is usually mild-moderate. May be difficult to distinguish from heat stroke

1. May present with[1]

- Unwell after exertion or exposure to hot conditions:
  - **heat stroke** - altered mental state or neurological signs eg lethargy, confusion or ataxia
  - **heat exhaustion** - weakness, dizziness, headache, nausea or vomiting, muscle cramps, thirsty

2. Immediate management[1,2]

- **DRSABCD**
- Lie the patient in a cool place or in the shade + loosen/remove excess clothing
- Rapidly assess + manage concurrently
- Measurement of T should not delay cooling

If likely heat stroke

- Start cooling immediately. Contact MO/NP urgently:
  - aim to cool in 30–60 minutes to T 38.5
- **If › 5 years** immerse whole body from neck down in cold as possible water eg icy/slurry bath for 15 minutes:
  - if no bath or **if frail/aged patient,** do combination of:
    - remove clothing, wet with cold/cool water, under shower/hose
    - apply ice packs to groin, armpits, cheeks, palms + soles
    - repeatedly moisten the skin with a moist cloth + fan continuously
- **If ‹ 5 years** cool in lukewarm bath or repeatedly moisten the skin with a moist cloth + fan continuously
- Insert IVC
- MO/NP may order:[3]
  - cooled IV fluids. **Note:** IV fluid stored in a standard refrigerator is approx. 4ºC
  - IV midazolam if shivering from cooling, risk of heat gain. **Note:** small dose of only 0.5–1 mg for an adult. Use cautiously if altered LOC

If likely heat exhaustion

- Start cooling within 30–60 minutes
- Repeatedly moisten the skin with a moist cloth + fan continuously
- Give cool/cold water or sports drink, if fully conscious

3. Clinical assessment[1,2]

- Do vital signs
- Ask about:
  - any signs of infection, recent illnesses - consider Sepsis, p. 62
  - recent activity/exercise in hot conditions
  - if child - have they been left in a car

  - inadequate fluid intake
  - illicit drugs or medications which affect heat regulation - consider drug associated hyperthermia eg anticholinergics, stimulants, SSRIs/MAOIs, antipsychotics[3]
  - history of malignant hyperthermia
- Do physical examination, including:
  - BGL
  - ECG + continuous cardiac monitoring
  - listen to chest - any crackles, wheeze
  - look for petechial haemorrhages, bruising
  - palpate muscles - any tenderness, pain
  - urinalysis for leucocytes, nitrites, blood. Note colour of urine
  - i-STAT - UE

4. Management[1]

- Paracetamol, aspirin + ibuprofen are ineffective + should not be used to actively cool
- **If heat stroke, MO/NP may further advise:**
  - IV fluids, give cautiously based on clinical parameters eg urine output + BP
  - bloods - LFT, coagulation studies
  - stop cooling if T about 38.5 to avoid overcooling
  - insert IDC
  - retrieval/hospitalisation
- Monitor closely until retrieval - airway, vital signs, urine output + fluid balance
- **If drug associated hyperthermia** - MO/NP may order:[3]
  - cool IV fluids at maintenance rate, rarely › 20 mL/kg is required
- **If heat exhaustion (initial T ‹ 40 + symptoms resolve ≤ 30 minutes):**
  - discuss discharge with MO/NP
  - advise on prevention eg keep cool, wear light coloured, loose-fitting clothing, drink plenty of fluids on hot days. Delay return to activity/sports ≥ 48 hours[2]

5. Follow up

- As per MO/NP

6. Referral/consultation

- Consider mandatory reporting if child left in a car. See Child protection, p. 539

Ears, nose and throat (ENT) emergencies

HMP Nose bleed/epistaxis - adult/child

Background

- 95% of nose bleeds are anterior and are usually managed by simple compression of nose[1]

1. May present with

- Nose bleed

2. Immediate management[1,2]

ALERT suspect Button battery, p. 78 ingestion/insertion in child with blood around nostrils. If lodged in the oesophagus, it can burn a hole through to the aorta causing catastrophic haemorrhage

- **DRSABCD**
- **If active bleeding + SHOCKED** - major obvious epistaxis in process, cool, ↑HR , CRT › 2 seconds:
  - urgently consult MO/NP + urgent retrieval
  - insert Anterior nasal pack, p. 194 eg Rapid Rhino®
  - IVC x 2
  - take bloods - FBC, group and hold, coagulation studies
  - start IV sodium chloride 0.9% 10–20 mL/kg
  - MO/NP may order topical tranexamic acid eg 500 mg/5 mL (half a vial) on nasal pack[3]
  - **if not controlled,** MO/NP may advise:
    - 2nd pack to other nostril
    - **Posterior nasal pack** (next page). Take out anterior pack first
- **If active bleeding + NOT shocked:**
  - apply continuous pressure on the lower third of nose with thumb + forefinger for 5–10 minutes
  - sit upright, lean forward
  - breathe through mouth + spit blood out rather than swallowing
  - **if not stopped after 10–15 minutes:**
    - reapply pressure + reassess (incorrect pressure most common cause of continued bleeding)
    - spray lidocaine + phenylephrine into nostrils
    - insert absorbable pack eg Kaltostat®
    - continue applying pressure
  - **if still bleeding:**
    - remove Kaltostat® and insert Anterior nasal pack, p. 194 eg Rapid Rhino®
    - urgently consult MO/NP
    - continue to manage as per 'if active bleeding + shocked' above

3. Clinical assessment[1,2]

- Do vital signs
- Get history, including:
  - onset, duration and severity of bleeding
  - prior nose bleeds - when, how often, severity, treatment
  - **red flags** for tumour eg nasal blockage, facial pain/swelling, headaches, deep toothache, teenage male
  - **risk factors** for nose bleed:
    - nose or facial trauma, nose picking, CPAP use
    - prior nasal surgery
    - intranasal medicine or drug use

- bleeding disorders or family history of easy bruising
- kidney/liver disease, hypertension
- taking anticoagulants/antiplatelets eg NSAIDs

4. Management[1,2]

- If bleeding stops with compression alone, patient can go home with first aid advice:
  - return if bleeding re-starts and unable to control at home with compression
  - if risk factors/red flags present or recurrent bleed(s), advise to see MO/NP at next clinic
  - give **Discharge advice**
- If anterior nasal pack inserted, MO/NP may advise:
  - retrieval/hospitalisation
  - home with pack in situ + give **Discharge advice** (remove in 24–72 hours)
  - ± antibiotics
- Consider non-accidental injury, especially if < 2 years, see Child protection, p. 539 + Domestic and family violence, p. 232 as indicated

Anterior nasal pack insertion - only to 1 nostril

Rapid Rhino® - easiest and least painful + most comfortable for patient[1,4]

- Sizes 4.5, 5.5, 7.5 and 9 cm. **Note:** use an appropriate size to age, with larger sizes (7.5 cm +) for posterior packing
- PPE + get good light source + sit patient up if possible
- Soak in sterile water for a FULL 30 seconds
- Spray tranexamic acid or if unavailable, lidocaine + phenylephrine on the Rapid Rhino®[3,5]
- Insert in straight direction along floor of nasal cavity, until blue indicator is past the nares
- Use a 20 mL syringe to inflate device with air. Stop inflation when the pilot cuff becomes rounded and feels firm when squeezed
- Reassess after 15–20 minutes. Re-inflate as needed to ensure proper pressure
- Tape to patient's cheek
- **See instructions + video** at https://rapidrhino.com/rapid-rhino-product-usage-instructions/

Other nasal pack eg Merocel®[6]

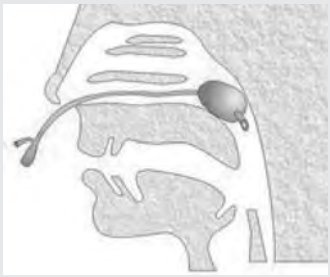
- Coat with water soluble gel + grasp string with fingers
- Gently and quickly insert along the floor of the nasal cavity until the string reaches the nose
- If packing has not expanded in 30 seconds, irrigate with 10 mL sodium chloride 0.9%
- Tape the string to the nose and trim ends
- Moisten with sodium chloride 0.9% prior to removal

S2	Lidocaine + phenylephrine			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Spray	Lidocaine 5% + Phenylephrine 0.5%	Intranasal	**Adult + child ≥ 12 years** - up to 5 sprays **Child ≥ 2 years** 2–4 years 1 spray 4–8 years 2 sprays 8–12 years 3 sprays	stat
Offer CMI: May cause bitter taste for 1–2 minutes and transient burning/stinging. Numbness of tongue or mouth; risk of trauma from hot drinks or biting. Do not eat or drink for 2 hours after				
Contraindication: Pregnancy and child < 2 years				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80				7

Posterior nasal pack insertion - only to 1 nostril

- MO/NP may advise if anterior packing does not work, or catastrophic haemorrhage
- **Use Rapid Rhino®** in larger size than normal - in attempt to control posterior and anterior bleeding (follow instructions as per anterior nasal packing)
- OR, use Foley urine catheter - **get further advice if trauma/suspected base of skull fracture**[1,2]

Foley catheter - note Rapid Rhino® preferred[2]



- PPE + get good light source + sit patient up if possible
- Have suction available + assistant to apply as you insert catheter
- Spray nasal passage with lidocaine + phenylephrine - it will be painful
- Lubricate tip of catheter (sterile lubricant)
- Measure half way point between nasal septum and tragus of ear
- Insert in straight direction along floor of nasal cavity towards ear lobe - to half way point
- Keep mouth open
- You **MUST be able to see the TIP** of catheter in back of throat **BEFORE inflating balloon**:
  - inflate with 3 mL of air and pull catheter forward until it 'catches' in the back of the nose
  - then inflate with up to 10 mL air, stopping when it gets too uncomfortable
- Get assistant to maintain firm traction while you pack anterior nostril eg with a Rapid Rhino®
- Secure catheter at nostril to prevent it slipping backwards eg with tubing clamp/clip
- Place wad of gauze between clamp and patients nose to prevent pressure necrosis
- Secure catheter to patients face with tape
- **Urgent retrieval, antibiotics + close observation** - at risk of airway obstruction if Foley dislodges or placed inappropriate

Discharge advice[1,6]

- Rest for 12–24 hours. If child do quiet activities eg drawing or reading
- For next 24 hours:
  - avoid hot drinks + food, hot baths/showers
  - do not pick or blow nose. Sneeze with open mouth
- Avoid aspirin and ibuprofen - may ↑ bleeding. Take paracetamol if needed for pain
- To prevent further nose bleeds from dry/cracked skin, moisturise nostrils eg Vaseline®, twice daily for 1 week. Use a cotton tip or finger, and gently rub it on inside of nose

Plus if nasal pack in situ

- May have cold like symptoms while in place eg blocked nose, ↓ smell, facial pressure, headaches, nasal drainage, watery eyes
- Return immediately if bleeding starts (nose or mouth), fever, ↑ pain, vision changes, SOB, loss of colour of skin around nose, swelling of face, skin rash
- Keep pack moist by spraying with sodium chloride 0.9%
- To avoid ↑ blood flow to nose + risk further bleeding - avoid straining, lifting > 5 kg, strenuous exercise, bending over + sleep with head slightly elevated

5. Follow up

- If nasal pack in situ and not retrieved, review next day or sooner if any concerns:
  - remove pack as advised by MO/NP

6. Referral/consultation

- MO/NP may consider ENT referral as appropriate

Foreign body in ear or nose - adult/child

1. May present with[1,2]

- Foreign body (FB) in ear or nose eg insect, bead, pebble, plastic toy, food

Symptoms suggesting possible FB in ear/nose of child

Ear	Nose
• Ear pain, hearing loss, discharge (pus or blood) • Ear fullness, hiccups or cough that won't stop • Tinnitus (ringing in ear)	• Nasal occlusion, bleeding nose • Malodorous, pus or blood stained discharge • Facial swelling or pain

2. Immediate management[1,2]

- Urgently consult MO/NP for ENT referral if:
  - bleeding or airway issues if FB to nose
  - suspected Button battery, p. 78 or paired magnets (in nose) - **time critical emergency**:
    - **urgent removal needed.** If suspected, but not visualised, x-ray needed to rule out. If no on-site x-ray arrange urgent retrieval

ALERT button batteries require urgent removal to prevent necrosis of surrounding tissue

3. Clinical assessment[1,2]

- Get history and examine ears/nose
- Identify exact location, shape and composition of FB
- If possible, get assistant to help, especially if child (in addition to caregiver)

4. Management[1,2]

- **Do NOT attempt to remove if any of below:**
  - FB not easily seen **OR** is deep in the ear/nose **OR** is:
    - large or impacted, or chronic with inflammation
    - penetrating or hooked
    - paired magnets or magnet and metallic object across septum of nose ie in each nostril
  - child moving/noncompliant - risk of trauma, pushing FB further in, or aspiration
  - multiple failed attempts to remove prior to presentation
  - if any of above, consult MO/NP for retrieval or referral to ENT
- **Otherwise, attempt to remove FB from ear or nose ONCE** - regardless of method:
  - use headlamp ± magnification if available, for better visualisation + to free both hands
  - if unsuccessful or not comfortable attempting, consult MO/NP

Removing FB from NOSE[2]	
Small, smooth or spherical objects	• **Self blow/exhale** - if child old enough to cooperate eg › 3 years, encourage to blow nose while occluding the nostril opposite to the FB • **Parents' kiss** - ask parent/caregiver to seal the child's mouth with their mouth, while occluding the unaffected nostril. Then give a short sharp puff of air • **Suction** - only try if FB visible and not 'lodged'. Use micro suction tube. Form a solid seal between tube and object. Be careful not to push FB up nose • **Magnetic device** - (if available) for metal object - insert gently until clicks onto object. Be careful not to push FB up nose
Soft, irregular, small object	• **Forceps** - only use if FB visible and looks easy to grasp. Avoid repeated grasping attempts as may push FB in further
Other objects	• Consult MO/NP

Removing FB from EAR[1]	
Soft, irregular, small object	• **Forceps** - only use if FB visible and looks easy to grasp. Avoid repeated grasping attempts as may push FB in further
Insect or small inorganic object	• **Gentle irrigation** - if insect, put 2–3 drops of cooking oil into ear to kill first. Irrigate with warm water using a cut 14/16 G cannula (needle removed) with a 30 or 60 mL syringe. Direct stream along upper back area of canal. Repeat as needed • **Do NOT irrigate if** suspected perforated eardrum, grommets, button battery, vegetable matter or expandable FB
Smooth/ spherical mobile objects	• **Gentle suction** - only try if FB visible and not 'lodged.' Use micro suction tube to form a solid seal between tube and object • **Magnetic device** - (if available) for metal object - insert gently until clicks onto object
Other objects	• Consult MO/NP

- **Post removal:**
  - look for other FBs patient may have inserted + for any trauma/infection:
    - if significant trauma to ear canal consult MO/NP who may order dexamethasone + framycetin + gramicidin (eg Otodex®, Sofradex®) or ciprofloxacin ear drops ± ENT referral[1]
    - treat concurrent Otitis externa, p. 518 if present[1]
- Give education around safe storage of small objects eg button batteries, marbles, coins, balloons. Ensure toys for play are appropriate for age

5. Follow up

- **Ear FB removed** - advise to be reviewed:[1]
  - if any symptoms arise ie hearing loss, discharge, marked pain, facial nerve paralysis or dizziness/feeling off balance. Consult MO/NP ± ENT referral
  - if ear drops given, in 2–3 days
- **Nose FB removed** - advise to be reviewed:[2]
  - if any symptoms arise ie fever, purulent discharge, nose bleed, facial pain or swelling. Consult MO/NP ± ENT referral

6. Referral/consultation

- As above

Gastrointestinal emergencies

HMP Acute abdominal pain - adult/child

Recommend

- **Always consider:**
  - Ectopic pregnancy, p. 357 in all females of reproductive age with abdominal pain ± bleeding[1]
  - PID, p. 446 in sexually active females, particularly if < 30 years, with new onset of pelvic pain[1]
  - Testicular torsion, p. 211 and check testes in males with abdominal pain + male infants with inconsolable crying[2]

Background

- If child, also see QPEC guidelines *Acute abdominal pain - emergency management in children*

1. May present with

- Abdominal pain

2. Immediate management

- Do vital signs
- If shock - pale, sweaty, ↑HR, capillary refill > 2 seconds ± ↓LOC:
  - contact MO/NP urgently
  - start treatment for Shock, p. 60
- Screen for Sepsis, p. 62
- If severe pain:
  - insert IVC x 2, do rapid assessment
- Offer analgesia ± antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40:
  - **note:** analgesia does not mask physical signs/hinder diagnosis[3-5]

3. Clinical assessment

- It is not necessary to make a definitive diagnosis. It is more important to recognise cases which are significant
- If child, also see Child with abdominal pain, p. 476
- Ask about the pain:[4]
  - **Site** - where is it, ask patient to pinpoint location
  - **Onset:**
    - gradual, rapid or sudden
    - continuous or intermittent
    - what were they doing when it started
  - **Character** - sharp, dull, burning, stabbing, cramp like, crushing, tingling
  - **Radiate** - anywhere eg shoulder tip, back
  - **Alleviating factors** eg sitting up, medicine, relief by moving about eg renal colic, or from lying very still eg peritonitis
  - **Timing:**
    - when did it first begin, duration
    - have they had it before, when, what happened
    - any increase in severity
  - **Exacerbating factors** - does anything make it worse eg movement
  - **Severity** - mild, moderate or severe (scale 1–10):
    - does it interfere with sleep or normal activities

- Ask about:[4]
  - **associated symptoms** eg fever, SOB, headache, nausea, vomiting - any blood, bile or green vomit - does it look/smell like faeces
  - recent weight loss, changes in appetite, food refusal/poor feeding[6]
  - **bowels** - any diarrhoea, constipation, blood, black stools/melaena, time of last motion, passing wind[1]
  - **urine** - dysuria, frequency, urgency, haematuria[1]
  - **vaginal** - bleeding, discharge. **Note:** abnormal discharge may indicate PID, p. 446
  - **possible causes of pain,** including:
    - foreign body ingestion + consider Button battery, p. 78[6]
    - poisoning eg venoms, paracetamol, lead, iron[5]
    - recent trauma eg abdominal, scrotal[2]
- **Get past history,** including:[7,8]
  - medical + surgical
  - smoking, alcohol + other drugs
  - medications + family
  - menstrual - last period, was it normal, are periods regular, any contraception[1]

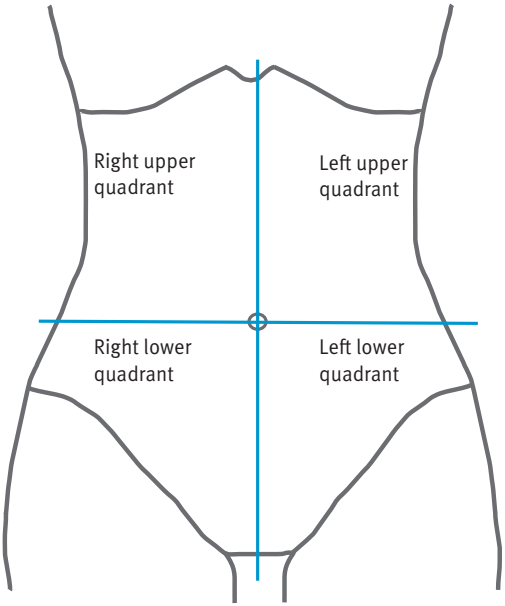
Do physical examination, including:

Red flags from abdominal examination - if any contact MO/NP urgently

- Pain radiating to the back + palpable pulsatile mass - could be AAA[4]
- Localised tenderness + distension
- Guarding - muscle tightness in response to palpation or board like rigidity
- Rebound tenderness - pain when pressure is applied + then released suddenly
- Pain disproportionate to presentation/working diagnosis

- **Abdominal examination:**[3-5,8]
  - **look** for:
    - symmetry, shape eg distended or sunken
    - surgical scars, bruises, distended veins, hernias
    - signs of non-accidental injury
  - **listen** for bowel sounds - absent, decreased or hyperactive:
    - normal are low pitched + gurgling 2–5/minute. Hyperactive/high pitched suggests Bowel obstruction, p. 207
  - **palpate** - start lightly, away from site of pain + move through the 9 areas. Follow with deep palpation:
    - palpate kidneys - with 1 hand underneath + 1 hand above (below rib line), gently push down
    - check testes/groin in males[2]
  - **percuss (tap)** all 4 quadrants to check for dullness
- Listen to chest - any wheeze, crackles. **Note:** pneumonia + ACS, p. 104 can present with abdominal pain
- ECG
- Urinalysis + pregnancy test if reproductive age - **if +ve go to** Ectopic pregnancy, p. 357
- BGL - if › 10 check for ketones + consider DKA, p. 87
- Bloods/i-STAT including lactate, bladder scan if available
- Any jaundice, enlarged lymph nodes
- Hydration assessment - adult, p. 202 or child, p. 522
- Rectal examination - may be indicated if suspected Upper GI bleeding, p. 205

Abdominal quadrants



4. Management[8]

- Consult MO/NP in all cases if:
  - infant/child, pregnant woman or › 60 years
  - moderate to severe pain
  - cause of pain not known
- MO/NP may order:
  - chest + abdominal x-ray
  - urgent retrieval/hospitalisation
  - antibiotics, IDC, NGT, nil by mouth

5. Follow up[4,5]

- If not retrieved, advise patient/carer to be reviewed next day, or sooner if:
  - pain persists › 24 hours, worsens or changes from generalised to localised, or
  - worsening symptoms or new symptoms develop eg vomiting, fever
  - if any of the above, contact MO/NP

6. Referral/consultation

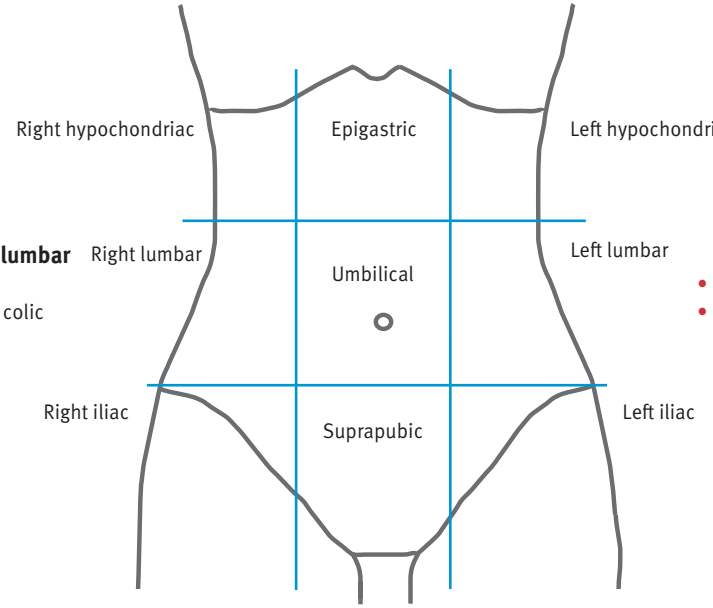
- As above

Abdominal pain causes[1-8]

Right hypochondriac
- Gall bladder - biliary colic or cholecystitis
- Hepatitis
- Pneumonia
- Liver abscess/tumour - rare

Epigastric
- Myocardial infarction
- Gastritis
- Gastric/duodenal ulcer
- Pancreatitis
- Ruptured aortic aneurysm
- Button battery ingestion

Left hypochondriac
- Pneumonia
- Pancreatitis
- Ruptured spleen



Right lumbar
- UTI
- Renal colic

Left lumbar
- UTI
- Renal colic

Right iliac
- Appendicitis
- Ectopic pregnancy (unilateral)
- Ovarian cyst
- PID (bilateral)
- Strangulated hernia (usually men)
- Testicular torsion

Umbilical
- Strangulated umbilical hernia
- Ruptured aortic aneurysm
- Gastroenteritis
- Small bowel obstruction
- Inflammatory bowel disease
- Early appendicitis (then moves to right iliac)

Left iliac
- Diverticulitis
- Ectopic pregnancy (unilateral)
- Ovarian cyst[7]
- PID (bilateral)
- Strangulated hernia (usually men)
- Testicular torsion

Generalised
- DKA
- Endometriosis

Suprapubic
- Ectopic pregnancy
- Testicular torsion
- Ovarian torsion
- Miscarriage/pregnancy related/RPOC
- UTI
- Large bowel obstruction
- Acute retention of urine
- Uterine fibroid complication
- PID

Gastroenteritis/dehydration - adult
Diarrhoea ± vomiting

Background[1]

- Most acute diarrhoea is viral and resolves within 24–48 hours without specific treatment
- Antibiotics are of no benefit in most cases and may exacerbate diarrhoea

1. May present with[1]

- Sudden onset of diarrhoea ± vomiting, fever, abdominal pain, nausea, chills
- Lethargy, dehydration

2. Immediate management[1]

- Do vital signs + **Hydration assessment**
- **If severe dehydration:**
  - contact MO/NP urgently
  - continue to manage as per Shock, p. 60
- Screen for Sepsis, p. 62

Hydration assessment[1]

	Mild	Moderate	Severe
Level of consciousness	alert	slightly lethargic	altered
Thirst	mild	moderate	intense
Oral mucous membranes	slightly dry	dry	parched, with wrinkled tongue
Sternal skin turgor		obvious ↓	marked ↓
Eyes		normal	sunken
RR	normal	normal or ↑	moderate ↑
HR		↑	
BP		mild ↓ or postural ↓	severe ↓ with cold extremities
Urine output	normal or ↓	moderate ↓	significant ↓ or no output

3. Clinical assessment

- Get history, including:[1]
  - gastrointestinal symptoms:
    - date/time of onset, frequency + amounts, is there blood ± mucous in stools, bile stained or green vomit, location and severity of abdominal pain
    - **note:** if › 24 hours of vomiting without diarrhoea, consider other causes. See Nausea and vomiting, p. 40
  - fever, rash, headache, light headedness/dizziness, ↓ mobility
  - known illness in contacts
  - recent overseas travel, antibiotic use or hospital admission
  - immunocompromised
  - medications eg aperients
- Do physical examination, including:
  - BGL + ketones - if ↑ consider DKA, p. 87
  - i-STAT - UE, lactate
  - urinalysis - ketones
  - Abdominal examination, p. 199

- Do stool MCS + multiplex PCR + *C.difficile* if:[1]
  - diarrhoea › 7 days
  - severe symptoms eg blood in stools, high fever, ↑HR, abdominal tenderness or severe pain
  - immunocompromised
  - recent overseas travel (*C.difficile* not required)

4. Management[1]

- Rehydration is the most important aspect of management
- Consult MO/NP if:
  - vomiting and unable to tolerate oral fluids - IV fluids may be required[2]
  - severe symptoms
  - pregnant, immunocompromised or elderly
- **If minimal or no dehydration:**
  - advise to continue eating + drinking as tolerated
- **If mild to moderate dehydration**:
  - give ORS, even if intermittent vomiting
  - **note:** if ORS is not available, use 1/2 level teaspoon of salt + 6 level teaspoons of sugar in 1 L of clean drinking water
  - aim for 2–3 L over 24 hours. Frequent small volumes may be better tolerated eg 50 mL every 15–30 minutes
  - avoid fatty or sugary foods and excessive intake of soft drinks, sports/energy drinks, cordials and fruit juice. If used they should be diluted
  - once tolerating/responding to ORS, advise patient to return to normal diet[1]
- Offer antiemetic if needed. See Nausea and vomiting, p. 40
- **Control the spread advice:**
  - if prepares/serves food - avoid handling food until no diarrhoea or vomiting for 48 hours[2]
  - if healthcare worker - do not return to work until no symptoms for 48 hours[3]
  - otherwise, if single case - avoid others until no symptoms, feeling well + no loose bowel motions for at least 24 hours[2]

5. Follow up[1]

- Advise patient to return + contact MO/NP if:
  - symptoms persist › 48 hours, or worsen
  - develops severe vomiting, abdominal cramps, or blood in stools
- Review stool pathology results

6. Referral/consultation[2]

- Notify Public Health Unit if ≥ 2 cases of diarrhoea ± vomiting in the same location or single case in a food handler ⓙ

HMP Gastritis - adult

Background[1]

- Inflammation of the gastric mucosa commonly caused from *Helicobacter pylori* infection, use of NSAID, or alcohol

1. May present with[1,2]

- Epigastric pain or discomfort ± nausea, vomiting, heartburn, reflux

2. Immediate management

- Do vital signs
- If shock - pale, sweaty, ↑HR, capillary refill › 2 seconds ± ↓LOC:
  - contact MO/NP urgently + see Shock, p. 60
- Assess as per Chest pain assessment, p. 100 + see ACS, p. 104
- Offer analgesia ± antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40

3. Clinical assessment[1,2]

- Do not jump to conclusions as to the cause of the epigastric pain in a person who drinks alcohol
- Do NOT use medication cocktails eg pink lady, to assist in ruling out a cardiac cause[3]
- Ask about:
  - pain - onset + duration
    - is it accompanied by nausea, vomiting or heartburn
    - any blood in vomit - fresh or coffee grounds, ± melaena, go to Upper GI bleeding, p. 205
  - recent heavy alcohol intake
  - are they taking NSAID, aspirin, antacid
  - previous episodes - when, any treatment
  - recent weight loss, difficulty or painful swallowing
  - other symptoms eg SOB, dizziness, syncope/collapse
  - recent food intake
- Get past history - heart disease, GORD, peptic ulcer disease, abdominal surgery
- Do physical examination, including Abdominal examination, p. 199 +
  - ECG, BGL + bloods/i-STAT - lactate

4. Management[1,2]

- **Contact MO/NP urgently** if intense boring pain that radiates to the back
- Consult MO/NP, who may advise:
  - IV pantoprazole ± thiamine if alcohol related
  - bloods eg lipase, LFTs
  - retrieval/hospitalisation ± referral for endoscopy

5. Follow up

- Advise to return if symptoms ↑ or new symptoms eg blood in vomit - contact MO/NP urgently. Otherwise advise to see MO/NP at next clinic

6. Referral/consultation

- As above

HMP Upper gastrointestinal bleeding - adult/child
Vomiting blood

Background[1]

- Usually caused secondary to peptic ulcer disease, erosions, oesophagitis or oesophageal varices

1. May present with[1]

- Vomiting blood or dark vomit with 'coffee grounds' ± melaena, pain

2. Immediate management

- Do vital signs
- Insert IVC x 2
- If shock - pale, sweaty, ↑ HR, capillary refill › 2 seconds ± ↓ LOC, or large active bleed:
  - contact MO/NP urgently + see Shock, p. 60

ALERT suspect Button battery, p. 78 in all children with upper GI bleed. A button battery lodged in the oesophagus can burn a hole through to the aorta[2]

3. Clinical assessment[3,4]

- Get rapid history, including:
  - is blood dark, bright or coffee grounds, amount + duration
  - melaena or any fresh blood in stools
  - pain
  - repeated retching/vomiting prior to bleeding - may indicate oesophageal tear[1]
  - previous episodes
  - history of liver failure, ischaemic heart disease, renal failure, peptic ulcer disease, oesophageal varices
  - alcohol misuse
  - are they taking aspirin, NSAID, anticoagulants, corticosteriods, iron supplements
- Do physical examination, including Abdominal examination, p. 199 +
  - ECG
  - i-STAT - lactate, baseline Hb (HemoCue if available)
  - bloods - FBC, UE, INR, LFT, cross match

4. Management[3,4]

- Consult MO/NP urgently, who may advise:
  - IV fluids
  - IV antibiotics ± octreotide if oesophageal varices
  - IV pantoprazole ± thiamine if alcohol misuse
  - retrieval/hospitalisation for urgent endoscopy/surgery
- Monitor vital signs closely until retrieval, keep nil by mouth

5. Follow up

- As advised by MO/NP

6. Referral/consultation

- As above

HMP Rectal bleeding - adult/child

1. May present with[1]

- Blood mixed in/with stool or blood leaking from the rectum

2. Immediate management[1]

- Do vital signs
- If shock - pale, sweaty, ↑HR, capillary refill › 2 seconds ± ↓LOC, or bleeding is heavy/continuing:
  - contact MO/NP urgently + see Shock, p. 60

ALERT suspect Button battery, p. 78 in all children with melaena or bloody discharge from rectum[2]

3. Clinical assessment[1,3]

- Do not attribute rectal bleeding to haemorrhoids unless more serious causes have been excluded
- Get history, including:
  - onset and duration of bleeding +
    - amount + colour of blood - bright or dark
    - does it coat the stool or is it mixed in
    - associated with straining or passing hard stool
  - past history of haemorrhoids
  - any change in bowel habits eg mucus discharge, constipation, diarrhoea, black or maroon stools
  - abdominal pain, rectal pain or itch, recent weight loss
  - bowel disease eg diverticulitis, Crohn's, colon/rectal cancer
  - recent removal of polyps
  - recent trauma to rectum, including sexual trauma
  - are they taking aspirin, NSAID, anticoagulants, antiplatelets - may need to be withheld
- Do physical examination, including Abdominal examination, p. 199 +
  - check perianal area for - haemorrhoids (not always visible), skin tags, anal fissures, haematoma
- Consider vaginal bleeding as source, especially in older patient - contact MO/NP

4. Management[1,3]

- Consult MO/NP who may advise:
  - rectal examination, bloods, investigations for serious causes eg cancer
  - topical medication
  - retrieval/hospitalisation
- If haemorrhoids, advise patient to:
  - avoid straining
  - have adequate intake of fibre + fluids to avoid constipation
  - respond to the urge to open bowels (rather than holding in). Do not try to initiate a bowel action without the urge

5. Follow up

- If not retrieved, advise to be reviewed at next MO/NP clinic. Earlier if concerned/bleeding returns

6. Referral/consultation

- As above

HMP Bowel obstruction - adult/child

1. May present with[1]

- Abdominal pain ± bloating, nausea, vomiting, fever

2. Immediate management[1]

- Do vital signs
- Screen for Sepsis, p. 62
- Insert IVC + start IV sodium chloride 0.9% - then as ordered by MO/NP
- Offer analgesia (not oral) ± ondansetron. See Acute pain, p. 32, Nausea and vomiting, p. 40
  - **note:** metoclopramide is contraindicated - do not give[2]

3. Clinical assessment[1]

- See Abdominal pain, p. 198 to guide assessment
- Suspect bowel obstruction if:
  - pain:[3]
    - intermittent + colicky or continuous
    - is it getting worse, does it change with vomiting
    - ask patient to pinpoint location
  - any distension
  - nausea, vomiting - any blood, bile or green vomit, does it look/smell like faeces
  - inability to pass wind or stool
  - changes to bowel habits, recent weight loss
  - rectal bleeding, crampy rectal pain
  - ask about possibility of foreign body ingestion/insertion as cause of obstruction[4]
- Get past history:[1]
  - abdominal or pelvic surgery, bowel obstruction, hernias
  - recent abdominal trauma
  - bowel disease eg diverticulitis, Crohn's, bowel cancer
  - are they taking opioids, NSAIDs, corticosteroids, chemotherapy
- Do physical examination, including:
  - ECG
  - BGL
  - bloods/i-STAT - UE, lactate, FBC, LFT, lipase, bladder scan if available
  - Abdominal examination, p. 199 check for:
    - tenderness, guarding, rigidity, masses, hernias
    - hyperactive/high pitched bowel sounds
    - abdominal wall/inguinal hernia
  - pregnancy test if reproductive age

4. Management[1]

- If infant consider Intussusception, p. 532
- Consult MO/NP urgently, who may advise:
  - urgent retrieval for CT scan/surgery
  - IV antibiotics
  - x-ray, IDC, NGT (free drainage)
- Keep nil by mouth
- Monitor closely until retrieval - vital signs, urine output + fluid balance

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Genitourinary emergencies

HMP Renal colic - adult

Background[1]

- Pain can be caused by kidney stone passage or an obstruction in the urinary tract

1. May present with[2,3]

- Severe 1 sided flank pain radiating to the groin:
  - usually episodic, typically lasting 20–60 minutes + may not completely resolve before next wave[4]
  - very distressed and unable to find a comfortable position
- Nausea + vomiting, sweating, looks unwell
- ± haematuria

2. Immediate management[5]

- Do vital signs
- Give oral ibuprofen + paracetamol or IM ketorolac ± antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40
- If severe pain, may need IV morphine or fentanyl until above works

3. Clinical assessment[5]

- See Abdominal pain, p. 198 to guide assessment
- Get history, including:
  - nausea + vomiting, fever
  - urinary symptoms eg dysuria, frequency, urgency
  - past history of kidney stones, previous episodes, renal impairment
- Do physical examination, including:
  - Hydration assessment - adult, p. 202
  - urinalysis to confirm haematuria + MSU for MCS if nitrites or leucocytes. **Note:** no haematuria does not exclude renal colic
  - pregnancy test if reproductive age

4. Management[5]

- **Contact MO/NP urgently if:**
  - a pulsatile abdominal mass and ⇩BP - a ruptured AAA can mimic renal colic
  - fever, pyuria (eg cloudy urine) or significant tenderness - suggests infected obstructed kidney

- Main aim of treatment is analgesia + IV fluids if significantly dehydrated. **Note:** most stones pass spontaneously < 1 month[3]
- Consult MO/NP, who may advise:
  - retrieval
  - eFAST USS (if skilled/available)
  - IV fluids, bloods/i-STAT - check kidney function/not going into renal failure
  - **or** consider sending home if:
    - afebrile, passing urine, able to tolerate oral fluids
    - adequate pain relief with oral analgesia
    - and with follow up at next MO/NP clinic

S4	Ketorolac			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	10 mg/mL	IM	10 mg	stat Inject slowly into a large muscle. Apply pressure for 15–30 seconds after injecting to minimise local reactions Do not give repeat doses (potential serious adverse effects)
Offer CMI: May cause pain at injection site, itching, sweating or rash				
Note: Use with caution in the elderly, asthma, hypertension, coagulation disorders or other NSAID use				
Pregnancy: Avoid use				
Contraindication: Dehydration, hypovolaemia, probenecid use, active peptic ulcer disease or GI bleeding, renal or hepatic impairment, heart failure. Allergic to aspirin or NSAIDs				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [6,7]				

5. Follow up

- If not retrieved, advise to:
  - be reviewed if develops fever, vomiting or pain returns - contact MO/NP
  - see MO/NP at next clinic ± urology referral

6. Referral/consultation

- As above

HMP Acute retention of urine - adult

Background

- Predominantly affects men. Most common cause is obstruction eg enlarged prostate. Can also be caused from infection, constipation, inflammation or injury[1]

1. May present with[1,2]

- Inability to urinate or empty bladder effectively ± suprapubic pain, bloating, urgency, distress

2. Immediate management[1-3]

- Do vital signs
- Screen for Sepsis, p. 62
- Offer analgesia. See Acute pain, p. 32

3. Clinical assessment[1-3]

- See Abdominal pain, p. 198 to guide assessment
- Also ask about:
  - worsening urinary symptoms eg nocturia, frequency, urgency, weak stream, dribbling
  - systemic symptoms eg T ≥ 38, chills, sweats
  - previous episodes, prostate or bladder problems
  - prolapse of the bladder, rectum or uterus - in females
  - recent pelvic trauma, STI, IDC
  - nausea, vomiting, constipation
  - medications eg anticholinergic, antidepressants
  - recent weight loss
- Do physical examination, including:
  - abdomen for distension and palpable bladder
  - check for swollen lymph nodes
  - urinalysis if possible + MSU for MCS or collect from IDC if advised to insert
  - bladder scan if available

4. Management[1,3]

- Contact MO/NP, who may advise:
  - insert IDC:
    - if likely difficult catheterisation, urgent retrieval for urological review/suprapubic catheter
    - DO NOT use force to push IDC through the obstructed urethra
  - bloods ± cultures, antibiotics
  - IDC to be removed or left in situ
- Monitor - urine output, for haematuria, transient hypotension, and post-obstructive diuresis

5. Follow up

- If not retrieved, advise to be reviewed next day and consult MO/NP
- Advise to see next MO/NP clinic

6. Referral/consultation

- As above

HMP Testicular/scrotal pain - adult/child

Testicular torsion

Recommend[1]

- **Testicular torsion is an emergency**. Surgery is required ≤ 6 hours to avoid permanent harm, even if the pain has been present › 6 hours

1. May present with[1,2]

- Pain in the testes/scrotum ± swelling/lump, nausea + vomiting
- Abdominal pain only
- **Note:** if recent testicular injury assume testicular torsion until proven otherwise

2. Immediate management[1]

- **Rapidly assess** against table below:
  - the presence or absence of a single sign cannot exclude testicular torsion +
  - keep in mind patient may be reluctant to volunteer symptoms due to embarrassment and reluctance to be examined[3]
- **Contact MO/NP urgently in all cases of testicular/scrotal pain**
- Offer analgesia ± antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40
- Do vital signs

Assessment of testicular pain[1,2]

	Testicular torsion	Epididymo-orchitis (EDO)
Onset and location	• Sudden onset of severe unilateral scrotal pain + pain at rest • May be gradual, mainly in the iliac fossa ± history of minor trauma • Intermittent testicular pain - can result from intermittent torsion/spontaneous detorsion	• Gradual onset of pain and swelling over a few days • Usually 1 side
Other symptoms	• Nausea, vomiting, tachycardia, dizziness ± fever[1]	• Dysuria, frequency, smelly urine
Examination	• Absent cremasteric reflex* • Testis - abnormal position, horizontal lie on standing and high riding • Scrotal skin changes - red or darkening • Tender to palpate globally • Thickened spermatic cord	• Intact cremasteric reflex* • Red, hot, swollen testis in normal position • Tender epididymis (tubular structure found at back of testes, running in a sagittal plane)
Also check	• Urinalysis - leucocytes does not exclude testicular torsion • Lump in groin of child with acute abdominal or inguinal pain can be torsion of undescended testis but may be mistaken for swollen lymph node or abscess	• Urinalysis - NAD does not exclude EDO • Risk factors eg recent urethral surgery, history of viral infection eg mumps; sexually active[4]

***Cremasteric reflex** - pinch or stroke the skin of the upper thigh. The testis on the same side should elevate via contraction of the muscle

3. Clinical assessment

- See **Immediate management**

4. Management[1]

- Contact MO/NP urgently in all cases who will arrange urgent retrieval + referral to surgical team:
  - even if the pain has been present › 6 hours
- Monitor closely:
  - vital signs + pain
  - re-examine scrotum if patient deteriorates, check for any changes[3]
- Keep nil by mouth
- USS and bloods are usually not required and should not delay surgical review
- Consider Child protection, p. 539 if scrotal trauma/bruising, especially in infants or where the cause is unclear[2]

5. Follow up

- As per MO/NP/surgical team

6. Referral/consultation

- As above

Poisoning

HMP Poisoning and overdose - adult/child
Intentional or accidental

Recommend[1]

- **Contact Poisons Information Centre (PIC) 13 11 26 (24 hours)** or satellite phone only 07 4763 7617 for any suspected poisonings (even minor) + give information from **Toxicology assessment**

1. May present with

- Reported poisoning ± signs and symptoms eg:[1]
  - abdominal pain, nausea, vomiting, diarrhoea
  - ↓RR, ↓LOC, hypo/hypertension, seizures, arrhythmias

2. Immediate management[1]

- **DRSABCD** as needed, see BLS, p. 44. **Do prolonged CPR** - toxic effects may be reversible[1]
  - **use PPE** as needed eg skin exposure, cyanide, paraquat, unknown toxicity of chemical/agent
  - if agitated/aggressive/violent, ensure your safety + see Mental health emergency, p. 328 for de-escalation if able
- Vital signs, GCS/AVPU, p. 550 + BGL
- O_2 if required to maintain SpO_2 › 94%. If carbon monoxide inhalation give 100% regardless
- If suspected opioid poisoning + ↓RR - give Naloxone, p. 214 immediately[2]
- **Urgently consult MO/NP/PIC ± arrange retrieval**
- Insert IVC if required
- 12 lead ECG + continuous cardiac monitoring - send to MO/NP/PIC
- Do rapid **Toxicology assessment**

Toxicology assessment[1]	
Poison/toxic agent	• Name + spelling, active ingredients + strengths, manufacturer • Any witnesses, look for container, take photo if possible, material safety data sheet (MSDS) • Possible co-ingestants eg alcohol, other medications, over-the-counter products
Route	• Ingestion, skin contact, inhalation, injection, eye/ocular
Dose	• How much was taken eg estimate max. dose on number of remaining tablets/ liquid subtracted from total packet/bottle, licked container lid • Always consider the worst-case scenario • Was substance diluted eg insecticides • If frequently used substance eg regular medication, alcohol, ask about: – frequency, duration and pattern of use – time and amount of last use – average daily consumption
Time	• Exact time/time since ingestion/exposure
Intent	• Accidental, deliberate self-poisoning, or non-accidental injury
Actions taken	• Eg skin washed, eyes irrigated, self induced vomiting, drank milk etc
Patient details	• Age, weight, gender, medical + medication history
Clinical effects	• Symptoms + signs since exposure • Vital signs + results of any investigations

3. Clinical assessment

- As per **Immediate management**

4. Management[1]

- **In all cases contact MO/NP/PIC, who may advise/order:**
  - i-STAT/bloods - renal function, LFT, FBC, VBG, UEC, serum paracetamol
  - repeat ECGs - monitor for QRS widening or QT prolongation
  - activated charcoal typically given ≤ 2 hours of ingestion
  - diazepam may be considered in some poisonings
  - acetylcysteine if paracetamol poisoning - may be brought with retrieval team
- **Monitor closely + provide supportive/symptomatic care** as per MO/NP/PIC eg:
  - airway, breathing, circulation. If sedated - be vigilant for airway compromise
  - vital signs + GCS/AVPU, p. 550
- If hypotension - start sodium chloride 0.9% 10–20 mL/kg over 10–30 minutes:
  - then as per MO/NP + may require inotropes to maintain BP
- If seizures:
  - if ↓ BGL treat with IV glucose, p. 90 - aim for BGL 4–8
  - if persistent (not self-limiting within minutes) or recurrent, give Midazolam, p. 85
- If hyperthermia - T › 39 or rapidly rising - start cooling, p. 191
- Most patients will require retrieval for further investigations, monitoring and management
- If not retrieved:
  - discharge in collaboration with MO/NP/PIC
  - if child - advise parent/carer safe storage of medicines + poisons - keep out of reach
- Other considerations:
  - suspected non-accidental injury, also see Domestic and family violence, p. 232 + Child protection, p. 539 as indicated
  - deliberate self-poisoning, also see Suicidal behaviour, p. 336 + use local pathways where available to guide management

S3	**Naloxone**			**Extended authority** ATSIHP/IHW
ATSIHP, IHW, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	400 microg/mL	IM	**Adult + child** 400–800 microg*	stat Can repeat after 2–3 minutes/ as per MO/NP order
Nasal spray	1.8 mg/ actuation	Intranasal	**Adult + child** 1.8 mg (1 spray into 1 nostril)	stat Can give 2nd dose (using new device) into other nostril after 2–3 minutes
Note: *In adults, 800 microg is most appropriate to achieve adequate respiration, reverse coma and avoid the need for repeated doses. Be guided by pupil size and clinical response. Patient should improve in 1 minute. Failure to respond to 2 mg may indicate another cause of unconsciousness. The duration of naloxone is short (15–30 minutes) compared to opioids. Continue observation + monitor RR. May cause an acute withdrawal syndrome in those with opioid dependence ie anxiety, agitation, tachycardia, confusion, seizures, pulmonary oedema or arrhythmias				
Pregnancy: Can be lifesaving in acute overdose. Monitor closely in pregnancy, lactation and neonates of opioid dependent mothers				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,3]				

Unscheduled	Activated charcoal			Prescribing guide
Only give on advice of MO/NP/PIC				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	50 g/ 250 mL	Oral	**Adult** 50 g **Child** 1 g/kg (max. 50 g)	stat Repeat doses on MO/NP/PIC advice
Offer CMI: May cause colicky abdominal pain, nausea, vomiting or constipation				
Note: Only administer if patient is alert, cooperative + able to drink themselves. Improve palatability by chilling, serve in a covered container with a straw, drink with eyes shut etc				
Contraindication: Child < 6 years with accidental liquid paracetamol ingestion. Strong acids or alkalis, iron sulfate or iron salts, cyanides, malathion, lithium, ethanol, methanol, ethylene glycol, hydrocarbons. Bowel obstruction				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]				

5. Follow up

- As per MO/NP/PIC

6. Referral/consultation

- Consult PIC in all cases

HMP Ciguatera fish poisoning - adult/child

Background[1-3]

- Caused by ingestion of ciguatoxins that accumulate in some tropical and subtropical fish eg red bass, chinamanfish, paddletail, coral trout, mackerel, red emperor, grouper, cod, snapper, bass, trevally, kingfish, other large predatory saltwater fish

1. May present with[1,2,4]

- **Eating saltwater fish 1–48 hours previously** + symptoms as per table below

Ciguatera poisoning symptoms[1,2]	
Gastrointestinal	• Nausea, vomiting, diarrhoea, abdominal cramps • **Occur early + resolve within 12 hours**
Neurological	• Tingling/numbness - mouth/lips, tongue, throat, fingers, extremities • Unpleasant or burning sensation on contact with cold water/cold objects • Itchiness, sweating, muscle pain, ataxia, ⚓ sensation[4] • **Symptoms usually develop over 24 hours**
Other[4]	• Cardiac signs (rare) eg hypotension, bradycardia • **Days/weeks after initial illness** - fatigue, loss of energy, confusion, reduced memory, muscle and joint pain, headache, anxiety, depression, itchiness

2. Immediate management[4]

- Do vital signs
- If hypotensive, see Shock, p. 60

3. Clinical assessment[2,4]

- Ask about:
  - symptoms + time/date of onset
  - type and amount of fish ingested
  - when ingested
  - how often fish is eaten, as small doses can accumulate over time
  - if others who ate the fish are also feeling unwell
  - any gastrointestinal symptoms prior to presentation **that may have subsided**
- Do:
  - ECG
  - bloods/i-STAT - UE
  - Hydration assessment - adult, p. 202 or child, p. 522
- If breastfeeding, assess infant for ciguatera poisoning

4. Management[1,2]

- Consult MO/NP if suspected, who may consult Poisons Information Centre ✆ 13 11 26 (24 hours) or clinical toxicologist
- Management is aimed at treating symptoms + reassurance (rarely life-threatening)
- Offer analgesia and antiemetic. See Acute pain, p. 32 and Nausea and vomiting, p. 40
- If dehydrated:[1]
  - start IV fluids (first line treatment) - sodium chloride 0.9%. MO/NP will advise rate/amount
  - monitor fluid balance
- **If diagnosed with ciguatera poisoning, advise:**[2,4]
  - sometimes symptoms may take weeks to months to resolve
  - to minimise symptom recurrence, for 3–6 months:
    - stay hydrated, avoid physical exertion
    - avoid eating any fish (including freshwater), nuts, alcohol, caffeine, pork, chicken

5. Follow up[2]

- If not retrieved/hospitalised advise to be reviewed the next day or if concerned
- Consult MO/NP if there are unresolved symptoms

6. Referral/consultation[5]

- Ciguatera is notifiable in Qld ✆. Alert Public Health Unit + see http://disease-control.health.qld.gov.au/Condition/731/ciguatera-poisoning

Bites and stings

HMP Snake bite - adult/child
Land and sea snakes

Recommend[1-3]

- **Medical emergency** - should receive high priority care, even if the patient appears well
- Suspected snake bite must be retrieved to a hospital with critical care facilities, adequate antivenom, and 24 hour pathology
- Contact Poisons Information Centre (PIC) ✆ 13 11 26 (24 hours) for early expert advice
- Do not attempt to capture or injure the snake

1. May present with[1-4]

- Suspected snake bite:
  - ± bite mark - may resemble a scratch
  - ± **Signs of systemic envenoming** (rare)

Signs of systemic envenoming[1,4]	
Early collapse	• Hypotension, seizure, unconsciousness or cardiac arrest
Non-specific symptoms	• Headache, nausea, vomiting, abdominal pain, sweating, diarrhoea, looks unwell
Progressive paralysis	• Eyes affected first - droopy eyelids, blurred vision, abnormal eye movements • Difficulty breathing, swallowing, chewing, speaking • Weakness in legs/arms, poor coordination/gait
Bleeding	• From bite/IVC site, gums, urine, vomiting/spitting blood
Rhabdomyolysis	• Muscle pain, tenderness and weakness, tea red coloured urine
Other	• Significant localised bite side effects, tender lymph nodes draining bite site

2. Immediate management[1-3]

- **DRSABCD**. As needed, see BLS, p. 44

Apply **Pressure bandage with immobilisation.**[1] Promptly note features and location of bite first. If bandage already on, apply further bandages if needed - without removing the first bandage

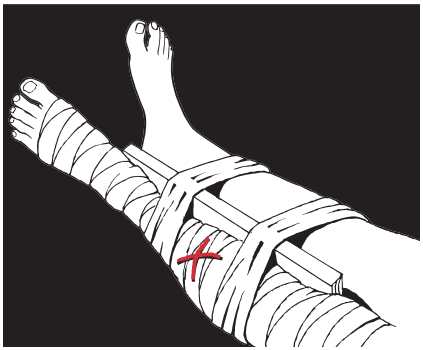
- Consult MO/NP urgently + arrange retrieval
- Look + monitor for **Signs of systemic envenoming.** If any:
  - MO/NP will order polyvalent snake antivenom in consultation with PIC/toxicologist
  - **note:** if snake species known, monovalent snake antivenom may be recommended by MO/NP/PIC **OR** sea snake antivenom if available[2]
- Do:
  - vital signs
  - GCS/AVPU, p. 550
  - insert IVC x 2
  - bloods:
    - FBC + blood film, UEC, LDH, CK, coagulation studies - INR, APTT, D-dimer, fibrinogen[1]
    - **do not use** point-of-care/i-STAT for INR or D-dimer. False –ve results common[3]
- If hypotensive/shock - give IV bolus sodium chloride 0.9% **adult** 250–500 mL, **child** 20 mL/kg

Pressure bandage with immobilisation[1,2,4-6]

- **Apply bandage - broad (15 cm) elastic type** (not crepe) firmly over the bite site:[1,4]
  - same pressure as for a sprained ankle
  - should NOT be able to easily slide a finger between the bandage and skin
  - **apply another bandage** from lower portion of affected limb, upwards to **cover as much of the limb as possible** (see diagram), over top of clothes if necessary
  - **if bite on the torso** apply direct pressure on the bite site using multiple combines and a bandage - do not restrict breathing or chest movement
  - **if bite on head or neck** - do not apply pressure to the bitten area. Keep patient/body still
- **Immobilise** - the joints either side of the bite site using a splint + bandage to restrict movement (use a sling if arm)[5]

Keep patient completely immobilised, calm and still for bandaging to be effective[1,4]

- Indicate on bandage the location of bite



3. Clinical assessment[1,2,4]

- Get history:
  - geographic location where bite occurred ie land or water
  - location and features of bite(s) on body - do NOT remove pressure bandage to check
  - time of bite
  - appearance of snake if seen
  - number of strikes
  - any first aid
  - time of bandage application
  - symptoms + when started
- Do:
  - urinalysis for blood + note colour
  - palpate lymph nodes draining the bite site limb for tenderness[6]

4. Management[1-4]

- **Do not remove bandage. Keep patient immobilised**
- Nil by mouth
- Monitor closely until retrieval:
  - vital signs
  - GCS/AVPU, p. 550
  - urine output
- Send pathology with retrieval team
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545

Snake antivenom[1-4,7]

- Indicated if clinical or laboratory evidence of envenoming
- If decision is made to give, aim to give early (within 2 hours of bite) to prevent/limit complications of envenomation[1]

Unless life-threatening, all cases where antivenom is considered should be discussed with tertiary facility/clinical toxicologist or PIC[1,4]

Antivenom administration

- **Before** - prepare to resuscitate + manage Anaphylaxis, p. 80
- **During:**
  - do vital signs 5 minutely
  - monitor for **Adverse effects** eg erythema, urticaria, hypotension and bronchospasm
- **After:**
  - continue to monitor closely for adverse effects until retrieval[4]
  - MO may advise to release pressure bandage after antivenom administered + patient stable[1]

S4	Polyvalent snake antivenom		Extended authority ATSIHP/IHW/IPAP/RIPRN	
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case notify MO/NP as soon as circumstances do allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	40,000 units/ 50 mL **Contains 5 monovalents** Brown, Tiger, Death adder, Taipan, Black	IV	**Adult and child** 1 vial	stat Start infusion slowly. Monitor for **Adverse effects** - if none, ↑ rate and infuse over 15–20 minutes If **allergic or anaphylactic reaction** pause infusion, treat accordingly then restart at a slower rate Additional doses on MO/NP order
Preparation: Dilute to 500 mL sodium chloride 0.9% or Hartmann's **OR** if young child or at risk of fluid overload, dilute to 250 mL. **Can be rapidly injected undiluted in life-threatening emergencies**				
Offer CMI: May cause anaphylaxis, rash, headache, hypotension, fever and delayed serum sickness				
Pregnancy: Benefits to mother and fetus may outweigh potential risks				
Contraindication: No absolute contraindications. Benefits outweigh risks				
Management of associated emergency: Ensure adrenaline (epinephrine) 1:1,000 is drawn up and resuscitation equipment readily available. If patient develops allergic reaction/anaphylaxis stop the infusion and give IM adrenaline (epinephrine). See Anaphylaxis, p. 80 for doses. Consult MO/NP [1,7,8]				

5. Follow up

- If antivenom used:
  - complete and send off the questionnaire that comes with each ampoule
  - advise they may develop serum sickness in 4–14 days. Signs include:[8]
    - fever, rash, joint and muscle pain, general malaise
    - if develops, advise to return to clinic. MO/NP may order oral corticosteroids[3,4]

6. Referral/consultation

- Consult MO/NP/PIC on all occasions of suspected snake bite

HMP Spider bite - adult/child
Red-back, other Australian spiders

Background

- In Australia, spider bites are unlikely to cause necrotic lesions. If a patient presents with a necrotic lesion, other causes should be thoroughly investigated[1,2]
- Red-back spider antivenom is not usually recommended[2,3]

1. May present with[1]

- Suspected spider bite ± **Bite symptoms**

Spider	Bite symptoms[1-3]
Big black spider	• Painful bite + fang marks. See Funnel-web spider, p. 221
Red-back	• Does not cause rapid or life-threatening effects • **Pain** - increases over an hour. Radiates from bite site up the limb or to trunk • **Local features** - sweating + goosebumps within an hour around the bite site, patchy paralysis, pins and needles, muscle spasms, redness • **Other** - headache, nausea, vomiting, fever, hypertension; **in child** - consider if abrupt onset of inconsolable crying, abdominal pain or priapism[2]
Other spiders	• Minor effects eg pain, swelling ± itch at bite site

2. Immediate management
Not applicable

3. Clinical assessment

- Get history:
  - description of spider (if seen)
  - time, location and features of bite site
  - geographical location where bite occurred
  - any first aid
- Do vital signs + physical examination - noting any **Bite symptoms**

4. Management[1,3]

- Reassure patient
- Apply ice pack
- Do NOT apply pressure bandage - can worsen pain
- Clean wound with soap and water to prevent secondary infection
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- **If red-back spider bite:**[2]
  - treat symptoms + pain
  - offer ibuprofen + paracetamol. See Acute pain, p. 32
    - if ineffective, consider adding oxycodone (if adult)
  - consult MO/NP if:
    - child, or
    - severe symptoms or pain not responding to analgesia. MO/NP may consult Poisons Information Centre (24 hours) ✆ 13 11 26 or clinical toxicologist ± retrieval if required[2]
  - observe until pain adequately controlled, then can go home[2]
- **If other spider bite:**[1,2]
  - offer symptomatic relief of itch or pain. See Acute pain, p. 32
  - no specific treatment needed

5. Follow up[3]

- Advise to return if concerned or if severe/persistent symptoms. Consult MO/NP

6. Referral/consultation

- As above

HMP Funnel-web (and big black) spider bite - adult/child

Recommend[1,2]

- **Life-threatening medical emergency** - treat any big black spider bite initially as a funnel-web bite, especially in eastern Australia[1]
- Contact Poisons Information Centre (PIC) ✆ 13 11 26 (24 hours) for early expert advice

1. May present with[1,3]

- Painful bite
- Puncture marks often visible ± bleeding
- ± signs of envenoming:
  - mild - local numbness/tingling or muscle twitching + systemic symptoms
  - severe - see table below

Signs of severe funnel-web spider envenoming[1,3]

- Abdominal pain, vomiting, headache
- Agitation, altered LOC, collapse
- Watery eyes, goosebumps, sweating, drooling
- Muscle twitching (commonly tongue)/spasms, tingling or numbness eg lips/mouth
- Difficulty breathing, pulmonary oedema
- Hypertension, brady/tachycardia
- Pupils constricted or dilated
- **In young children**, inconsolable crying, drooling, vomiting or collapse

Severe envenomation occurs rapidly (within 30 minutes of bite) and almost always within 2 hours

2. Immediate management[1,2]

- **DRSABCD**. As needed, do BLS, p. 44

Apply Pressure bandage with immobilisation, p. 218
Same technique as snake bite. Promptly note features and location of bite first

- Consult MO/NP urgently + arrange retrieval
- Insert IVC x 2
- Look + monitor for **Signs of severe funnel-web spider envenoming** - especially respiratory compromise + altered LOC:
  - if any, MO/NP may order funnel web spider antivenom
  - **do not delay antivenom if severe envenoming present - can be fatal within 30 minutes**[4]
- Do + monitor until retrieved:
  - vital signs
  - GCS/AVPU, p. 550
  - ECG + continuous cardiac monitoring

3. Clinical assessment[2]

- Get history:
  - description of spider (if seen)
  - time, location and features of bite site

- geographical location where bite occurred
- any first aid

4. Management[1-3]

- **Do not remove bandage. Keep patient immobilised**
- Nil by mouth
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545

Antivenom administration

- **Before** - prepare to resuscitate + manage Anaphylaxis, p. 80
- **During:**
  - do vital signs 5 minutely
  - monitor for **Adverse effects** eg erythema, urticaria, hypotension and bronchospasm
  - observe for response to treatment
  - if ongoing envenoming signs, MO/NP may order another dose + consult clinical toxicologist/PIC
- **After:**
  - continue to monitor closely for adverse effects until retrieval
  - MO may advise to release pressure bandage after antivenom administered + patient stable

S4	Funnel web spider antivenom			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances do allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	125 units	IV	**Adult and child** 2 vials	**stat** Start infusion slowly. Monitor for **Adverse effects** - if none, ↑ rate and infuse over 20 minutes If **allergic or anaphylactic reaction** pause infusion, treat accordingly then restart at a slower rate If severe, MO/NP may order a further 2 vials[3]
Preparation: Reconstitute each vial with 10 mL water for injections - **swirl gently** until completely dissolved - may take up to 10 minutes. Dilute dose in 100 mL sodium chloride 0.9% **OR** if young child or at risk of fluid overload, dilute in 50 mL. **Give undiluted over 2–5 minutes if cardiac arrest**				
Offer CMI: May cause anaphylaxis, rash, urticaria and delayed serum sickness				
Pregnancy: Benefits to mother and fetus may outweigh potential risks				
Management of associated emergency: Ensure adrenaline (epinephrine) 1:1,000 is drawn up and resuscitation equipment readily available. If patient develops allergic reaction/anaphylaxis stop the infusion and give IM adrenaline (epinephrine). See Anaphylaxis, p. 80 for doses. Consult MO/NP[1,4,5]				

5. Follow up

- If treated with antivenom, advise they may develop serum sickness in 4–14 days. Signs include:[1,5]
  - fever, rash, joint and muscle pain, general malaise
  - if develops, advise to return to clinic. MO/NP may order oral corticosteroids[4]

6. Referral/consultation

- Consult MO/NP/PIC on all occasions of suspected funnel-web spider bite

HMP Scorpion sting or centipede bite - adult/child

Background[1,2]

- Australian species are not known to cause systemic envenomation

1. May present with[1,2]

- Scorpion sting or centipede bite ±
  - pain at site - can be severe
  - red, tender, swelling, numbness, itchiness and tingling at site
  - rarely nausea, headache and malaise

2. Immediate management

Not applicable

3. Clinical assessment

- Get history:
  - description of creature (if seen)
  - time, location and features of sting/bite site
  - geographical location where sting/bite occurred
  - any first aid
- Do vital signs
- Do physical examination including site and features of sting/bite

4. Management[1,2]

- Reassure patient
- For pain, consider:
  - ice pack, or
  - hot water immersion. First check water temperature with unaffected limb to avoid scald
  - analgesia. See Acute pain, p. 32
  - consult MO/NP if not responding to simple analgesia
- If itch - consider antihistamine
- Clean wound with soap and water to prevent secondary infection
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545

5. Follow up

- Severe infection to sting/bite site occasionally occurs - advise daily wound care + review if required

6. Referral/consultation

- Consult MO/NP as above or if systemic symptoms persist

Tick bite - adult/child

1. May present with[1-3]

- Tick
- Localised swelling, itching or irritation
- Allergic reaction (large local swelling[1]) or anaphylaxis
- Late presentations may show signs of tick paralysis eg:
  - muscle weakness, difficulty walking, poor balance or coordination
  - numbness, tingling or weakness in limbs, hands, feet or face, drowsiness[4]

2. Immediate management[2]

- If signs of severe allergy/anaphylaxis, see Anaphylaxis, p. 80

3. Clinical assessment

- Get history:
  - allergies
  - how long tick attached + any first aid
  - geographical location where bite occurred
- Do:
  - vital signs
  - physical examination + look for:
    - signs of tick paralysis
    - ticks - check hair, between buttocks, groin, labia, ear canals, skin folds + inspect for lumps/swelling. **Note:** ticks can be difficult to find. Don't stop if 1 is found as there may be more

4. Management

- Consult MO/NP ± arrange retrieval if:
  - signs of tick paralysis[1,2]
  - history of anaphylaxis to tick bite[3]
- **Treat ALL tick bites as if anaphylaxis could result.** To reduce the risk, **Do NOT:**[3,5]
  - touch, scratch or forcibly remove tick eg with tweezers, fingernails or tick removal device[3]
  - apply heat, kerosene, methylated spirits, nail polish, oil, alcohol, other chemicals[1]
- **Kill tick** as per **Tick Removal** + allow to drop off - may take many hours

Tick removal[1,2,5,6]	
Larger/ adult tick	• Freeze tick with ether-containing product eg Tick Off® and allow to drop off • Follow manufacturers instructions
Small tick	• Apply permethrin cream eg Lyclear® and allow to drop off. Apply at least twice with 1 minute pause between applications
Advise to return to clinic if remains attached the following day. If returns, use fine blunt forceps as close to the skin as possible to pull tick off (so it remains intact)[3]	

- **If patient has removed the tick but mouth-parts remain** - attempt to remove with forceps. If unable, leave it alone and let the skin heal
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545
- Once tick has dropped off, advise:
  - clean the area with soap and water to prevent secondary infection[1]
  - apply cold compress to reduce pain/swelling
  - site may be inflamed/worsen up to 48 hours after removal; up to 10 days if mouth-parts in situ[3]

5. Follow up[3]

- Advise to check bite site daily ± wound care if needed
- Tick bites can cause illnesses eg Rickettsial infections, Q fever, mammalian meat allergy:[5,7]
  - return if chills, fever, headache, muscle/joint pain, rash, dry black area at bite site,[3] or if concerned

6. Referral/consultation

- Consult MO/NP as above

HMP Box jellyfish sting - adult/child

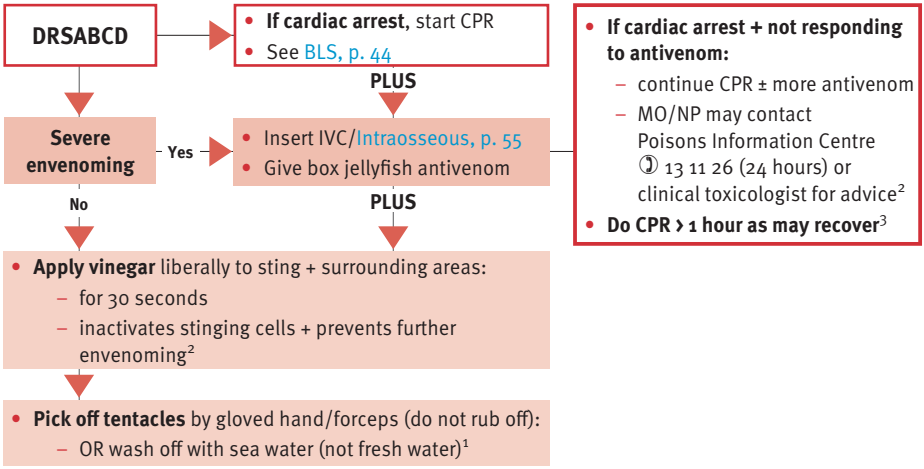
Background[1]

- **Life-threatening medical emergency** - severe envenoming can cause death within 20–30 minutes
- Consider box jellyfish if sting occurred from Bundaberg (Qld) northwards, across the northern coastline and down to Geraldton (WA)

1. May present with[2,3]

- Immediate severe pain after a jellyfish sting:
  - AND sting marks/welts - wide (up to 1 cm) whip-like, with a cross-hatched pattern
  - ± attached tentacles
- **Severe envenoming:**[2]
  - cardiovascular collapse eg hypotension, cardiac arrest, unconsciousness, seizures

2. Immediate management[1,2]



- If severe/evidence of envenoming, consult MO/NP urgently + arrange retrieval
- **Offer analgesia + ice packs**:[2]
  - IV opioid may be necessary. See Acute pain, p. 32
- Do + monitor until retrieved:
  - vital signs
  - GCS/AVPU, p. 550
  - ECG + continuous cardiac monitoring

3. Clinical assessment

- Ask about:
  - time of sting
  - geographical location where sting occurred
  - any first aid
- Do physical examination, including site, size and features of sting

4. Management[3]

- If minor sting, no signs of envenomation and pain managed with simple analgesia, consult MO/NP who may advise discharge

Antivenom administration[2,5]

- **Before** - prepare to resuscitate + manage Anaphylaxis, p. 80
- **During:**
  - do vital signs 5 minutely
  - monitor for **Adverse effects** eg erythema, urticaria, hypotension and bronchospasm
  - observe for response to treatment
- **After** - continue to monitor closely for adverse effects until retrieval

S4	Box jellyfish antivenom		Extended authority ATSIHP/IHW/RIPRN	
RN must consult MO/NP				
ATSIHP, IHW and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	20,000 units/1.5–4mL	IV	**Adult and child** 1 vial	**stat** Start infusion slowly. Monitor for **Adverse effects** - if none, ↑ rate and infuse over 5–10 minutes If **allergic or anaphylactic reaction** pause infusion, treat accordingly then restart at a slower rate Consult MO/NP for further doses. In severe envenoming up to 3 vials are commonly required
Preparation: Dilute in 1:10 (or in 100 mL) sodium chloride 0.9% or Hartmann's **OR** if young child or at risk of fluid overload dilute to 1:5. **Can be injected undiluted in cardiac arrest. If life-threatening emergency, inject over 2–5 minutes**				
Offer CMI: May cause anaphylaxis and delayed serum sickness. Transient rash may occur[4]				
Pregnancy: Benefits to mother and fetus may outweigh potential risks[4]				
Management of associated emergency: Ensure adrenaline (epinephrine) 1:1,000 is drawn up and resuscitation equipment readily available. If patient develops allergic reaction/anaphylaxis stop the infusion and give IM adrenaline (epinephrine). See Anaphylaxis, p. 80 for doses. Consult MO/NP[2,4,5]				

5. Follow up[2]

- Advise they may develop an allergic itchy + bumpy rash over the sting site after 7–14 days
- If treated with antivenom, advise they may develop serum sickness in 4–14 days. Signs include:
  - fever, rash, joint and muscle pain, general malaise
  - if develops, advise to return to clinic. MO/NP may order oral corticosteroids

6. Referral/consultation

- As above

HMP Irukandji syndrome - adult/child

Background[1-3]

- **Potential life-threatening medical emergency**
- Consider if symptoms develop during/shortly after swimming in tropical coastal + offshore waters of Australia

1. May present with[1-3]

- Initial sting usually not felt. Minimal/absent skin markings
- After 20–30 minutes, may develop:
  - severe generalised pain - back, abdomen, chest and muscles
  - sense of impending doom, agitation
  - nausea and vomiting
  - sweating
  - **if severe,** cardiac effects (uncommon) eg:
    - difficulty breathing, severe hypertension, tachycardia (common), shock

2. Immediate management[2-4]

- **DRSABCD.** If needed, BLS, p. 44
- Reassure and keep patient at rest
- Consult MO/NP urgently + arrange retrieval
- Offer analgesia. See Acute pain, p. 32. Opioid usually needed
- Do:
  - vital signs frequently
  - O_2 to maintain $SpO_2 \geq 94\%$
  - ECG + continuous cardiac monitoring
  - insert IVC
  - bloods/i-STAT - troponin, FBC, UEC, Mg
- Monitor for cardiac effects eg:
  - Pulmonary oedema, p. 110 eg respiratory distress, chest crackles/wheeze
  - Hypertensive emergency, p. 113 - treat initially with subling GTN
  - ECG changes eg T wave inversion and ST segment depression
- MO/NP may contact Poisons Information Centre (24 hours) ✆ 13 11 26 or clinical toxicologist
- **Consider differential diagnoses** - Decompression illness, p. 188 if diver shortly after surfacing, or Box jellyfish, p. 225 if large welts seen

3. Clinical assessment[3]

- Ask about - time of sting + any first aid
- Check - site, size and features of sting (if visible)

4. Management[2,3]

- Continue to monitor closely until retrieval. Cardiac effects can be delayed

5. Follow up

- All patients to be retrieved/hospitalised

6. Referral/consultation

- As above

HMP Bluebottle and other jellyfish stings - adult/child

Background[1]

- Bluebottle stings are common in all coastal waters of Australia

1. May present with[1-3]

- Immediate, intense pain at sting site
- Red welts - linear or curved
- Systemic effects (eg nausea, headache, malaise) are uncommon

2. Immediate management[4]

- If swimming in tropical/subtropical waters, consider differential diagnoses:
  - Box jellyfish, p. 225 - immediate severe pain and obvious large welts on skin ± tentacles adhered to skin
  - Irukandji syndrome, p. 227 - pain usually delayed, severe and generalised. Skin markings or welts may not be seen

3. Clinical assessment[1-3]

- Ask about:
  - time of sting
  - any first aid
- Do vital signs
- Check - site, size and features of sting

4. Management[1-4]

- Reassure patient
- **Do not** use vinegar - may increase pain
- Remove any remaining tentacles by gloved hand or forceps, or wash off with sea water
- For pain consider:
  - hot water immersion - put affected limb in hot water (first check temperature on other limb to avoid scald), or hot shower for 20 minutes (hot but not scalding or uncomfortable)
  - analgesia. See Acute pain, p. 32
  - **note:** pain typically lasts up to 2 hours
- Consult MO/NP if:
  - pain not controlled by oral analgesia + hot water immersion
  - systemic effects, or doubt over cause of sting
- Transport to hospital or further medical intervention is rarely required

5. Follow up

- If patient concerned

6. Referral/consultation

- As above

HMP Blue-ringed octopus and cone shell bite/sting - adult/child

Background[1-3]

- **Life-threatening medical emergency.** Envenoming can cause paralysis + death from respiratory failure within 30 minutes
- Blue-ringed octopus inhabit all coastal waters in Australia - often found in tidal pools
- Many species of cone shell are found in tropical waters of Australia

1. May present with

- Collapse on or near beach shortly after a minor sting

Blue-ringed octopus[1,3]	• Painless bite ± spot of blood visible • Within minutes - rapid progressive paralysis: – numbness of mouth, lips, tongue, drooping upper eyelid, blurred/double vision – difficulty swallowing – **in severe cases** - respiratory failure leading to hypoxic cardiac arrest
Cone shell (snail)[4]	• Sting felt as mild to sharp burning sensation ± swelling and numbness • Can progress to spreading paralysis - similar to blue-ringed octopus sting • **In severe cases** - respiratory failure, cardiac arrest (40 minutes to 5 hours after sting)

2. Immediate management[1-4]

- **DRSABCD.** As needed, do BLS, p. 44
  - **note:** may require prolonged ventilation - until respiratory paralysis resolves (2–5 days)

Apply Pressure bandage with immobilisation, p. 218
Same technique as snake bite. Promptly note features and location of bite/sting first

- Urgently consult MO/NP + arrange retrieval
- Do + continue to monitor until retrieved:
  - vital signs + neurological assessment
  - airway + check for signs of paralysis. **If needed, bag-valve-mask ventilation (life-saving)**
  - continuous cardiac monitoring
- Insert IVC
- Reassure patient - they may be paralysed but still fully aware[3,4]
- Offer analgesia. See Acute pain, p. 32

3. Clinical assessment

- Ask about - time of bite (if possible), any first aid, time paralysis started

4. Management[1,2]

- **Do not remove pressure bandage. Keep patient immobilised**
- MO/NP may intubate prior to retrieval if respiratory failure[3]

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Sponges - adult/child

Background[1,2]

- Venomous sponges are found in all coastal waters of Australia. Can cause contact dermatitis
- Sponge related injuries are rare

1. May present with[1,2]

- Mild local redness, itching, stinging, pins and needles, numbness
- Occasionally local swelling and joint stiffness
- Fire sponges can cause redness, swelling, blistering + peeling of the skin 2–3 weeks after contact

2. Immediate management

Not applicable

3. Clinical assessment

- Ask about:
  - time and circumstances of contact
  - any first aid
- Do vital signs
- Check skin around contact site

4. Management[1,2]

- Clean the wound site
- Reassure patient, treatment usually not required
- Offer analgesia. See Acute pain, p. 32
- Consider antihistamine or topical steroid for contact dermatitis

5. Follow up

- Review if any ongoing symptoms

6. Referral/consultation

- Usually not required

HMP Stinging tree - adult/child

Background[1]

- Common tree in Qld rainforests with stinging hairs on leaves/stalks. Hairs contain numerous substances which are injected into the skin causing immediate and often severe pain
- There is no clear first aid or definitive treatment recommendations. Below are common remedies which are used in areas where the tree is endemic
- Topical diluted hydrochloric acid (HCl) is no longer recommended

1. May present with[1]

- Immediate pain after contact with tree ± local sting site erythema, swelling, sweating

2. Immediate management

- Reassure patient this is not life-threatening
- Advise patient not to scratch or rub the area - can cause hairs to break + penetrate deeper, making them difficult to remove[2]
- Give analgesia. See Acute pain, p. 32 - may need IV morphine or fentanyl if severe pain:
  - **note:** initial pain can last hours[1]

3. Clinical assessment

- Do vital signs

4. Management

- Hospitalisation not usually needed
- Use hair removal wax strip to remove finer hairs (unless a minor sting). Do not smear wax on skin, as will cause more pain:[2,3]
  - removing finer hairs helps to prevent further release of the toxin (hairs can continue to release toxin for up to a year)
- Apply topical anaesthetic gel after wax removal
- Can also try:[2,4]
  - applying sticking plaster + pulling it off
  - remove visible hairs with tweezers
- **Note:** sometimes the skin will close over the hairs + they can't be removed
- Advise patient:[1,2]
  - pain/tingling and sensitivity to cold weather/water can **last days or months**
  - hot showers may help
  - affected area can remain intermittently sensitive for a long period of time
- If IV opiate required, will need ongoing oxycodone with regular simple analgesia

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Assault

Domestic and family violence (DFV) - adult

Recommend[1]

- If outside of Qld, refer to local policy + consider mandatory reporting requirements
- DFV has immediate and long-term impacts on children. **Mandatory reporting of child abuse is required throughout Australia,** see Child protection, p. 539

Background[1]

- DFV is when 1 person in an intimate personal, family or informal carer relationship uses violence, coercion, manipulation or abuse to maintain power and control over the other person
- It is usually an ongoing pattern of behaviour aimed at controlling a partner (coercive control). It can include social, financial, psychological and technology-facilitated abuse, often accompanied by threats of physical violence to cause fear
- Also see *Understanding DFV* (Qld Health intranet only)

1. May present with[1]

- Disclosure of DFV ± injuries
- Patient may not act any differently or show any outward signs, but consider:
  - **risk factors** eg the patient perceives risk, pregnancy/new birth, isolation, recent/pending separation, court orders/proceedings, financial difficulties, perpetrator mental health issues ie suicide threats + attempts and drug/alcohol abuse[1]
  - **indicators** eg unexplained bruising/other injuries (especially to head + neck), bruises in various stages of healing, injuries on hidden body parts (breasts, abdomen ± genitals), injuries do not fit history given, emotional distress ie anxiety, indecisiveness, multiple presentations, accidents during pregnancy

2. Immediate management

- Assess and treat any injuries. Consult MO/NP if strangulation injury, may require CT scan[2]
- Consider immediate safety of yourself, the patient ± children/unborn child:
  - if concerns call police on triple zero (000)

3. Clinical assessment[1,3]

ALERT never ask questions like

- Why don't you leave
- Why did he/she hit you
- What could you have done to avoid this situation

- Talk to the patient alone + in private. Be non-judgemental + listen carefully. Ask questions like:
  - has your partner ever threatened to hurt you or your children
  - do you have any worries about your safety or someone else's at home
  - are you afraid of your partner, do you feel safe in your relationship
  - are you safe to go home
  - would you like assistance with this
- It takes courage to talk about DFV. It is important to respond sensitively:
  - communicate belief and validate the experience eg that must have been frightening for you, it must be difficult for you to talk about
  - affirm that violence is unacceptable, you don't deserve to be treated this way

- **Patients experiencing any of the following are at high risk of being murdered.** Ask about:[3,4]
  - strangulation/choking/suffocation - how many times, any ↓ or loss of consciousness
  - escalation in severity or frequency of violence
  - recent or pending separation
  - obsessive/jealous behaviours including stalking and cyberstalking
  - access or use of weapons
  - perpetrator threatens/attempts suicide
  - threats to harm/kill children and pets
  - perpetrator unemployment, drug/alcohol abuse
  - sexual assault/violence
- If pregnant or new birth, check medical record for DFV screening tool ie SAFE Start Psychosocial form - this may help guide management
- Ensure objective documentation, quote any disclosures. Use diagrams for injuries as needed[1]

4. Management

- **If patient declines to answer questions or discuss further:**[1]
  - respect their response and offer contact details of DFV services, see **Referral/consultation**
  - advise that he/she has right to protection and safety from DFV
  - document your conversation
- **If patient chooses to talk/asks for assistance:**[1]
  - help them to call a DFV service. See **Referral/consultation.** With consent offer to speak on their behalf and then support them until the call is complete
  - contact social worker if available
  - if patient requests, contact police to assist with:
    - removing perpetrator from the home
    - retrieving belongings
    - applying for a Domestic Violence Order, even if they chose to stay in the relationship
- Ensure patient has somewhere safe to go, offer to arrange refuge accommodation. If chooses to go home consider safety plan, including:[1,3]
  - in an emergency call police on triple zero (000)
  - an escape plan - identify safe places and how to get there
- **Note:** if experiencing strangulation - advise there is a risk of traumatic/acquired brain injury with recurrent strangulations[3]
- Do not engage with the perpetrator in ways that might ↑ risk of DFV:[1]
  - do not confront in an accusatory manner or in a way that will shame or anger them
  - never share anything the patient or children have told you
  - do not collude with their attempts to minimise, excuse or justify their violent behaviour
- If a perpetrator discloses violence:[1]
  - acknowledge their courage + reinforce that violence is not acceptable
  - offer ongoing support + referral/contact details to DFV services, see **Referral/consultation**
- **If you are unsure what to do:**[1]
  - contact MO/NP/mental health clinician/discuss with local clinic management
  - call DFV service for advice, or
  - if this has triggered personal experiences, reactions or feelings - seek assistance from the Employee Assistance Program (EAP), MO/NP or local clinic management

5. Follow up

- Offer referral to mental health clinician, DFV specialist worker, legal services
- Review disclosures + consider if information sharing is required, see **Background** *Understanding DFV* for guidance as needed

6. Referral/consultation

- DVConnect 24 hour ✆ 1800 811 811, including assistance with refuge accommodation
- DVConnect Mensline 9 am–midnight ✆ 1800 600 636
- 1800 RESPECT, 24 hour sexual assault and domestic violence support ✆ 1800 737 732
- Elder Abuse Helpline ✆ 1300 651 192
- National Disability Abuse and Neglect Hotline ✆ 1800 880 052
- For **non-urgent** matters Policelink ✆ 131 444. Alternatively, online and SMS contact https://www.police.qld.gov.au/domestic-violence
- Find local support, including in remote areas https://www.qld.gov.au/community/getting-support-health-social-issue/support-victims-abuse/domestic-family-violence/find-local-support

Sexual assault - adult/child

Background[1]

- Sexual assault is a crime and includes any unwanted or forced sexual act which a person does not consent eg penile/digital/object penetration, oral sex, groping, inappropriate touching of a sexual nature
- A forensic examination is where a trained clinician gathers and preserves biological evidence with a Forensic Medical Examination Kit (FMEK) - see links below. This may include the collection of the patient's clothes. Check local protocol, patient may require retrieval if unable to be done locally
- Also see *Child sexual abuse* https://www.dcssds.qld.gov.au/our-work/child-safety/protecting-children

Qld Health key resources (if outside of Qld Health, refer to local policies)

- *Caring for people disclosing sexual assault* https://qheps.health.qld.gov.au/hsq/forensics/response-to-sexual-assault
- If < 14 years, see https://qheps.health.qld.gov.au/fss/forensic-services/response-to-sexual-assault/fmer/under-14-paediatric

1. May present with

- Disclosing sexual assault, rape ± injuries eg bruising/scratches to arms, legs, groin[1-3]
- Trauma to genital area, anus. **Note:** may not be visible[4]
- Child/adolescent pregnancy, STI[4]
- Parent/carer concerns of sexual abuse of child
- Accompanied by police requesting forensic examination[1]

2. Immediate management

- **Assess and treat any injuries - clinical interventions take priority over forensic examination**[2]
- **Contact MO/NP urgently if:**
  - strangulation marks + symptoms eg difficulty breathing/swallowing, neck pain
  - traumatic injuries eg head, chest, abdominal

- **If < 14 years of age** - contact MO/NP who will refer to paediatrician:
  - medical + forensic examinations should be performed by a paediatrician with sexual abuse examination skills, with support from a Sexual Assault Nurse Examiner (SANE) for FMEK if required
  - sexual abuse must be reported to police **AND** as per mandatory reporting responsibilities to Child Safety.[2] See Child protection, p. 539
  - **do NOT ask about details, the police will do this** + advise the MO to inform the forensic examination
  - if not retrieved, before sending home, consider/consult with paediatrician ± Child Safety about safety risks to return home. Document these discussions. Is:
    - the home environment safe, and
    - there a protective parent/carer
- Contact social worker if available

3. Clinical assessment

- It is important that the patient feels a sense of control. **Offer:**[2]
  - to arrange a support person who is not a potential witness
  - move to private room
  - clinician gender preference where possible
  - reassurance that consent is needed for all parts of treatment/examination and can be withdrawn anytime
- **Sexual assault is a very traumatic experience.** It takes courage to talk about. It is important to respond sensitively:
  - communicate belief and validate the experience eg that must have been frightening for you, it must be difficult for you to talk about
  - **ask about** details of assault, **do not** ask questions like - why did you go there, how drunk were you
  - investigating the assault is a police matter, do not try to work out what did/didn't happen
- Ensure objective documentation, quote any disclosures
- **As appropriate, ask about:**
  - contraception. If oral contraceptive - any missed doses in last menstrual cycle
  - tetanus and hep B vaccination status
  - reproductive coercion if safe to do so. See Domestic and family violence, p. 232 if indicated
- **Offer** a physical examination, including:
  - vital signs
  - assessment and documentation of all injuries, use diagrams if required. **Note: do not perform any forensic examination unless trained**

4. Management

- If < 14 years of age ongoing management as per MO/NP/paediatrician

If ≥ 14 years of age

- Contact MO/NP, Sexual Health Service or Forensic Nurse Examiner (FNE)/SANE who will talk to the patient about reporting + forensic examination options, dependent on:[1]
  - time since the assault + type of assault
  - involvement of altering substances eg alcohol, illicit drugs
- **A forensic examination can ONLY be performed by a FNE, SANE or MO (under advice from Forensic Medicine Qld if MO not trained).** Retrieval may be required for forensic examination. Check local protocol

- Encourage patient to talk to the police[1]
- **If patient chooses to report the assault to police:**[2]
  - call the local police or Policelink ✆ 131 444
  - police will talk with the patient ± request forensic examination
  - **note:** police will take possession of the completed kit
- **If patient does not want to report or is undecided, discuss:**[2]
  - Collect and Store option. Samples are collected, stored + can be used to report at a later date within 24 months - contact MO/NP if patient chooses
  - reassure the patient they can talk to the police, this does not mean they have to make a report now
- **If patient does not want to report or have a forensic examination:**[2]
  - they can contact police later, or
  - log the details of the assault anonymously through the Alternative Reporting Option, see https://www.police.qld.gov.au/reporting
- Offer STI screen if indicated or patient concerned.[3] See STI/BBV tests, p. 433
  - **note:** if done now still needs screening at 2 week follow up even if antibiotic prophylaxis is given[3]
  - contact MO/NP who may advise:[3]
    - ceftriaxone, azithromycin for STI prophylaxis
    - HIV Post-Exposure Prophylaxis, p. 461
- Also consider:[3]
  - pregnancy test for pre-existing pregnancy ± Emergency contraception, p. 424
  - Tetanus immunisation, p. 545
  - hep B vaccine and immunoglobulin (IG) (should be given within 14 days of the assault if non-immune or incomplete vaccination)[4]
  - early referral to sexual assault support service/social work/Mental Health[3] ✆ 1300 MH Call (1300 642 255)
- Offer analgesia. See Acute pain, p. 32

5. Follow up

- Advise patient **as indicated**:
  - STI screening is recommended 2 weeks after the assault[3]
  - pregnancy test if next period late or different from normal[3]
  - hep B vaccine at 1 and 6 months after first dose[5]
  - see MO/NP at next clinic as appropriate

6. Referral/consultation[3]

- Contact MO/NP for all sexual assaults
- Other resources include:
  - Forensic Medicine Qld ✆ 07 3722 1321 (hotline 24/7)
  - ‹ 14 years - Child Protection Forensic Medical Service (CPFMS) - statewide ✆ 07 3068 2660 (8:30 am–5 pm). On call SMO (5 pm–8:30 am) ✆ 07 3068 1111
  - Qld Sexual Assault Helpline ✆ 1800 010 120 (7:30 am–11:30 pm, 7 days)
  - 1800 Respect, 24 hour sexual assault and domestic violence support ✆ 1800 737 732
  - Child Safety Regional Intake Service or Child Safety After Hours Service Centre ✆ 1300 681 513 or 1800 811 810
  - True Relationships & Reproductive Health www.true.org.au ✆ 07 3250 0240
  - Victims Assist Qld https://www.qld.gov.au/law/crime-and-police/victim-assist-queensland

General

Respiratory problems

HMP Upper respiratory tract infection (URTI) - adult
COVID-19, common cold, influenza, bronchitis

1. May present with

- Symptoms as per table below

Symptoms + common causes[1]					
	COVID-19	**Common cold**	**Influenza**	**Bronchitis[2]**	Also consider **Allergic rhinitis***
Onset	gradual	gradual	sudden	usually follows URTI	sudden or gradual
Fever	sometimes	rare, usually mild	common	sometimes	no
Cough	common	common	common	prominent feature ± purulent/coloured sputum	no
Sore throat	common	common	sometimes	no	itchy, frequent need to clear throat
Shortness of breath	sometimes	no	sometimes	sometimes + wheeze	no
Fatigue	common	sometimes	common	sometimes	sometimes
Aches/pains	sometimes/ generalised	facial pain/ pressure	generalised	chest discomfort/ pain from coughing	no
Headaches	common	common	common	sometimes	sometimes
Runny or stuffy nose	common	common + posterior nasal drip	sometimes	sometimes	clear rhinorrhea, itchy nose ± watery, red eyes
Diarrhoea	rare	no	sometimes	no	no
Sneezing	common	common	common	no	common + sniffing

Note: * allergic rhinitis (hay fever) is non-infectious, may present with similar symptoms

2. Immediate management

- Use appropriate PPE + do PoCT/rapid antigen test (RAT), if available

3. Clinical assessment

- Get history, including:[2-4]
  - onset, duration, severity of symptoms
  - fever, chills
  - SOB, cough, any sputum - colour
  - facial pain, chest discomfort/pain
  - asthma, COPD, immunocompromised
  - recent international travel
  - unwell contacts
  - are symptoms:
    - there year round, seasonal or come and go[3]
    - troublesome/impacting on sleep, sport, work etc

- Do physical examination, including:
  - vital signs
  - check/listen for:
    - WOB , ↓air entry, wheeze, crackles
    - ENT - red throat, enlarged tonsils, bulging red eardrums
    - enlarged head/neck lymph glands
- **Note:** ↑RR + crackles in chest could be signs of carditis - see Acute rheumatic fever, p. 498

4. Management

- Advise most URTIs are viral + get better without antibiotics[5]
- If severe symptoms + patient unwell - consult MO/NP
- See management tables below

URTI management	
COVID-19	• See local guidelines for latest management advice
Common cold	• Symptoms usually clear within 7 days[5] • Advise to return if develops features of bronchitis or Acute sinusitis, p. 240
Influenza[4]	• Consider nose and throat swab PCR to confirm (or as per Public Health Unit advice) • Consult MO/NP if at risk of complications (antivirals may be indicated), including: – ≤ 5 years or ≥ 65 years – pregnant – immunocompromised, chronic conditions, Down syndrome, obesity – Aboriginal and Torres Strait Islander person – homeless person, aged-care/long-term resident
Bronchitis[2]	• Advise usually resolves without antibiotics within 2–3 weeks. Cough can persist up to 8 weeks • Consider other causes of cough eg Pneumonia, p. 241, Asthma, p. 92, Pertussis, p. 491, influenza, heart failure
Advise symptomatic treatment	
• Gargle warm salty water. Paracetamol or ibuprofen if needed. See Acute pain, p. 32 • Suck on an ice cube or lozenges, have a soothing drink eg honey and lemon • Use sodium chloride 0.9%/decongestant nasal drops/spray/tablets • Wash hands, cover mouth when sneezing/coughing to help stop others catching it	

Allergic rhinitis (hay fever) management[3,6]
• Give antihistamine eg Cetirizine, p. 290 • If watery, red eyes - can use eye drops if no response to antihistamines or intranasal corticosteroids. See Allergic conjunctivitis, p. 279 for eye drops • Advise to see MO/NP at next clinic if severe/troublesome, or has pre-existing asthma • Hay fever can be a risk factor for asthma. If allergic to pollens, advise may be at risk of thunderstorm asthma. Stay indoors in thunderstorms. Also see https://www.allergy.org.au/patients/asthma-and-allergy/thunderstorm-asthma

5. Follow up

- Advise to be reviewed if not improving in a few days, symptoms worsen, new symptoms, or concerned. Consult MO/NP
- If cough continues › 3 weeks, advise to see MO/NP at next clinic - may need further investigations[2]

6. Referral/consultation[7]

- COVID-19 and influenza are notifiable ⓘ

HMP Acute sinusitis - adult/child

1. May present with[1]

- Common cold, p. 238 symptoms
- + severe symptoms - present from onset of illness + persisting for 3–4 days ie:
  - T ≥ 39, purulent nasal discharge or facial pain

2. Immediate management[1]

- Suspect Foreign body in nose, p. 196 in child with:[2]
  - any nasal occlusion, facial swelling ± pain, or smelly, purulent or blood-stained nasal discharge
- Do vital signs
- Screen for Sepsis, p. 62
- Contact MO/NP urgently if any signs of spreading infection:
  - acute onset confusion
  - double or ↓ vision
  - neck stiffness, severe headache, photophobia
  - swelling or cellulitis around eyes, forehead or face
  - bulging eyes, painful eye movements

3. Clinical assessment[1]

- Get history, including:
  - onset, duration, severity of symptoms
  - facial pain/tenderness
  - fever, cough, nasal discharge - colour
  - immunocompromised
- Do physical examination, including:
  - any facial swelling + tenderness with gentle palpation
  - ENT

4. Management[1]

- Advise:
  - can have viral or bacterial cause
  - if bacterial sinusitis, it is usually self-limiting, and antibiotics are not usually indicated
  - paracetamol or ibuprofen if needed. See Acute pain, p. 32
  - consider symptomatic treatment as per URTI - adult, p. 238 or URTI - child, p. 477
- Consult MO/NP, who may consider antibiotics, if:
  - severe symptoms persisting › 3–4 days, or worsening after initial improvement, or
  - persist for › 7–10 days without improvement

5. Follow up[1]

- Advise to be reviewed if symptoms worsen, do not improve or signs of spreading infection:
  - consult MO/NP

6. Referral/consultation

- As above

HMP Pneumonia - adult

1. May present with[1-3]

- Cough + sputum, difficulty breathing, SOB
- Pleuritic chest pain
- Fever, rigors
- Fatigue, muscle aches/pain
- Always consider melioidosis during November to May (tropic wet season) in areas north of Mackay, Tennant Creek, Port Hedland - characterised by fever, pneumonia + abscesses

2. Immediate management[1,2]

- Do vital signs + give O_2 to maintain SpO_2 › 94% (88–92% if COPD)
- Screen for Sepsis, p. 62 - pneumonia is a common cause of sepsis:
  - continue to manage as per Sepsis if indicated
- Insert IVC as needed

3. Clinical assessment[1-3]

- Get history, ask about:
  - cough, sputum - new/change in sputum, purulent - green/yellow/brown/red
  - fever, rigors, night sweats
  - pleuritic chest pain
  - ↑ RR at rest, SOB
  - an aspiration event eg witnessed aspiration of vomit during a seizure
  - immunocompromised, diabetes, chronic kidney disease, chronic lung disease
  - hazardous alcohol intake
  - recent travel
  - any exposure to muddy soil/water
- Do physical examination, including:
  - check/listen for:
    - WOB
    - ↓ air entry, wheeze
    - crackles that do not clear on coughing (suggests pneumonia)
    - dullness on percussion
  - check skin for ulcers, abscesses, non-healing sores

4. Management[1]

- Contact MO/NP in all cases, who may advise:
  - chest x-ray
  - antibiotics ±
    - blood cultures, lactate, FBC, UEC, LFT, glucose, VBG
    - sputum (if able) for MCS ± nasopharyngeal swab for PCR
    - IV fluids, retrieval

Red flags for retrieval/hospitalisation[1]

- Any of - RR ≥ 22, HR › 100, sBP ‹ 90
- SpO_2 ‹ 92% on room air (or lower than normal if COPD)
- Acute onset confusion
- Chest x-ray shows multilobar involvement
- Lactate › 2
- Other factors eg comorbidities, social circumstances, age

- If assessed as not needing retrieval, MO/NP may advise:
  - oral amoxicillin OR
  - if allergy to penicillins, oral doxycycline
- Advise symptoms should steadily improve once treatment is started:[1]
  - fever should ↓ within the first few days and appetite will improve
  - other symptoms may take weeks to resolve
- **If melioidosis suspected** - MO/NP may order additional/alternative IV antibiotics ± retrieval

S4	Amoxicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	500 mg	Oral	1 g tds	5–7 days
Offer CMI: May cause rash, diarrhoea, nausea or thrush				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4]				

S4	Doxycycline			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	50 mg, 100 mg	Oral	100 mg bd	5–7 days
Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity				
Pregnancy: Safe in the first 18 weeks				
Contraindication: Serious allergy to tetracyclines. Taking oral retinoids. After 18 weeks of pregnancy				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5]				

5. Follow up

- Advise for review daily until improved, or earlier if symptoms worsen or concerned:
  - if no improvement or worsening consult MO/NP
- Advise to see at next MO/NP clinic

6. Referral/consultation

- Laboratory confirmed melioidosis is notifiable ①

Tuberculosis - adult/child

Recommend[1]

- Always seek advice from local Tuberculosis (TB) Control Unit (if outside of Qld, contact local Public Health Unit)
- Have a high clinical suspicion of TB if risk of exposure + respiratory infection unresponsive to standard treatments, in particular Aboriginal and Torres Strait Islander person in localised area eg Far North Qld/NT, or if HIV +ve

Background[1]

- Treatment is a combination of antimicrobial agents given over months + should always be discussed with a clinician experienced in TB management before commencement
- Drug susceptible and multidrug-resistant TB are ongoing concerns in high-risk populations
- Also see *Tuberculosis* https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/diseases/tuberculosis

1. May present with[2]

- Pulmonary TB signs + symptoms:
  - cough › 2 weeks
  - haemoptysis
  - fever of unknown origin + night sweats
  - unexplained weight loss, poor weight gain (child)
  - enlarged lymph nodes ie › 1 x 1 cm, › 1 month ± discharging sinus
  - feeling generally tired + unwell, ↓ playfulness (child)[1]
- Extrapulmonary TB - site specific signs/symptoms can be varied ± intermittent fever or weight loss

2. Immediate management[3]

- Wear a P2/N95 mask
- Place patient outside with a surgical mask on if no single room/negative pressure room available:
  - do not place in a room with re-circulating air conditioning

3. Clinical assessment[2]

- Ask about TB signs + symptoms, including:
  - onset date
  - if cough - productive/description
  - other signs/symptoms
- Assess for risk factors:
  - close contact with someone with TB - when/who
  - previous diagnosis of TB or latent TB - when, treatment
  - frequent visits to Papua New Guinea (PNG)
  - visited high incidence TB country eg PNG, SE Asia, Africa, India
  - ever resided in correctional facility
  - alcoholism, bong smoking + betel nut use
  - current or past smoker
- Get medical history:
  - chronic disease eg diabetes, liver or renal disease
  - seizures, HIV, leukaemia, lymphoma
  - major abdominal surgery

- organ transplant
- breastfeeding or pregnant - gestation
- medications + any immunosuppressant therapy

- Get social history:
  - occupation/number in household
  - recent hospital admission
- Do physical examination, including:
  - vital signs
  - weight + height
  - respiratory assessment ie auscultate + percuss - breath sounds, crackles, bronchial breathing, wheeze, chest fullness/dullness/ ↓ breath sounds due to pleural effusion
  - palpation of lymph nodes - note if any › 1 cm, and have been there › 1 month
  - measure middle upper arm circumference - if ‹ 12 years, breastfeeding, pregnant, or concerns about malnutrition[3]

4. Management[1,3]

- Always contact MO/NP and local TB Control Unit or Public Health Unit, who will advise ongoing management eg:
  - collect 2 good quality sputum samples requesting 'AFB testing'
  - **note: use PPE - sputum collection is a high risk infection control procedure**
  - samples should be collected on different days or if on the same day, several hours apart
  - samples that look salivary or low volume ie ‹ 1 mL are not good quality + should be repeated
  - rapid molecular test (Xpert Ultra) where index of suspicion for TB is high
  - young children often cannot produce sputum sample, consider gastric aspirate (infants + young children), nasopharyngeal aspiration + Xpert Ultra stool samples if ‹ 10 years
    - see Appendix A: sputum specimen collection https://qheps.health.qld.gov.au/__data/assets/pdf_file/0024/340845/procedure-0572.pdf (Qld Health intranet only)
  - chest x-ray, bloods for HIV
  - retrieval/hospitalisation or isolate in community and wait for sputum results
- If retrieved, patient should:
  - wear a surgical mask. Does not need P2/N95
  - not travel on commercial airlines or travel with other patients UNLESS the MO/NP determines they are clinically non-infectious
- Provisional diagnosis must be reported to:
  - transferring crew
  - receiving hospital - so negative pressure room can be prepared

5. Follow up

- As per TB Control Unit or MO/NP

6. Referral/consultation

- Always contact TB Control Unit for advice
- TB is a notifiable disease ①

HMP Trauma to teeth - adult/child
Knocked out tooth, displaced tooth, broken tooth

Recommend[1]

- Offer education on how to manage a knocked out 'adult' tooth. Prompt first aid may end up saving a tooth

1. May present with[1]

- Knocked out, displaced, broken tooth/teeth
- Bleeding in mouth
- Injury/swelling to lips, tongue/face

2. Immediate management[1]

- If a knocked out **adult** tooth:
  - put tooth in dairy milk (cool or room temperature). If no milk, sodium chloride 0.9% or saliva in plastic wrap (get patient to spit in wrap first). **Do NOT put in water**. Do not let it dry out
  - **replant within 15 minutes** if possible - see how to do this under **Management**

3. Clinical assessment[1]

- If practical, find all missing teeth/tooth fragments (do not handle root of tooth)
- Ask about:
  - circumstances of injury
  - current medications
- Do vital signs
- Inspect mouth, teeth, soft tissues/gums
- Assess for bleeding + check bite. Suspect Fractured jaw, p. 155 or facial fracture if bite abnormal
- Check for other injuries, especially head and neck
- If a tooth looks like it is missing, but not found at site of the accident, assess if:
  - patient has inhaled the tooth, OR
  - tooth has been forced up into the socket completely, appearing to be missing (covered in a clot)
  - if not sure, consult MO/NP/dentist who may consider x-ray

4. Management

- Control any bleeding with gentle pressure:
  - if bleeding continues, see Post tooth extraction bleeding, p. 254
- Offer analgesia. See Acute pain, p. 32. Ibuprofen preferred. Add paracetamol if needed:[2]
  - advise to take regularly, rather than as required, for continuous pain relief
  - if severe pain unrelieved by above, consider adding oxycodone (adults)[2]

Knocked out adult tooth[1]

- Check if it is an adult or baby tooth:
  - baby teeth - smaller, lighter in colour
  - a child › 5 years may have a mixture of adult and baby teeth, can be hard to tell
  - **do NOT replant a knocked out baby tooth** - can damage the developing adult tooth

How to replant a knocked out adult tooth[1]

- **If replanted › 1 hour** advise the chance of tooth loss and other complications is ↑. May still be worth replanting, as even if the tooth dies, it can help maintain bone height if an implant is used later to replace the lost tooth. **Get advice from MO/NP/dentist as needed**
- Hold tooth carefully by the top (crown), not the root
- Check the tooth is intact - sometimes the root may have broken off. If suspect it is not intact, consider urgent dental review ± x-ray before replanting
- If dirty, rinse tooth briefly with dairy milk or sodium chloride 0.9%. **Do NOT use water.** Do not rub or scrub
- Replace tooth in the socket with firm finger pressure. Be careful to **ensure the tooth is placed the right way around**. Take extra care if multiple teeth lost
- Use a **Temporary splint** to hold in place (see below)
- Check tetanus vaccination status + give booster if indicated. See Tetanus immunisation, p. 545 (as tooth is minimally washed/cleaned to make replant more successful)[3]
- **Start antibiotics after replanting the tooth:**[1]
  - doxycycline if ≥ 8 years OR
  - amoxicillin if ‹ 8 years (or doxycycline allergy). If allergic to amoxicillin, consult MO/NP/dentist
- **Advise:**
  - soft diet + use Chlorhexidine gluconate mouthwash, p. 260 while tooth splinted
  - **see dentist as soon as possible** (within 14 days for root canal/further treatment)
  - there is still a chance of tooth loss, especially if replanted › 1 hour or delay to see dentist

Temporary splint[1]

- Fix replanted tooth to adjacent teeth to hold in position:
  - use a small piece of folded aluminium foil or malleable material eg Blu Tack®, orthodontic wax
  - put firmly over replanted tooth and teeth either side, so adjacent teeth act as a splint. Ask the patient to bite down to hold in position
  - if a delay in dental treatment is expected, dentist may recommend tissue adhesive or other adhesive material to bond the tooth to adjacent teeth

If unable to replant a knocked out tooth[1]

- Do not let tooth dry out. If stored in milk, can survive up to 6 hours. If stored in plastic wrap + saliva or sodium chloride 0.9%, can survive up to 1 hour
- Consult MO/NP/dentist for further advice

Displaced tooth[1] - tooth is still in the socket, but moved position

- Do not reposition a baby tooth
- Reposition adult tooth to original position with firm finger pressure
- Put **Temporary splint** on tooth
- Advise to **see dentist as soon as possible**

Broken tooth/teeth[4]

- Keep tooth fragments, as dentist may be able to be re-bond onto the broken tooth
- If no pain from broken tooth, treatment is not urgent - refer to the next dental clinic
- If pain, dentine or pulp may have been exposed
- **Exposure of dentine:**
  - intermittent pain when exposed to stimulus (hot, cold or sweet food or drinks)
  - cover any obvious cavity with orthodontic wax or other inert material eg Blu Tack® or temporary filling eg Cavit®.[2] **Note:** will not last very long
  - analgesia not normally needed

- advise to **see dentist as soon as possible**
- avoid stimulus eg hot/cold drinks

- **Exposure of pulp:**
  - red soft tissue is seen in the area of break or cavity
  - severe pain persisting as a dull throbbing ache - even after removal of the stimulus
  - very sensitive to touch, may bleed or have a blood clot over it
  - advise needs urgent dental treatment (within 24 hours if possible) to avoid infection/more damage
  - **if delay to treatment expected,** consult dentist who may advise:
    - orthodontic wax or other inert material eg Blu Tack®, to cover the broken tooth to ↓ pain
    - OR temporary filling eg Cavit®
    - **note:** these measures may still not be successful in ↓ pain adequately. Consult dentist

S4	Doxycycline				Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP					
RN must consult MO/NP/dentist					
RIPRN may proceed					
Form	**Strength**	**Route**	**Dose**		**Duration**
Tablet	50 mg 100 mg	Oral	**Adult** 100 mg daily		7 days
			Child ≥ 8		
			‹ 26 kg	50 mg daily	
			26–35 kg	75 mg daily	
			› 35 kg	100 mg daily	
Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity					
Pregnancy: Safe in the first 18 weeks					
Contraindication: Serious allergy to tetracyclines. Taking oral retinoids. After 18 weeks of pregnancy					
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5]					

S4	Amoxicillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP				
RN must consult MO/NP/dentist				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg, 500 mg	Oral	**Adult** 500 mg tds **Child** 15 mg/kg (max. 500 mg) tds	7 days
Oral liquid	250 mg/5 mL 500 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea or thrush				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]				

5. Follow up

- As per dentist's advice. Refer for next dentist clinic visit

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

HMP Toothache - adult/child

Background[1]

- There is insufficient evidence to support the use of Oil of Cloves for toothache. Ingestion can cause life-threatening adverse reactions in children. Safety has not been established in pregnant + lactating women

1. May present with[2]

- Toothache/dental pain
- Tooth/teeth sensitive to hot/cold/sweet
- With or without:
  - bad breath (halitosis) ± bad taste in mouth
  - tooth decay - hole in tooth, broken down tooth, darkened tooth
  - facial swelling ± dental abscess (gum boil)

2. Immediate management

Not applicable

3. Clinical assessment[2]

- Get history using **Common causes of dental pain** table for prompts:
  - pain
  - associated symptoms eg bad breath, facial swelling, fever
  - dental history as appropriate
- Do vital signs
- Inspect oral cavity, teeth, soft tissues, lymph nodes, ears

4. Management[2]

- Use **Common causes of dental pain** table to guide treatment
- **Refer anyone with toothache to a dentist** - dental treatment is the most effective means to ↓ pain[2]
- Offer analgesia. See Acute pain, p. 32. Ibuprofen preferred. Add paracetamol if needed:[2]
  - advise to take regularly, rather than as required, for continuous pain relief
  - if severe pain unrelieved by above, consider adding oxycodone (adults)
  - Topical lidocaine, p. 258 eg Seda lotion® may help eg if tooth sensitive to stimulus
- Give analgesia for shortest duration possible, no more than 5 days without review[2]
- If severe pain consult MO/NP/dentist
- Reinforce good oral hygiene. See *Chronic Conditions Manual*

Common causes of dental pain[2]		
Pain/symptoms	**Likely cause**	**Management**
• **Intermittent pain:** – felt when tooth exposed to a stimulus eg hot, cold or sweet food/drinks – resolves once stimulus removed	**Reversible pulpitis** (inflammation of the dental pulp tissue)	• Avoid food or drink that provoke pain • Cover any obvious cavity with an inert material eg Blu Tack® or orthodontic wax • **Advise to see dentist as soon as possible** • Analgesia and antibiotics not needed
• **Severe pain:** – can wake person up at night – felt when tooth exposed to a stimulus eg hot, cold or sweet food/drinks – persists as a dull throbbing ache after stimulus removed. Can be continuous	**Irreversible pulpitis** (inflammation of the dental pulp tissue)	• Avoid food or drink that provoke pain • Cover any obvious cavity with an inert material eg Blu Tack® or orthodontic wax • **Advise to see dentist as soon as possible** - root canal treatment or extraction may be needed
• **Dull throbbing ache:** – NOT triggered by a stimulus eg hot, cold or sweet food/drinks • Tooth may be sore to bite on	**Infected root canal**	• **Urgent dental review** - root canal treatment or extraction may be needed • If dental treatment unlikely in 24 hours, start antibiotics as per Tooth abscess, p. 252
• **Tenderness of the tooth to pressure and on biting**	**Cracked tooth** or **Infection near tooth**	• Can be difficult to differentiate so **refer to dentist urgently** • If local infection confirmed and dental treatment not likely in 24 hours, start antibiotics as per Tooth abscess, p. 252
• **Facial swelling** and pain following a toothache	**Tooth abscess**	• See Tooth abscess, p. 252
• Pain worsens when head is tilted forwards	**Maxillary sinusitis**	• Treat symptoms • Antibiotics/dental treatment not needed. See Sinusitis, p. 240
• Dental pain worsening 1–4 days **after tooth extraction**	**Dry socket**	• See Dry socket, p. 256
• Acute onset of severe pain throughout the mouth + – gum bleeding, necrosis or ulcers of the gum ± bad breath • Smokers are at high risk	**Necrotising gingivitis**	• See Gum disease, p. 259
• Acute pain near front of ear on 1 or both sides ± mouth opening restricted • Patient may feel bite is not quite right	**Temporomandibular disorder**	• Rest the jaw, avoid extreme jaw movements eg yawning • Cold or warm compresses • **Refer to dentist**

5. Follow up

- Refer to next dentist clinic

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

HMP Dental caries - adult/child

Tooth decay

Recommend

- Aboriginal and Torres Strait Islander people + people from rural and remote areas are at high risk of dental caries[1]
- Advise to have fluoride varnish applied 2–4 times a year to primary (baby) + permanent (adult) teeth to substantially reduce the extent of caries[2]

1. May present with[3]

- Tooth/teeth sensitive to hot/cold, biting or pressure
- Dental caries (tooth decay) - hole in tooth, broken down tooth, darkened tooth, white spots
- Risk factors for ↑ risk of dental caries.[1] See *Chronic Conditions Manual*

2. Immediate management Not applicable

3. Clinical assessment[3]

- Ask when last dental visit was
- Assess for risk factors for dental caries
- Examine teeth for dental caries:
  - holes/cavities or structural damage which can be brown or black in appearance
  - tooth/teeth surfaces with a white or frosty appearance may indicate early stages of decay
  - pain or sensitivity
  - bad breath or a bad taste in the mouth
- If toothache, see Toothache, p. 248

4. Management[3]

- Ask about any adverse experience associated with previous fluoride varnish application
- Offer to apply fluoride varnish to teeth if:
  - there is evidence of dental caries or person is at high risk of dental caries +
  - regular brushing with fluoride toothpaste is likely to be ineffective +
  - › 18 months old +
  - there are no contraindications
- Refer for dentist review
- If patient has been recalled for re-application of fluoride varnish:
  - assess for any changes in risk status
  - check if patient has had fluoride varnish applied anywhere else during the recall period eg by a dentist
  - reapply as indicated
- Reinforce good oral hygiene. See *Chronic Conditions Manual*

Application of fluoride varnish[4]

- Obtain valid consent from parent/guardian
- Warn parent/guardian that teeth may appear discoloured following varnish application
- If thick plaque deposits are present, clean the teeth first
- Dry teeth gently eg with gauze or cloth
- Apply fluoride varnish:
  - use a small brush, applicator or dental probe
  - apply as a thin film to all tooth surfaces including exposed root surfaces if present (ensure the tip/brush is not overloaded with varnish)
  - the colour of the varnish will assist you to know where to apply it
- The varnish will set in the presence of saliva and should not be disturbed or removed prematurely. Advise not to eat or drink for 30 minutes or brush teeth until the following morning
- Ensure clinical documentation includes all teeth/tooth surfaces to which fluoride varnish was applied and dosage

S4	**Fluoride varnish** (Duraphat®)			**Extended authority** ATSIHP/RIPRN
RN must consult MO/NP				
ATSIHP may proceed if included in the scope of practice in the practitioner's practice plan				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Liquid	0.4 g/0.4 mL 5% (single dose) 50 mg/1 mL (10 mL tube 5%)	Topical to teeth	**Child 18 months–6 years** up to 0.25 mL **Child 6–12 years** up to 0.4 mL **› 12 years–adult** up to 0.75 mL Use Duraphat® dosing card if not using single dose preparation	stat Then administer 6 monthly or 3 monthly if indicated Do not supply for self or parent administration
Offer CMI: Teeth may appear discoloured temporarily following application. Do not brush teeth on day of application - resume brushing the next morning. Eat soft foods for the rest of the day to minimise disruption of the varnish				
Note: Do not apply if ulcerative gingivitis or stomatitis to avoid discomfort for patient (contains alcohol). Do not leave fluoride varnish unattended when in use. Fluoride varnish is an S4 when used by clinicians other than dental practitioners				
Contraindication: Allergy to colophony (natural rosin) or sticking plaster; any episode of severe allergy or bronchial asthma that has required hospitalisation				
Management of associated emergency: Adverse reactions extremely rare. If occurs contact MO/NP or dentist. If ingestion of large amounts contact Poisons Information Centre ✆ 13 11 26 [4]				

5. Follow up

- Arrange re-call for review of oral health status and reapplication of fluoride varnish:
  - if low risk - every 6 months, if high risk - every 3 months[4]

6. Referral/consultation

- Refer high risk and patients with obvious dental caries to dentist

HMP Tooth abscess - adult/child

Recommend[1]

- Antibiotics are not a substitute for dental treatment of a tooth abscess. The source of infection must be treated eg extraction of tooth, root canal treatment or surgical intervention

1. May present with[1,2]

- Toothache
- Localised swelling (abscess) on gum (± pus) ±
  - facial swelling/pain
  - fever
  - bad breath
  - systemically unwell

2. Immediate management[1]

- Maintain airway if compromised - do not lay flat
- Do vital signs. **Note:** oral T is unreliable for infections in the mouth
- Assess for **Severe or systemic features**

Severe or systemic features

- Significant facial swelling and pain
- **Risk of airway compromise** eg unable to open mouth › 2 cm between teeth, neck swelling, difficulty or pain on swallowing (+ difficulty swallowing saliva/secretions), unable to lie flat or speak in sentences, stridor, breathing difficulties, tongue elevated on soft palate[3]
- Systemic features eg pallor, sweating, tachycardia, axillary T › 38
- Signs of Sepsis, p. 62

- If any **Severe or systemic features**:
  - consult MO/NP urgently
  - insert IVC
  - MO/NP will order IV antibiotics
  - urgent retrieval
  - monitor closely until retrieval - **keep sitting up if risk of airway compromise**
  - **can rapidly become life-threatening due to airway obstruction or sepsis**

3. Clinical assessment[1,2]

- Ask about:
  - facial pain/toothache
  - hot/cold sensitivity of teeth
  - fever
  - recurrent tooth abscess needing antibiotics. Any dental treatment received
  - tooth decay, dental trauma, loose tooth
  - alcohol and drug use
  - Immunocompromised - adult, p. 19 or Immunocompromised - child, p. 466
- Do BGL
- Inspect:
  - mouth/gums - any soft tissue swelling, redness, pus, trauma, tooth decay
  - face - any redness, swelling, warm to touch

4. Management[1]

- If child consult MO/NP/dentist
- Offer analgesia - ibuprofen preferred. Add paracetamol if needed.[4] See Acute pain, p. 32
  - advise to take regularly, rather than as required, for continuous pain relief
  - if severe pain unrelieved by above, consider adding oxycodone (adults)
- Use flowchart below to guide further management

Tooth abscess management - if no severe or systemic features[1]

Is there an abscess - localised swelling on the gum or fluctuant (movable) tissue ± pus visible

Yes

- Is there facial swelling
- ± facial pain

Yes → **Spreading infection**

- Start oral antibiotics
- Consult dentist for urgent treatment
- If dentist not available, consult MO/NP

No

Localised infection

- Refer to dentist for prompt treatment
- If dental care not likely within 24 hours, or immunocompromised, start oral antibiotics

No

Consider another cause

- See Toothache, p. 248
- Be aware dental pain can sometimes be the only sign of an abscess

- **If oral antibiotics indicated, give**:
  - amoxicillin + clavulanic acid OR
  - if allergy to penicillins, give clindamycin
- Consult MO/NP/dentist if the abscess is recurring/antibiotics have been given previously, but no dental treatment yet
- Advise patient:
  - **to see dentist as soon as possible** - the cause of the abscess/infection needs to be fixed
  - rinse mouth with warm sodium chloride 0.9% or Chlorhexidine gluconate mouthwash, p. 260
  - about good oral hygiene. See *Chronic Conditions Manual*

S4	Amoxicillin + clavulanic acid			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP				
RN must consult MO/NP/dentist				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	875 mg + 125 mg	Oral	**Adult** 875 mg + 125 mg bd **Child** 22.5 mg/kg (max. 875 mg) bd *Dose as per amoxicillin component*	5 days
Oral liquid	400 mg + 57 mg/5 mL			
Offer CMI: Take with food. May cause rash, diarrhoea, nausea or thrush. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5]				

S4	Clindamycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP				
RN must consult MO/NP/dentist				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	150 mg	Oral	**Adult** 300 mg tds **Child** 7.5 mg/kg (max. 300 mg) tds	5 days
Offer CMI: May cause rash, diarrhoea, nausea, vomiting or abdominal pain. Take with a full glass of water. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Note: There is no oral liquid for children. For doses of a 'whole capsule' open the capsule and mix with a spoonful of food eg yoghurt or apple puree. For doses < 150 mg, open capsule and disperse contents into 10 mL of water to make a concentration of 15 mg/mL. Measure the required dose and give immediately. If smaller volumes are required, the capsule will disperse into 3 mL. The dispersion is highly unpalatable and may be mixed with juice before giving				
Contraindication: Allergy to lincomycin				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]				

5. Follow up

- Advise to return daily for review until it resolves, or sooner if symptoms worsen
- Consult MO/NP/dentist if:[1]
  - unresponsive to oral antibiotics after 48–72 hours
  - if deteriorating at any time - may need retrieval for surgical treatment and IV antibiotics

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

Post tooth extraction bleeding - adult/child

1. May present with[1]

- Bleeding continuing or recurring after a tooth extraction

2. Immediate management

- Consult MO/NP/dentist urgently if:
  - bleeding causing swelling or airway compromise
  - haemodynamically unstable. See Shock, p. 60

3. Clinical assessment[2,3]

- **Ask about:**
  - when tooth was extracted
  - when bleeding started
  - nature and amount of blood loss - ooze or filling mouth with blood after dressing removed
  - has patient tried biting on gauze to stop bleeding
  - use of mouth washes; touching site with tongue/fingers - that could exacerbate bleeding

- Medical history, including:
  - medications that could increase bleeding eg warfarin, aspirin, heparin, complementary
  - does patient usually bleed or bruise after trauma
  - bleeding disorders eg haemophilia
  - leukaemia, chronic liver disease
  - alcohol use
- Do vital signs
- Assess bleeding:
  - sit patient up under good light
  - use gauze, suction or syringe with sodium chloride 0.9% to remove blood, saliva and any liver clots (large mobile clots resembling fresh liver)
  - is blood continually filling mouth or just a sluggish ooze
  - any high flow arterial bleed, tear in gum or mucosa
  - any pus, cellulitis, trismus (unable to open mouth), liver clots

4. Management[2,3]

- Consult MO/NP/dentist if:
  - pus, cellulitis or trismus
- **To stop bleeding:**
  - dampen a piece of gauze, fold to postage stamp size, place on socket and hold firmly in place for 20 minutes until bleeding stops
  - if bleeding continues, rinse the socket with sodium chloride 0.9%, replace the gauze and ask patient to bite down firmly for 30 minutes
  - advise to sit upright
  - **do NOT** keep rinsing/spitting. Do not use tissues/cotton wool. Do not remove gauze too soon[3]
- **If bleeding continues despite measures above:**
  - consult MO/NP/dentist who may order:
    - gauze (as above) soaked in a 5% solution of tranexamic acid
    - make 5% solution by crushing a 500 mg tranexamic acid tablet and mix in 10 mL water
- **If bleeding continues beyond these measures**, or **low level ooze continues › 12–24 hours**:
  - systemic causes should be investigated - consult MO/NP/dentist

5. Follow up

- Advise to be reviewed the next day, or sooner if bleeding starts again
- Refer to next dentist clinic

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

HMP Dry socket - adult/child

Background[1]

- Dry socket (alveolar osteitis) is when a blood clot disintegrates prematurely after a tooth/teeth extraction resulting in inflammation of the bone below

1. May present with[1]

- Severe pain ± bad breath 1–4 days post tooth extraction

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Ask about:
  - when tooth extraction occurred, pain
- Do vital signs
- Inspect tooth extraction site:
  - typically the socket appears grey, non-healing and is often filled with debris

4. Management[1]

- Offer analgesia. See Acute pain, p. 32. Ibuprofen preferred. Add paracetamol if needed:[2]
  - advise to take regularly, rather than as required, for continuous pain relief
  - if severe pain unrelieved by above, consider adding oxycodone (adults)
- Irrigate socket gently with warm sodium chloride 0.9% to remove debris
- If signs (eg pain, redness) outside of the tooth socket, consult MO/NP/dentist for review of diagnosis
- Place Alvogyl® (antiseptic and analgesic) dressing loosely into socket:[1,3]
  - does not require removal later. **Note:** do not use if allergic to iodine
  - if not available contact MO/NP/dentist for further advice
- Should heal spontaneously within 2–3 weeks

5. Follow up

- Advise patient to be reviewed daily initially. Redress the socket as needed
- Consult MO/NP/dentist if not improving, or if pain persists › 3 weeks
- Refer for next dentist clinic visit

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

HMP Mouth ulcers - adult/child

Background

- Ulcers persisting › 2 weeks are potentially serious[1]
- The most common non-traumatic mouth ulcer is recurrent aphthous stomatitis (unknown cause), which affects 5–60% of the general population[2,3]

1. May present with

- Ulcer(s) in mouth

2. Immediate management Not applicable

3. Clinical assessment[1,2,4]

- Ask about:
  - when did ulcer(s) appear, duration
  - is it recurring
  - does patient suspect the cause eg trauma from:[5]
    - biting tongue/cheek
    - thermal burn from eating or drinking food that is too hot/cold
    - poor fitting dentures/sharp or broken teeth
    - use of topical agents in mouth, oral rinses
  - pain or pins and needles/tingling sensations in mouth or face
  - dry mouth - is cause known eg medicine side effect
  - fever
  - ulcers anywhere else on body
- Past history:
  - previous ulcers
  - immunocompromised eg chemotherapy, malnutrition, HIV
  - STI history. See STI/BBV assessment, p. 430 - consider syphilis and gonorrhoea:[2]
    - screen if appropriate
  - smoking, alcohol use
  - anaemia
  - diet, recent weight loss
- Do vital signs
- Inspect mouth, lips and tongue:
  - 1 or more ulcers
  - size, location, shape - oval/round or irregular
  - any pigmented lesions on the ulcer

4. Management[1,2]

- Most ulcers are self-limiting and heal within a few days
- If patient unwell/immunocompromised/HIV, or has other symptoms, consult MO/NP
- If poor fitting dentures or broken/sharp teeth, advise to see dentist at next clinic
- **If ulcers recurring, or has persisted for › 2 weeks:**
  - refer to next MO/NP clinic for investigations ± biopsy for less common causes eg:
    - metabolic, dermatological, allergic, immunological, infectious or cancer

- **Symptom relief options:**[2,4]
  - Chlorhexidine gluconate mouthwash, p. 260
  - topical anaesthetic eg lidocaine[5,6]
  - salt water mouth rinses (1/2 teaspoon salt in a glass of warm water)[6]
  - avoid acidic drinks (eg fruit juice or soft drink) and very spicy/sharp food
  - clean teeth properly
  - if needed, paracetamol or ibuprofen may help. See Acute pain, p. 32

S2	**Lidocaine** eg Seda lotion®			**Extended authority** ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	Strength	Route	Dose	Duration
Lotion	2.5% 15 mL	Topical	Dip cotton wool tip in lotion and apply as needed. Max. every 2 hours	If not improving after 2 weeks, advise to see MO/NP
Offer CMI: Caution with hot drinks as numbness can result in burns				
Contraindication: Not for use in infants				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [7]				

5. Follow up

- If not healed in 2 weeks, advise to see MO/NP at next clinic to assess for serious causes

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist

HMP Gum disease - adult/child
Gingivitis, periodontitis, necrotising gingivitis

Background[1,2]

- Gingivitis is inflammation of the gums caused by the presence of undisturbed plaque. If not managed appropriately, can lead to periodontitis (loss of bone/tissues that support the teeth)

1. May present with

Gingivitis[1]	• Red, swollen gums that bleed easily • Rarely painful
Periodontitis[2]	• Bad breath, bad taste • Gum recession • Bleeding ± swollen gums • If severe, may have: – loose teeth, spaces between teeth – pain – abscess. See Tooth abscess, p. 252 for management • Rarely seen in children
Necrotising gingivitis[3]	• Bleeding gums, ulcers - may have grey membrane • Significant pain • Bad breath • ± swollen lymph nodes, fever • Most common in young adult smokers. Rarely seen in children

2. Immediate management Not applicable

3. Clinical assessment

- Get history, including:
  - smoking
  - diabetes
  - teeth brushing/oral hygiene/dental history
- Do vital signs + BGL
- Inspect lips, gums, teeth, tongue, lymph glands in neck

4. Management[1-3]

- Offer analgesia as needed. See Toothache, p. 248 for dental pain recommendations
- Consult MO/NP/dentist if:
  - severe ± systemic signs and symptoms eg fever, malaise
  - patient has an underlying medical condition eg poorly controlled diabetes, immunocompromised
- Offer education on good oral hygiene. See *Chronic Conditions Manual*
- See **Gum disease management** table for further management

Gum disease management	
Gingivitis[1]	• Refer to dentist for check-up and clean - removal of plaque and calculus • If pain limits ability to brush teeth/floss well - consider short-term use of chlorhexidine gluconate mouthwash • Should resolve within 1 month
Periodontitis[2]	• If child consult MO/NP - needs **urgent paediatrician review** to investigate underlying cause[2] • Refer to next dental clinic for removal of plaque and calculus + ongoing care • Support patient to modify risk factors eg smoking, diabetes management[2] • Antibiotics are rarely needed
Necrotising gingivitis[3]	• **Refer to dentist as soon as possible** - for debridement of plaque and calculus + ongoing care • Give metronidazole + advise to use chlorhexidine gluconate mouthwash until pain • Advise to stop smoking • **Note:** antibiotics alone (without debridement by dentist + improvement of oral hygiene) will usually lead to recurrence

Unscheduled	**Chlorhexidine gluconate mouthwash**			
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Liquid	0.2%	Topical to mouth	**Adult** 10 mL 8–12 hourly **Child 6–12 years** 5 mL under adult supervision 8–12 hourly	5–10 days Rinse or gargle for 1 minute, then spit out
Offer CMI: Can cause altered taste, burning sensation, brown discolouration of teeth, tartar build up. Rarely severe allergy. **Limit use to up to 2 weeks** to minimise side effects				
Contraindication: Allergy to chlorhexidine - any route				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,5]				

S4	**Metronidazole**			**Extended authority** ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP				
RN must consult MO/NP/dentist				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg, 400 mg	Oral	**Adult** 400 mg bd	3–5 days
Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take with food to reduce stomach upset. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,6]				

5. Follow up

- If necrotising gingivitis advise to be reviewed daily until improving

6. Referral/consultation

- Consult MO/NP/dentist as above. Consider telehealth consult with dentist
- If diabetic, consider referral to diabetic educator

HMP Oral thrush - adult/child

Background[1]

- Oral thrush (candidiasis) occurs relatively commonly in neonates and infants. It is otherwise uncommon in healthy individuals

1. May present with[1,2]

- Whitish curd like patches/coating on tongue/in mouth that may wipe off easily
- Oral discomfort eg poor feeding, irritable
- Infants may also have a red rash with spots on buttocks. See Nappy rash, p. 311
- Severe cases may show ulceration ± inflammation at 1 or both corners of mouth (**angular cheilitis**)

2. Immediate management

Not applicable

3. Clinical assessment

- Get history, including:
  - **adult** - ask about risk factors eg:[1]
    - smoking, dentures (cleaning routine), corticosteroid inhalers, poor oral hygiene
    - immunocompromised
    - medicines eg antibiotics, corticosteroids
  - **infant** - ask about:[2]
    - nappy rash
    - if breastfeeding - any nipple pain, burning/itching or cracked/red areolae
    - method of cleaning feeding equipment/other items that go in mouth eg dummies (can be a source of reinfection)
- Do vital signs
- Check:[2]
  - mouth - any white or whitish-yellow plaques that may be difficult to remove, with the underlying area being raw or bleeding
  - infant's nappy area - any shiny red patches with satellite lesions
  - mother's nipple area (if indicated from history) - any redness/cracked nipples

4. Management

- Consult MO/NP if:
  - child › 2 years
  - immunocompromised - needs specialist advice[1]
  - severe, persistent or frequent episodes of thrush - needs further evaluation

Adult[1]

- **If not related to denture use** consult MO/NP/dentist who may advise miconazole or nystatin
- **If related to denture use:**[1]
  - give miconazole oral gel or nystatin
  - if angular cheilitis, advise to apply miconazole cream. See Candidiasis (skin), p. 310 for drug box
  - advise to apply to the cleaned fitting surface of the dentures at least twice a day
  - at night, remove dentures, clean well with a liquid soap and soft toothbrush and place in a dry environment
  - encourage good denture hygiene eg see https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/dentures

Infant and child < 2 years[1,2]

- Give miconazole oral gel or nystatin
- Provide support with breastfeeding/nipple thrush + refer to child health nurse/midwife as needed

Parent/carer advice[2]

- Concurrently treat nipples of mother if breastfeeding - use miconazole oral gel/cream or nystatin cream. Apply thinly after each feed during the day, for at least 7 days - no need to wash off gel before feeding. **Do wash off cream**
- Treat other signs of fungal infection in whole family eg Vaginal thrush, p. 442, Nappy rash, p. 311, Candidiasis (skin), p. 310
- Clean feeding equipment/dummies thoroughly after use + boil for 5 minutes. Replace weekly if possible
- Wash hands thoroughly after nappy changes and before applying creams/lotions

S3	Miconazole			Extended authority ATSIHP/IHW/IPAP/SRH
ATSIHP, IHW, IPAP, MID, RIPRN and SRH may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral gel	2%	Oral	**Adult and child > 2 years** 2.5 mL (½ of measure supplied) qid **Birth (at term)–2 years** 1.25 mL (¼ of measure supplied) qid **In babies - use clean finger (NOT spoon) to smear in front of mouth to avoid choking**	7–14 days Continue for 7 days after symptoms resolve
Offer CMI: Place in the mouth and on the tongue after feeding/food. Keep in mouth as long as possible before swallowing. May cause mild GI upset				
Contraindication: Use with warfarin, simvastatin, ergometrine				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

S3	Nystatin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	100,000 units/mL	Oral	**Adult and child** 1 mL qid	7–14 days Continue for 2–3 days after symptoms resolve
Offer CMI: Swish around the mouth for as long as comfortable before swallowing. Use after feeding/drinking or eating. May cause nausea, vomiting or diarrhoea				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]				

5. Follow up

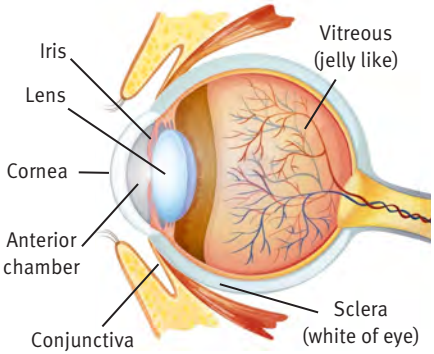
- Advise to be reviewed if symptoms do not resolve within a few days

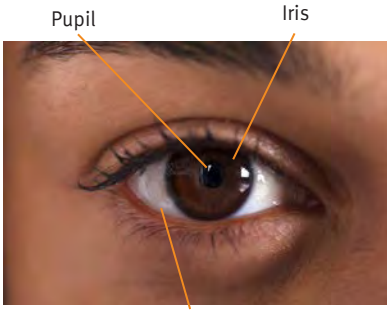
6. Referral/consultation

- Consult MO/NP/dentist/child health nurse/midwife as above

Eye problems

Eye assessment - adult/child





Eye tips[1]	
Do - when indicated	**Don't**
• Visual acuity (VA) in both eyes + record it • Test pupil light reactions • Evert the eyelid • Instil fluorescein, **unless** a ruptured eyeball or penetrating injury is obvious • Ask if wears contact lenses • Advise not to drive with eye padded as depth perception may be altered	• Give local anaesthetic eye drops to take home • Try to remove protruding foreign body (FB) • Put drops or ointment in an eye that has suffered an obvious rupture or penetrating injury • Use steroid eye drops or double pad an eye, unless advised by MO/NP/ophthalmologist • Routinely apply eye pad

1. May present with

- Red, painful eye(s)
- Changes to vision, photophobia, blurred vision
- Discharge, tearing
- Feeling like something in eye

2. Immediate management

- If history of substance in eye(s):[2]
  - irrigate eye(s) with 1–2 L of sodium chloride 0.9% for ≥ 30 minutes:
    - tap water/shower if nothing else available
    - go to Chemical burn to eye, p. 272
- If protruding foreign body (FB) - do not remove, consult MO/NP urgently[3]

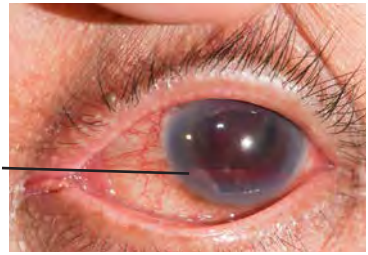
3. Clinical assessment[3-5]

- If severe pain, instil Oxybuprocaine, p. 269
  - child - may need additional analgesia to aid examination. See Acute pain, p. 32
- If injury/trauma, ask about:
  - time and mechanism of injury eg sharp object, flash burn, exposure to laser
  - any first aid

  - **could there be a foreign body (FB)**:
    - ask about all activities in preceding 24 hours
    - especially activities that can cause high velocity projectiles eg hammering, grinding, operation of high speed machinery[6]
    - possible contamination with plant material/soil
  - use of protective eyewear
  - if forceful blunt injury, suspect eyeball rupture ± 'blow out' fracture of the orbit
- **If child** always suspect injury as cause of red, painful eye:[1]
  - any witnesses, is the injury consistent with explanation
  - if suspected non-accidental injury, see Child protection, p. 539
- **Ask about symptoms**:[7-9]
  - 1 or both eyes affected
  - rate of onset - sudden or over several hours, did it start in 1 eye first
  - duration + progression - is it getting better or worse
  - changes in vision eg impairment/loss of, double or blurred
  - photophobia, pain or grittiness, redness, discharge
  - other eg flashing lights, floaters, headaches, halos around lights, fever
- **Get past history:**[7-9]
  - diabetes, cold sores (herpes simplex virus), rheumatoid arthritis, ↑BP
  - glasses, contact lens wear (sleeping or swimming in, prolonged use)
  - eye problems eg injury, cataracts, surgery, laser or injections[1]
  - family history eg glaucoma
- Do vital signs + examine eyes (see below)

Eye examination[1]

- **If a red, swollen, tender eyelid + febrile, assume** Orbital/periorbital cellulitis, p. 275
- Examine systematically, use ophthalmoscope set to +10D and held at 10 cm from eye or bright pen light[6]
- Check both eyes without putting pressure on the eye or forcing the lids open, including:[4]
  - **eyelashes** - any in-turned, crusted discharge
  - **eyelids** - do they fully close, any lacerations, swelling, redness, bruising, blisters, or lumps
  - **lower eyelid** - colour of conjunctiva eg bright red may indicate bacterial or allergic conjunctivitis
  - **sclera** + overlying conjunctiva - signs of redness (widespread or section only - use clock hours to describe), swelling, FB
  - **cornea** - clear or hazy, FB, white spot - **instil fluorescein**[1]
  - **anterior chamber** - any blood (hyphaema) or pus (hypopyon)



- **Instil fluorescein**. **Note:** any red eye should have fluorescein instilled
- **If eye swollen closed**, gently lift lid to check for injuries + pupil size/shape and reaction to light

- **Always evert upper eyelid** if red eye, sensation of FB, or grittiness:
  - check for/exclude retained FB + look for redness or small round bumps - may indicate conjunctivitis (bacterial, viral, allergic)
- **Examine the pupils + eye movements:**[1]
  - **check + compare pupils:**
    - shape, size + reaction to light (do they react equally)
    - red reflex for any dimming, any cloudiness
    - any asymmetry in the position of and brightness of the corneal reflex
  - **eye movements** - ask patient to look up, down, side to side - any pain, restriction. If restricted upward movement consider orbital fracture in blunt injury
  - **any double vision**. To confirm true double vision (and not just blur/ghosting), cover 1 eye. If double vision disappears, it is not true double vision
- **Do Visual acuity (VA)** in each eye individually, with distance glasses if available
- **Measure intraocular pressure (IOP)** if tonometer available and skilled

Visual acuity (VA)

- **Use Snellen or tumbling E chart** positioned at the specified distance eg 3 or 6 m from the patient in a well lit area:[10]
  - ask patient to cover 1 eye with their palm and read or point in the direction of the E's, from the top of the chart left to right
  - record VA as 2 numbers. Top number is the distance from the chart, bottom number is the smallest line of letters/E's that can be read without mistakes eg 3/3, 6/9
  - **note:** 3/3 or 6/6 does not exclude a serious condition. VA may be long-standing or due to uncorrected refractive error
- **If cannot read the top letter at 3 or 6 m:**[10]
  - hold up your fingers at varying distances eg 5 m, 4 m etc and record vision as counting fingers (CF) (the maximum distance they can see between 5 and 1 m eg VA CF 5 m)
- **If cannot see to count fingers,** check if they can see hand movements or have perception of light by shining a torch into the eye at 10 cm[6]
- Repeat using a multiple-pinhole occluder if available. If VA improves it likely means a VA issue that can be corrected with glasses, and less likely an acute issue

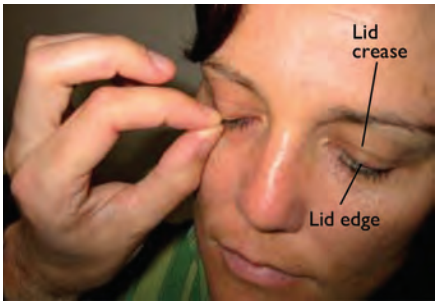
Fluorescein examination

- **Avoid** if obvious or high likelihood of globe rupture or penetrating injury
- Fluorescein (dye) will pool or uptake (stain) in damaged areas of cornea
- Uptake will look yellow in normal light, and green in blue light of ophthalmoscope:[10,11]
  - **multiple pinpoints** - may be dry eye
  - **sharp, well-defined border** - may be abrasion(s)
  - **large, dense, central staining pattern** - may be bacterial ulcer
  - **branching (dendritic) pattern** - may be HSV
  - **vertical lines on cornea** - may be retained FB in eyelid

Unscheduled	**Fluorescein** (Minims Fluorescein®)			
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Strip	1 mg	Eye	Gently touch strip to inside lower lid	stat
Eye drops	2%		Smallest amount possible	
Offer CMI: Blink to spread the dye. Temporarily stains skin, tears, and nasal secretions yellow				
Note: Eye drops - too much will flood the eye + a defect may be missed. Gently dab the closed eye with a tissue to remove excess. **Strips** - moisten with sodium chloride 0.9% if dry eye. Repeat if more dye is needed. If red eyes use separate strips/tissues for each eye [5]				

How to evert an eyelid[1]

Image 1



Ask patient to keep looking downwards as you take hold of the eyelashes and then gently pull the lid slightly towards you (image 1)

Image 2

Place cotton bud at the lid crease (or 5 mm from lid edge) and apply very light pressure downward with the bud (images 1 & 2)

Image 3

Evert the eyelid by using the eyelashes to gently pull the lid upwards over the bud. Remove the bud (image 3)

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Eye differential diagnosis - adult/child

- Use flowchart below to help with differential diagnosis. Be aware of single red eye - may indicate sight threatening emergency[12]

Do Eye assessment, p. 263
Are findings of assessment unclear
eg ↓ vision that has no apparent explanation
OR are you unsure

Yes → **Consult MO/NP**

No

Alert
Non-lethal strangulation can cause: red eyes, petechiae in eyes, droopy eyelid + vision changes.[13] Also see Domestic and family violence, p. 232

History of trauma — Yes →

Consider
- Chemical burn to eye, p. 272
- Flash burn to eye, p. 271
- FB in eye, p. 268
- Eye injury, p. 273
- Laser exposure - consult MO/NP

No

Key findings

1 eye initially, spreads to 2nd eye Itchy/irritated Can range from pink to red in colour Discharge - pus, mucus, watery VA not significantly ↓ Minimal uptake of fluorescein	Single eye Sudden pain FB sensation Photophobia Excessive tearing Blurred vision VA ↓ or normal Uptake of fluorescein at abrasion ± history of trauma	Single eye Pain Photophobia ± VA ↓ Discharge ± lid swelling White spot on cornea Fluorescein uptake eg fuzzy edges, or dendritic pattern More common in contact lens wearers	Intense redness circling the cornea/iris Usually sudden onset Photophobia VA ↓ Tearing Pupil - small, misshapen or non-reactive ± uptake of fluorescein	Very red eye Sudden onset of severe pain Blurred vision Seeing halos around lights Pupil - mid-dilated, slow or no reactivity Nausea + vomiting VA ↓ No uptake of fluorescein ↑ IOP
Consider Conjunctivitis, p. 278	Consider Corneal abrasion, p. 270	Consider **Corneal ulcer**	Consider **Acute iritis**	Consider **Acute glaucoma**

These are ocular emergencies
Can be difficult to diagnose/differentiate

Consult MO/NP urgently + urgent retrieval for ophthalmic review

- Offer analgesia ± antiemetic. See Acute pain, p. 32, Nausea and vomiting, p. 40
- **If corneal ulcer + dendritic pattern/history of HSV,** MO/NP may order:
  - acyclovir ointment or oral antivirals if ointment not available
- **If acute glaucoma** likely, MO/NP may order:[14]
  - eye drops to ↓ IOP eg 0.5% timolol, 2% pilocarpine ± IV/oral acetazolamide
- **If acute iritis** likely, MO/NP may order:[15]
  - corticosteroid eye drops eg dexamethasone AND mydriatic/cycloplegic eye drops eg atropine
- Ongoing management as per MO/NP/ophthalmologist

HMP Foreign body in eye - adult/child

1. May present with[1]

- Report of something in the eye + irritation/pain:
  - may be worse when blinking or with eye movements
  - ± tearing, blurred vision, red eye, swollen lid, photophobia

2. Immediate management[1]

- See Eye injury, p. 273 if:
  - obvious penetrating injury, or caused from high speed + force - **high velocity**
  - protruding foreign body (FB) - do not remove
- Advise to not rub the eye

3. Clinical assessment[1-3]

- Ask about:
  - time + how FB happened eg:
    - hammering, grinding, operation of high speed machinery - **high velocity**
    - sand, dust, eyelash - **low velocity**
    - if unsure, ask about all activities in preceding 24 hours, especially activities that can cause high velocity projectiles
  - use of protective eyewear
  - pain, changes in vision, photophobia
  - contact lenses - get patient to remove
  - previous eye conditions, surgery
- Do vital signs
- Examine both eyes as per Eye assessment, p. 263
  - instil oxybuprocaine if needed for pain
  - visual acuity (VA) - test unaffected eye first
  - Evert eyelids, p. 266 - if FB seen under eyelid, irrigate or use **moistened** cotton tip with sodium chloride 0.9% to wash/sweep away
  - instil Fluorescein, p. 265 - may help to see FB + show any Corneal abrasion, p. 270
- If unable to tolerate examination, contact MO/NP

4. Management

- If no FB visible, but fluorescein shows abrasion, see Corneal abrasion, p. 270
- Consult MO/NP if:
  - high velocity projectile - x-ray may be needed
  - event happened a few days prior + there is ↑ pain, worsening vision + diffuse redness[3]
  - ↓ VA, pupils irregular or non-reactive
  - blood in anterior chamber, Hyphaema, p. 264 - suggests blunt trauma
  - FB 'lodged' in the cornea
  - signs of perforation eg very low IOP, Seidel sign, p. 273[1]
- Only try to remove the FB if it:[4]
  - looks superficial/not 'lodged' in the eye
  - is at least 4 mm from the pupil, see table below
- Advise to wear protective eyewear during risky activities[1]

Removal of foreign body[1,3,4]

- Instil more oxybuprocaine if initial dose has worn off + consider instilling in both eyes to stop blinking
- Lie patient down, with affected eye closest to you. Ask patient to look up, approach from side to ↓ blinking. Hold eyelid open if needed
- First try to irrigate with sodium chloride 0.9% (use a syringe without needle) FB may wash off, or
- Try to dislodge with a moistened cotton tip applicator using 'dab' or 'nudging' motion
- Check VA again after removal
- **If FB removed from cornea** give Chloramphenicol, p. 270 - do not use eye pad
- Consult MO/NP if:
  - unable to remove the FB. MO/NP may consider removal with 25 G needle/ocular burr (best done with slit lamp)[4]
  - there is a 'rust ring' after removal

S4	Oxybuprocaine			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Eye drops	0.4%	Eye	**Adult and child** 1 drop	stat Repeat in 1–2 minutes if needed Up to 6 drops may be used for foreign body removal
Offer CMI: May sting for a few seconds. Close eyes after instillation. Dab away tears, do not rub				
Note: Do not give to patient to take home				
Contraindication: Ruptured eyeball or penetrating eye injury				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5]				

5. Follow up

- If FB **removed from cornea**, advise to return the next day for review - do VA + instil fluorescein:
  - consult MO/NP if VA ↓, pain or redness ↑, or cornea defect on fluorescein staining
- For any **other FB**, advise to return if the sensation of FB in eye worsens or persists overnight:
  - consult MO/NP

6. Referral/consultation

- As above

HMP Corneal abrasion - adult/child

1. May present with[1,2]

- Sudden onset of mild foreign body sensation (even if no FB) to severe pain ±
  - tearing, photophobia, blurred vision, difficulty opening eye, history of trauma, redness

2. Immediate management

Not applicable

3. Clinical assessment

- Get history and examine eyes as per Eye assessment, p. 263
- Do vital signs

4. Management

- **Consult MO/NP urgently if:**[3]
  - history of penetrating trauma eg fingernail, twig, edge of paper, mascara brush[3,4]
  - no history of trauma immediately before onset of symptoms - suspect corneal ulcer
  - significant pain, photophobia, ↓vision or worsening symptoms
  - wears contact lenses - MO/NP may order ofloxacin or gentamicin eye drops[4]
- MO/NP may advise urgent retrieval for ophthalmology review ± topical antibiotics
- If abrasion < 4 mm + normal vision and resolving symptoms:[3]
  - give chloramphenicol[1]
  - advise most heal in 1–2 days[1-3]
  - do not patch or pad the eye, sunglasses may help with photophobia[4]
- Offer analgesia.[4] See Acute pain, p. 32

S3	Chloramphenicol			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Eye drops	0.5% (10 mL)	Eye	1 drop qid **OR** 1.5 cm of ointment qid	3–5 days
Eye ointment	1%			
Offer CMI: May cause stinging or burning. Discard 1 month after opening. Can be stored at room temperature once opened. Do not wear contact lenses during treatment. If child - offer to administer first dose with parent/carer				
Contraindication: Ruptured eyeball or penetrating injury				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,6]				

5. Follow up

- Advise to be reviewed daily until healed or sooner if symptoms worsen:
  - repeat VA, instil fluorescein - consult MO/NP if worsening symptoms/no improvement
- Advise to see MO/NP at next clinic

6. Referral/consultation

- As above

HMP Flash burn to eye - adult/child

Background

- Damage to the cornea from excessive exposure to bright ultra violet (UV) light.[1] If left untreated infection can start, which can lead to loss of vision[2]

1. May present with

- Intense pain/feeling that there is something in eye (usually both) ± bloodshot, watery eyes, photophobia, blurred vision[2]
- Exposure to UV light around 5–12 hours prior eg:[1]
  - welding, direct sunlight, reflection off snow/water, sunlamp, lightning, explosion, solar eclipse

2. Immediate management

- Offer analgesia. See Acute pain, p. 32

3. Clinical assessment

- **Ask about:**[1]
  - recent welding/other exposure to UV light
  - onset/duration of pain/symptoms
  - photophobia, blurred/changed vision
  - 1 eye or both
  - contact lenses - get patient to remove
  - has this happened before - ↑ risk of infection after previous injury/burn
- Do vital signs
- **Examine both eyes** as per Eye assessment, p. 263
  - instil single dose of Oxybuprocaine, p. 269
  - VA
  - instil Fluorescein, p. 265 - may show widespread dots (superficial defects) across the cornea, particularly where not protected by eyelids in normal position, often both eyes[3]
  - if from welding check for FB in eye, p. 268
- Check face/skin for burns

4. Management[1-3]

- Consult MO/NP if:
  - large or central (over pupil) corneal abrasion
  - ↓ VA
- Advise patient:
  - rest with eyes closed + simple analgesia as needed for next 24 hours
  - pain + discomfort should start improving in a few hours and usually heals in 1–2 days
  - artificial tears/lubricating eye drops may help
  - wear safety goggles/sunglasses that have been coated to protect from UV light[2]

5. Follow up

- As per Corneal abrasion, p. 270

6. Referral/consultation

- As above

HMP Chemical burn to eye - adult/child

Recommend[1-3]

- **Immediate irrigation is critical** to avoiding permanent damage + blindness

1. May present with[1]

- History of substance in eye(s) ±
  - pain
  - excessive tearing, swelling of the lids or conjunctiva
  - ↓ vision
  - photophobia, inability to open eyes

2. Immediate management

- **Irrigate eye(s) with 1–2 L of sodium chloride 0.9% for ≥ 30 minutes.** Use:
  - IV bag with giving set fully open **or**[2]
  - tap water/shower if nothing else available[1,3]
  - **do not examine eye(s) until this has been done**
- Lie patient down, hold tubing 3–5 cm above eye surface, ask patient to:[2]
  - open eyelids as wide as possible - may need to hold eyelid open
  - look left, right, up + down while irrigating
  - if only 1 eye, tilt head away from unaffected eye
  - remove any foreign bodies - evert upper/lower eyelids + sweep with a soaked cotton tip[1,3]
- Oxybuprocaine, p. 269 can be used for pain relief but remember if you are irrigating you are washing them out. Instil about every 10 minutes
- Offer analgesia if eye drops do not provide adequate pain relief. See Acute pain, p. 32
- **Urgently contact MO/NP**

3. Clinical assessment

- **Get rapid history while irrigating:**
  - when/how did it happen - if explosion may have other injuries[1]
  - what was the chemical and active ingredients if possible. **Note:** alkalis burn deeper + require more irrigation eg lime, oven cleaner[1-3]
  - any first aid, how soon after[1,2]
  - photophobia
  - pain in or around the eye
  - vision changes
- Do vital signs
- **After 30 minutes of irrigation:**[2]
  - wait for 5 minutes then use litmus paper to check pH in both eyes - touch the paper on inside lower eyelid (compare to unaffected eye if only 1 affected eye)
  - pH should be between 6.5–8.5
  - if not - keep irrigating + contact MO/NP
  - use Morgan Lens® if skilled
- **If pH 6.5–8.5 check:**[2]
  - VA + instil Fluorescein, p. 265
  - IOP if skilled

- outer aspects of eye + lids for abnormalities:[1-3]
  - cornea clear or cloudy, can you see iris details - cloudy may indicate severe burn
  - evert lids again - any retained chemical
- check surrounding skin

4. Management

- Contact Poisons Information Centre ✆ 13 11 26 (24 hours) to get management advice + details regarding product involved ie pH
- Consult MO/NP urgently, who will advise further management ± retrieval for ophthalmology review

5. Follow up

- As per MO/NP/ophthalmologist

6. Referral/consultation

- As above

HMP Eye injury - adult/child
Blunt, penetrating

1. May present with[1-3]

- Trauma ±
  - pain, loss of vision, double vision, photophobia
  - excessive tearing - if globe perforated, aqueous will leak out + look like excessive tearing

2. Immediate management

- Assess + treat life-threatening injuries[4] eg Head injuries, p. 140, Traumatic injuries, p. 131
- If obvious penetrating injury or protruding FB - **do not remove**, **consult MO/NP urgently**[2,5]

3. Clinical assessment

- Avoid applying pressure to eyeball eg eyelid retraction or measurement of IOP
- Get history + do examination as per Eye assessment, p. 263, including:
  - check for orbital fracture if blow to the eye/blunt injury eg fist, falls, sports:[3,4]
    - feel the bony rim above and below the eye - any deformity, pain
    - any numbness of the lower lid, cheek, side of nose, upper lip, teeth[3]
  - if eye looks displaced lower than other eye or is turning out, may indicate a blow out fracture
  - **note:** if instilling Fluorescein, p. 265, look for the **Seidel sign** - where the aqueous leaking out of a perforating injury causes an expanding dark patch to form in the fluorescein pattern[4]
- Do vital signs
- If suspected penetrating injury, check tetanus status[2] ± give Tetanus immunisation, p. 545

4. Management

- **Consult MO/NP urgently if ruptured eyeball or penetrating injury** cannot be ruled out:[2,5]
  - protect by taping rigid eye shield over eye:[2]
    - if no eye shield use cut down Styrofoam® cup taped securely to the brow + cheek
    - make sure the shield/cup is not pressing on the eye
  - bed rest on back, with head elevated if preferred, in dim lighting[4]
  - keep nil by mouth[2,5]

- **Consult MO/NP in all cases, who may advise:**
  - antibiotics, x-ray
  - urgent retrieval for ophthalmic review ± CT scan/MRI if suspected intraocular FB:
    - if risk of trapped air from penetrating injury, sea level cabin pressure is required for flight
- Offer analgesia ± antiemetic, nausea + vomiting can ↑ injury.[2,5] See Acute pain, p. 32, Nausea and vomiting, p. 40

5. Follow up

- If not retrieved, advise follow up as per MO/NP/ophthalmologist

6. Referral/consultation

- As above

Sudden, painless loss of vision - adult/child

Background[1]

- **Medical emergency.** Causes can include - stroke, TIA, blockage in eye vessel, retinal detachment

1. May present with

- Partial or complete sudden loss of vision in 1 or both eyes - temporary (lasting seconds, minutes, hours) or permanent; may be blurred, distorted, or completely blacked out[1]

2. Immediate management

- If loss of vision + signs of stroke eg 1 sided weakness, slurred speech:[1,2]
  - contact MO/NP urgently
  - see Stroke, p. 127

3. Clinical assessment[1-3]

- **Get rapid history/assessment** as per Eye assessment, p. 263
- **Also ask:**
  - onset of vision loss - sudden, over several minutes or hours
  - 1 or both eyes - 1 usually means ocular cause; both usually central eg CVA or systemic disease
  - if transient/has vision returned - may indicate TIA/vascular cause[2]
  - other symptoms - any:
    - preceding flashes ± floaters, or recent trauma eg car accident, bungee jumping - may indicate retinal detachment
    - double vision, 'dark shadow' in vision of affected eye
    - jaw pain on chewing or headache - may indicate temporal arteritis
  - prior episodes
  - contact lenses/glasses
  - hypertension, diabetes, cataract surgery
  - current medicines, eye drops
- Vital signs + BGL
- Check head + neck areas for signs of trauma[1]
- Examine eyes, including:
  - VA (distance + near) + pupil reaction to light
  - red reflex - loss of reflex may indicate retinal detachment
  - try to visualise the optic disc
  - confrontation visual field testing

Video of confrontation visual field testing

4. Management[1]

- Consult MO/NP urgently for all cases:
  - ongoing management ± urgent retrieval for specialist review/management
- Minimise activity eg bed rest

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Orbital/periorbital cellulitis - adult/child

Background[1-3]

- **Medical emergency.** Orbital cellulitis is an infection of the eye socket + surrounding tissue. **Can cause blindness** + intracranial infection (uncommon but vision-threatening)
- Periorbital cellulitis is an infection of the eyelid (more common)
- Overlapping clinical features makes it difficult to differentiate
- Children < 4 years are at ↑ risk of both due to a undeveloped orbital septum

1. May present with[2]

- Redness + swelling around eye
- Eye pain, headache, fever, drowsy, altered LOC

2. Immediate management

- Do vital signs
- Screen for Sepsis, p. 62
- Offer analgesia. See Acute pain, p. 32. May require opiates[2]

3. Clinical assessment[2,3]

- **Get rapid history:**
  - pain - eye, ear, facial
  - headache, fever, drowsy, altered LOC
  - ↓ vision, double vision
  - eye problems eg recent stye, cyst, trauma or insect bite to eye/eyelid, watery eye, any surgery
  - Sinusitis, p. 240, URTI, tooth or ear infection
  - Hib immunisation status
  - personal or family history of boils
- **Check** head + neck, look for obvious signs of infection eg:
  - insect bite to the eye, wound, stye, infected tooth, enlarged lymph nodes, tender sinuses
- **Examine** both eyes. Check for:
  - swelling. **Note:** if not able to open eye to assess eye movements + pupils, assume orbital cellulitis. Contact MO/NP urgently
  - painful/limited eye movements - unable to look in different directions
  - discharge - do swab for MCS + gonorrhoea and chlamydia PCR if neonate
  - ↓ VA, pupil reaction to light not equal
  - protrusion of the eyeball

4. Management

- If minimal swelling in both eyes, or non-tender (painless) swelling in a well looking patient, could be an allergic reaction or mild periorbital cellulitis.[3] Consult MO/NP
- **Contact MO/NP urgently** in all other cases, who may advise:[2]
  - if **orbital cellulitis OR severe periorbital cellulitis** suspected:
    - insert IVC, blood cultures, FBC, CRP
    - IV antibiotics - do not delay
    - urgent retrieval ± CT scan
    - urgent ENT + ophthalmology advice
  - if **periorbital cellulitis likely AND patient otherwise well** eg no fever, malaise - **oral antibiotics**

Antibiotics - MO/NP may order[2]		
	Mild	**Moderate-severe**
If non-remote community **and NO** prior history of MRSA infection	• Oral flucloxacillin (cefalexin if child* or mild allergy, clindamycin if immediate sensitivity) **OR** • Oral amoxicillin + clavulanic acid (if features of sinusitis or risk factors for Hib eg < 5 years and not fully vaccinated); cefalexin if mild allergy	• IV cefotaxime
If remote community in North Qld, NT, WA **OR** if previous MRSA infection/ endemic setting/boils	• Oral trimethoprim + sulfamethoxazole	• As above **plus** IV lincomycin
*If unable to swallow capsules, as cefalexin liquid tastes better than flucloxacillin liquid		

S4	**Trimethoprim + sulfamethoxazole**			**Extended authority** ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd **Child** 4 mg/kg (max. 160 mg) bd *Dose as per trimethoprim component*	7 days
Oral liquid	40 + 200 mg/5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,4]				

S4	Cefotaxime			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g 2 g	IV	**› 16 years to adult** 2 g **Infant and child ≤ 16 years** 50 mg/kg (max. 2 g)	stat Inject slowly over at least 3–5 minutes
Offer CMI: May cause diarrhoea, nausea, vomiting, pain at injection site, rash, headache or dizziness. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Note: Rapid injection ‹ 1 minute can cause life-threatening arrhythmias. Flush well between aminoglycosides				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5]				

S4	Lincomycin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	600 mg/ 2 mL	IV	**Adult** 600 mg **Child › 1 month** 15 mg/kg (max. 600 mg)	stat Infuse over at least 1 hour
Preparation: Dilute in 100 mL sodium chloride 0.9%. **Only give by slow IV infusion** - IV injection can cause cardiac arrest, hypotension				
Offer CMI: May cause nausea, vomiting, diarrhoea, abdominal pain or cramps				
Contraindication: IV injection. Severe or immediate allergic reaction to clindamycin				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [6,7]				

5. Follow up

- If not retrieved, advise to be reviewed daily until improved or sooner if symptoms worsen or unable to give antibiotics regularly:[2]
  - check antibiotics are being given correctly. If any issues, consult MO/NP[2]
  - if not improving after 24 hours, contact MO/NP
- Advise to see MO/NP at next clinic

6. Referral/consultation

- As above

HMP Conjunctivitis - adult/child

1. May present with[1]

- Itchy/irritated ± red eye(s)
- Discharge - watery, pus, mucous
- Crusting of eyelids/lashes

2. Immediate management Not applicable

3. Clinical assessment

- **Suspect** Trachoma, p. 281 in all cases of conjunctivitis in remote Aboriginal and Torres Strait Islander communities in NT, WA and SA or if outbreaks in Qld[1]
- Get history, use **Types of conjunctivitis** table for prompts +
  - onset/duration + symptoms eg redness, discharge, itching
  - contact lens wear, particularly poor lens hygiene[2]
- Examine both eyes as per Eye assessment, p. 263, including:
  - VA + instil Fluorescein, p. 265. **Note:** VA should not be significantly ↓ and only minimal fluorescein uptake
  - evert eyelids
- Do vital signs
- Consider Eye differential diagnosis, p. 267

4. Management

- **Contact MO/NP urgently if:**[1]
  - pain, photophobia or blurred/reduced vision, or worsening symptoms
  - fluorescein uptake shows Corneal abrasion, p. 270
  - wears contact lenses, or has herpes/shingles infection
- Use **Types of conjunctivitis** table to guide management

Types of conjunctivitis

Signs/symptoms	Likely cause	Management
If ≤ 6 weeks:[3] • Discharge - initially watery, progressing to copious pus • Swelling of eyelids (may be severe) • Red eyes • Usually bilateral	**Neonatal infectious conjunctivitis**	• Screen for Sepsis, p. 62 • Do swabs for MCS + gonorrhoea + chlamydia PCR (+ HSV PCR if skin vesicles) • Contact MO/NP urgently for ongoing management, antibiotics ± retrieval • **Note:** gonorrhoea/chlamydia may reflect mother-to-child transmission, accidental transmission or sexual abuse.[2] Treat mother + do contact tracing, p. 437 ± Child protection, p. 539
• If newborn/young infant with sticky/watery discharge and is the ONLY symptom (no redness)	**Likely blocked tear duct**[1] rather than conjunctivitis	• Usually gets better without treatment over weeks/months • Seek advice from midwife/child health nurse/ MO/NP as needed • **Consult MO/NP if other signs** eg red eye(s) + if suspected bacterial conjunctivitis, give chloramphenicol[2]
• Watery discharge • Burning/grittiness • ± eyelid swelling • ± recent flu-like, URTI or GI symptoms • Contact with person with conjunctivitis • Usually in 1 eye, but often spreads to both	**Viral**[4] Most common type of conjunctivitis	• Reassure patient usually self-limiting but may take weeks to resolve • Do not give chloramphenicol[2] • Lubricating eye drops may provide symptomatic relief • Highly contagious, advise patient on good hygiene practices (see below)
• Itchy eyes ± swelling • ± watery discharge • ± small round bumps under eyelid • History of hay fever, allergies	**Allergic**[5,6]	• If patient has allergic rhinitis, oral antihistamines may help[2] eg Cetirizine, p. 290 • Antihistamine eye drops eg ketotifen, may help reduce symptoms and lubricating eye drops may help to remove allergen[1]
• Pus/mucous discharge • Burning/grittiness • Crusting of eyelids/lashes • Usually bilateral	**Bacterial**[2]	• Often resolves in 5–7 days without treatment • If young infant or marked symptoms eg purulent discharge, give chloramphenicol[2] • Highly contagious, advise patient on good hygiene practices (see below)
• Consider if non-resolving infectious conjunctivitis • Mucopurulent discharge • Can affect 1 or both eyes	**Chlamydial**[7]	• Do STI/BBV tests, p. 433 + swab eye for chlamydia PCR (write 'eye' on pathology form) • Give azithromycin

Management in all cases

- Symptomatic treatment may help eg cold compresses several times/day or ice packs[1]
- Clean eye(s) as needed with clean water to remove crusting/discharge. Gently wipe from inside to outside to avoid spreading infection to other eye[8]
- Frequent hand washing, avoid sharing towels or pillows[2]
- Keep children away from school/child care until no discharge[9]

S3	Chloramphenicol	Extended authority ATSIHP/IHW/IPAP

ATSIHP, IHW and IPAP must consult MO/NP

RIPRN may proceed

RN may administer; for supply see RN supplying, p. 11

Form	Strength	Route	Dose	Duration
Eye drops	0.5% (10 mL)	Eye	1 drop every 2 hours while awake for 1–2 days. Then, if improvement, 1 drop qid Use ointment at night (1–1.5 cm) **OR** 1.5 cm of ointment 3–4 times daily	Up to 5 days
Eye ointment	1%			

Offer CMI: May cause stinging or burning. Discard 1 month after opening. Can be stored at room temperature once opened. Do not wear contact lenses during treatment. If child - offer to administer first dose with parent/carer

Note: Consult MO/NP if child ≤ 2 years + not responding to treatment

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,10]

S4	Azithromycin	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed for adult only - must consult MO/NP for child and neonate

Form	Strength	Route	Dose	Duration
Tablet	500 mg	Oral	**Adult** 1 g	stat
Oral liquid	200 mg/5 mL		**Child › 1 month** 20 mg/kg (max. 1 g)	
			Neonate 20 mg/kg daily	3 days

Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush. In neonates, advise parents to report if starts vomiting or irritable when feeding - may indicate pyloric stenosis

Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,11]

5. Follow up[1]

- Advise to return if worsening or new symptoms. Contact MO/NP who may:
  - order bacterial + viral swabs
  - arrange ophthalmic referral to exclude alternative diagnoses
- If bacterial and not resolved in 5 days, patient should have immediate ophthalmic review

6. Referral/consultation

- As above

HMP Trachoma - adult/child
Chlamydia trachomatis conjunctivitis

Background

- Caused by *Chlamydia trachomatis*, different strains from STI chlamydia. Repeated infections can lead to eyelid contraction and in-turned eyelashes that rub on the eyeball, causing painful corneal scarring and opacity. Can lead to blindness in older adults[1]
- Most cases occur in children + teenagers in remote communities in the NT, SA and WA - with only **rare cases detected in Qld**[1]
- Also see World Health Organisation *Trachoma* https://www.who.int/health-topics/trachoma#tab=tab_1

1. May present with[1,2]

- Child - repeated conjunctivitis
- Adult - in-turned eyelashes, cloudy cornea

2. Immediate management Not applicable

3. Clinical assessment

- Get history, including:[1,2]
  - previous episodes for patient and family
  - time spent in NT, SA, WA or known area of outbreak
  - contact with person(s) with similar symptoms
- Do vital signs
- Examine eyes as per Eye assessment, p. 263, including:
  - evert the upper eyelids, look for:[2]
    - ≥ 5 pale round spots (follicles). See Trachoma grading card for images
    - intense redness, swelling - can you see normal blood vessels
    - **note:** follicles ± intense redness are indications of active trachoma - take eyelid swab for chlamydia PCR
    - visible scarring on the inner surface of upper eyelid, in-turned eyelashes, signs of pulling out eyelashes
  - check cornea - clear or cloudy

4. Management

- If highly suggestive of active trachoma, treat as per CDNA Trachoma guidelines
  - treat patient and people › 3 kg who live in the same household(s) as the patient:[2]
    - give oral azithromycin
    - **note:** aim to treat all members of relevant household(s) within 1 week of starting treatment[2]
- Consult MO/NP if in-turned eyelashes:
  - referral for ophthalmic review ± eyelid surgery
- Advise patient and family to reduce spread of infection by:[1,2]
  - daily showering, washing faces + hands regularly
  - avoid sharing towels/face washers, beds/bedding

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Adult** 1 g **Child › 3 kg** 20 mg/kg (max. 1 g)	stat
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush. In neonates, advise parents to report if starts vomiting or irritable when feeding - may indicate pyloric stenosis				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,3]				

5. Follow up

- Check swab result:
  - if *Chlamydia trachomatis* is identified notify Public Health Unit[1]
- Advise to return if worsening or new symptoms, contact MO/NP who may:
  - order swabs for MCS and *Chlamydia trachomatis* PCR
  - arrange ophthalmic referral if repeated infections, in-turned eyelashes or corneal changes

6. Referral/consultation

- As above
- *Chlamydia trachomatis* is notifiable by pathological diagnosis ☽

HMP Urinary tract infection (UTI) - adult
Cystitis, pyelonephritis

Background[1]

- The safety and efficacy of urinary alkalisers eg Ural®, Citravescent® is unknown
- Cranberry and ascorbic acid are not effective treatments

1. May present with

Cystitis[1,2]

- Urinary symptoms - frequency, urgency, dysuria ± suprapubic tenderness
- Low abdominal pain

Pyelonephritis[3]

- T ≥ 38, flank pain, nausea, vomiting
- ± urinary symptoms

2. Immediate management

- Consider Ectopic pregnancy, p. 357 in sexually active females with low abdominal pain
- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment[1]

- **Ask about:**
  - past episode(s) of UTI and STI:
    - when, treatment, effectiveness
  - kidney stones, prostate problems, urinary tract abnormalities
  - vaginal discharge
- **Do:**
  - urinalysis - any nitrites ± leucocytes
  - pregnancy test if reproductive age. **If pregnant, go to** UTI in pregnancy, p. 360
  - MSU for MCS if:[1]
    - male
    - aged care resident
    - recent antibiotics or recurrent infection
    - risk factors for multi-drug resistant bacteria eg recent overseas travel/hospitalisation
    - no response to empirical antibiotics
    - pyelonephritis suspected
  - if sexually active offer STI/BBV tests, p. 433
  - check for any suprapubic, loin tenderness, see Abdominal examination, p. 199 as a guide

4. Management

- Offer analgesia. See Acute pain, p. 32

Pyelonephritis[3]

- Contact MO/NP promptly who may advise:
  - IV gentamicin + ampicillin
  - check prior urine MCS results to ensure no resistance to above antibiotics
  - retrieval/hospitalisation

Cystitis[1]

- Diagnosis requires the presence of symptoms (+ve urine culture alone does not require antibiotics)
- Advise to drink enough fluids so not thirsty. Aim for 6–8 glasses of water/day[2]
- **Male:**
  - contact MO/NP
  - UTIs are uncommon - dysuria in younger males is usually caused by an STI[1]
- **Female**:
  - if low abdominal pain **without** urine symptoms consider PID, p. 446
  - if nitrites or leucocytes on urinalysis AND:
    - **no urine symptoms** - MSU and antibiotics are not required[4]
    - has **urine symptoms** - do MSU + give antibiotics[2]

Antibiotics if indicated[1]

- Trimethoprim OR nitrofurantoin. If contraindicated, give cefalexin:
  - **note:** give nitrofurantoin if treated ≤ 3 months ago with trimethoprim
  - check prior urine MCS results to ensure no resistance to antibiotics recommended. If resistance, contact MO/NP

S4	Trimethoprim			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed for females. Must consult MO/NP for males				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	300 mg	Oral	300 mg nocte	**Female** 3 days **Male** 7 days
Offer CMI: May cause fever, itch, rash or nausea				
Note: If renal or hepatic impairment or on an ACEI, seek MO/NP advice. Elderly may be more susceptible to adverse effects eg hyperkalaemia				
Pregnancy: Avoid in 1st trimester - associated with congenital anomalies and ↑ risk of miscarriage				
Contraindication: Megaloblastic anaemia				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5]				

S4	Nitrofurantoin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed for females. Must consult MO/NP for males				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	50 mg 100 mg	Oral	100 mg qid	**Female** 5 days **Male** 7 days
Offer CMI: Take with food or milk to reduce nausea + improve absorption. May cause nausea, vomiting, anorexia, diarrhoea, abdominal pain, headache, drowsiness or dizziness. Report if develop difficulty breathing, cough or numbness or tingling. May make urine a brownish colour. Do not use with urinary alkalisers (eg Ural®, Citravescent®) as they reduce the antimicrobial effect				
Note: If renal impairment seek MO/NP advice				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed for females. Must consult MO/NP for males				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	500 mg bd	**Female** 5 days **Male** 7 days
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,7]				

5. Follow up

- Advise to be reviewed in 2–3 days if still has symptoms, or sooner if concerned:
  - consult MO/NP if symptoms persist or worsen
- Check results of MSU:[1]
  - if pathogen resistant to the antibiotics given, but **symptoms have improved**, do not give a different antibiotic
  - consult MO/NP if pathogen resistant to antibiotics given and symptoms **have not improved**
- Do not do post-treatment MCS to confirm resolution of UTI if asymptomatic

6. Referral/consultation

- As above

Skin problems

HMP Rash - adult/child

Background[1-3]

- Rashes are common, with many possible causes. Aim to identify serious causes
- If child, also see QPEC skill sheets *Rashes in children* - video + skill sheet

1. May present with[1,2]

- Rash

2. Immediate management[1-3]

- **Look for signs of Anaphylaxis, p. 80. If any give IM adrenaline (epinephrine), p. 81 now**
- Do vital signs, including BP
- Screen for Sepsis, p. 62

ALERT urgently consult MO/NP if

- Petechial/purpuric, p. 287 - suspect meningococcal disease until proven otherwise. Can have a maculopapular rash in earlier stages[2]
- **Multiple bullous lesions** or **generalised red skin in absence of sunburn** - suspect staphylococcal scalded skin syndrome (+ sepsis) **or** Stevens-Johnson syndrome (SJS)/Toxic epidermal necrolysis (TEN) (consider if mucosal involvement)

3. Clinical assessment[1-5]

- Assess for **Red flags**

Red flags[2]

- Systemic symptoms eg fever, malaise, unwell
- Looks sick or toxic
- Hypotension
- Severe pain
- < 3 months old or elderly
- Immunocompromised
- Mucous membrane lesions
- Recent new medicine (≤ 1 month since exposure)
- Suspected domestic/family violence or non-accidental injury

- **Ask about:**
  - rash:
    - onset + distribution - trunk, face, other specific areas
    - when/where did it first appear, where is it now, has it changed
    - itchy or painful
  - other symptoms eg fever, cough, red eyes, photophobia, sore joints, abdominal pain, ↓ oral intake
  - symptoms prior to rash appearing
  - trauma related to rash/injury to skin, even minor[6]
  - contacts/family with rash/similar symptoms, or unwell
  - current medicines, new medicines/food
- **Consider possible causes**. Ask about:
  - immunisation status - incomplete or missed vaccines, recent immunisations
  - known allergies, exposure to potential allergens/chemicals
  - history/family history of eczema, asthma, hay fever, food allergies/intolerances
  - recent travel eg overseas/tropics/camping - dates and location
  - STI and BBV, p. 430 as appropriate - consider gonorrhoea, syphilis, HIV
  - environmental exposure eg sun, insect bites, animal/snake bite, plants, marine

- **Do physical examination, including:**
  - **rash** - check all over body, including skin folds, nappy area, palms/soles, mucosal surfaces etc:
    - colour, characteristics (see table below). **Note:** rash may have › 1 descriptor
    - distribution - generalised (widespread), on trunk, or specific area eg face, palms, soles
    - **does it blanch** when glass pressed on it
    - palpate (with gloves) - texture, flat or raised
    - any skin peeling eg with light pressure applied from the side
  - **mouth** - redness, ulceration, petechiae, Koplik spots (bright red spots/whitish centre), vesicles, exudate, oral thrush
  - **eyes** - conjunctivitis (any exudate), jaundice
  - **lymph nodes** - localised or generalised swelling
  - weight - bare weight if ‹ 2 years
  - urinalysis if child - any blood

Rash photos Dermnet

Rash descriptor	Characteristics
Petechial/purpuric	• **Petechiae** - pinpoint red/purple spots. **Does not blanch** when glass pressed against skin • **Purpura** - non-blanching lesions › 2 mm. Raised (palpable) or flat
Maculopapular	• **Macules** - flat, red areas of skin ‹ 1 cm • **Papules** - solid, raised area ≤ 1 cm. If › 1 cm called **plaque**
Erythematous	• Red skin
Vesiculobullous	• Fluid filled lesions. If ‹ 0.5 cm called **vesicle**; › 0.5 cm called **bullae**
Wheal (welt)	• Rapid onset elevation of the skin. Pinhead to dinner plate size. Itchy

4. Management

- Consult MO/NP if:
  - any **Red flags**, petechial/purpuric rashes, any rash and you are **unsure of cause**, or if concerned
  - pregnant or recent overseas travel
- Generally a rash without fever or systemic features is not urgent[1,2]
- Use table below to consider causes of rash. Also see **Other considerations** (next page)

Potential causes of rash (not intended to include all causes)

	Erythematous - red skin[2,5]		
	Generalised distribution		
Not usually itchy	**Staphylococcal scalded skin syndrome**	• Red blistering skin, looks similar to burn/scald • Tender/painful. Skin peeling • Starts on face, groin/axillae/neck then spreads • Fever, irritability	• Mostly affects ‹ 5 years[7] • **Urgently consult MO/NP** • Antibiotics + retrieval
	Kawasaki disease	• Rash on trunk, limbs, nappy area[8] • 'Strawberry tongue' (red/lumpy), cracked lips, red eyes (no exudate), red palms/soles • Fever › 39, swollen hands/feet • Neck lymph nodes swollen 1 side (› 1.5 cm)	• Mostly affects ‹ 5 years • **Urgently consult MO/NP** • Retrieval, IV immunoglobulin
	Scarlet fever[9] (strep infection)	• Rash red initially, then dry + rough, with pin head spots. Feels like 'sandpaper' • 'Strawberry tongue' (red/lumpy) • Sudden high fever, sore throat	• Mostly affects 5–15 years. Highly infectious[1] • **Consult MO/NP** ± antibiotics
	Fifth disease (slapped cheek)[1,10]	• Initial mild fever, headache, aches • Then bright red cheeks + lace pattern to trunk, arms, legs. May come and go for weeks	• Mostly affects 4–10 years. If pregnant contact, consult MO/NP

Maculopapular - most common (many causes)			
Generalised distribution			
Itchy	**Adverse drug reaction**[2,11]	• New medicine exposure 1–4 weeks prior • Starts on trunk + upper limbs. May join together on chest ± purpuric rash on ankles/feet ± mucosal lesions or blistering/pustules • Fever	• **Promptly consult MO/NP** • May require topical or oral corticosteroids • Stop likely medicine
Itchy	**Hives (urticaria)**[5]	• Multiple wheals • ± swelling of tongue, lips, or throat	• See Urticaria, p. 289
Not itchy	**Viral illness**[2]	• Fever, malaise, headache • Common cause of rash in children	• Consult MO/NP
Not itchy	**Roseola infantum**[2]	• Sudden high fever lasting 3–5 days • Then afebrile + rash on trunk, spreading to arms + legs	• Common mild viral infection, mostly in infants–2 years • Symptomatic treatment
Not itchy	**Measles**[3]	• Begins behind ears/forehead, then spreads • Fever, red eyes, cough, malaise, Koplik spots ± recent travel overseas • Not immunised. Rare in Australia	• **Highly infectious - isolate immediately** • Consult MO/NP • Notifiable ⓘ
Not itchy	**ARF**	• On trunk and proximal extremities • Circular patterns of bright pink papules	• See ARF, p. 498. **Note:** hard to see if dark skinned
Not itchy	**Syphilis**	• Rash on palms + soles, patchy hair loss	• See Syphilis, p. 452
Localised distribution			
Itchy	**Scabies**[1]	• Common in web of fingers/toes, elbows, wrists. Infants - palms/soles. Very itchy	• See Scabies, p. 303
Itchy	**Eczema, contact dermatitis**[2,12]	• Usual on elbows/behind knees; face in infants • Dry/itchy skin; red/scaling or vesicles	• Refer to MO/NP clinic for topical corticosteroids
Itchy	**Psoriasis**[2,13]	• Usual on elbows, knees, limbs, scalp • Red inflamed/itchy, silvery/white, scaly papules/plaques	
Vesiculobullous - fluid filled[1,2]			
Generalised distribution			
Itchy	**Varicella (chickenpox)**	• Start as macules, rapidly turn into fluid filled lesions • Starts on trunk, spreads to face/extremities • Fever, malaise ± sore throat/headache before onset of rash. Can still get if immunised	• Usually self-limiting • Notifiable ⓘ • Consult MO/NP urgently if pregnant, baby or immunocompromised
Localised distribution			
May be itchy	**Shingles**	• Rash on 1 side of body along a nerve pathway. Tingling/severe pain • Common on torso. Chickenpox in past • Usually › 50 years old	• See Shingles, p. 312
May be itchy	**Hand, foot and mouth disease**[14]	• Rash in mouth, hands, feet ± buttocks • Mostly affects ‹ 10 years + contacts with same	• Resolves in 7–10 days • Symptomatic treatment
May be itchy	**Impetigo**	• Start as round filled bumps. Progress to blisters or honey coloured crusts • Usually afebrile	• See Impetigo, p. 299

Other considerations[1-4]
Petechial/purpuric: if febrile/toxic + rash palpable - disseminated gonococcal infection, bacterial endocarditis, Henoch-Schonlein purpura OR **non-palpable** - thrombocytopenic purpura, disseminated intravascular coagulation. **If NOT febrile/toxic + rash palpable** - autoimmune vasculitis OR **non-palpable** - idiopathic thrombocytopenia[2]
Erythematous: Cellulitis, p. 291, Urticaria, p. 289, ARF, p. 498, systemic lupus erythematosus (SLE) (butterfly rash on face), rosacea (flushing/redness on face), TEN/SJS (severe drug reactions), toxic shock syndrome, medication side effects, alcohol flush, scomboid (fish poisoning), juvenile arthritis
Maculopapular: heat rash, fungal infection, insect bites, Folliculitis, p. 295, rubella, Epstein Barr virus, cytomegalovirus, erythema multiforme, Mosquito borne diseases, p. 322, molluscum contagiosum (smooth/pearly papules, indented centre)
Vesiculobullous: herpes simplex (cold sore), contact dermatitis, Burns, p. 178, Folliculitis, p. 295, adverse drug reaction, bullous pemphigoid, pemphigus vulgaris
Mechanical causes: non-accidental injury eg bruises, burns, scalds, patterns you may recognise. As relevant also see Child protection, p. 539 and Domestic and family violence, p. 232[6]

5. Follow up

- As relevant, for isolation/exclusion periods, refer to *Time out keeping your child and other kids healthy* https://www.health.qld.gov.au/public-health/schools/prevention
- As guided by MO/NP

6. Referral/consultation

- Consult MO/NP as above

HMP Urticaria (hives) - adult/child

1. May present with[1,2]

- Itchy rash - blotches or raised red lumps:
  - pinhead to dinner plate in size. Can look like mosquito bites when first appear
  - usually disappear within minutes to hours in one spot, rash often moves around/migratory
- ± angio-oedema - swelling of face, lips, or throat
- ± viral infection symptoms eg fever, malaise

2. Immediate management[3,4]

ALERT if urticaria with any of the following, treat as Anaphylaxis, p. 80

- Difficult or noisy breathing
- Wheeze or persistent cough
- Swelling of tongue or throat (eg tightness, drooling or difficulty swallowing)
- Pale and floppy (young children)
- Difficulty talking or hoarse voice
- Altered LOC
- Persistent dizziness or collapse
- Abdominal pain, vomiting

Give IM adrenaline (epinephrine), p. 81 without delay

3. Clinical assessment

- Get history, including:
  - onset/duration of symptoms, what were they doing when it started
  - known allergies/triggers
  - previous episodes, treatment, was it effective
  - eczema, asthma, autoimmune disorder eg SLE[2,5]

- Ask about possible causes/triggers:[1,2]
  - infection eg viral URTI - most common cause in child
  - bites or stings[5]
  - contact with substance eg latex, rubber gloves, some foods, animal saliva
  - heat, cold, pressure, rubbing or scratching skin
  - stress, sleep deprivation
  - foods, medicines eg antibiotics, NSAIDs
    - **note:** new medicines in previous week + up to 1 month - may indicate **cutaneous drug reaction** rather than urticaria[6]
- Do physical examination, including:
  - vital signs
  - listen to chest for wheeze ± Abdominal examination, p. 199 if GIT symptoms
  - check skin, including lips/mouth - describe lesions, localised/widespread

4. Management

- Give antihistamine eg cetirizine or loratadine
- Contact MO/NP if:
  - angio-oedema - swelling of face, lips, or throat
  - suspected cutaneous drug reaction
  - lesions have persisted for › 24 hours and not itchy
  - chronic urticaria - lasting › 6 weeks
- Give **Patient/carer advice**[1]

Patient/carer advice[1]

- Acute urticaria (hives) is usually caused by infection eg viral URTI
- If occurs within 1–2 hours of exposure eg food, medicines, stings and disappear within 6–8 hours, is likely an allergic reaction. Localised hives may be a contact allergy[2]
- Avoid/minimise exposure to allergens (if known):
  - keep cool, wear loose clothing
  - avoid aggravating factors eg alcohol, excessive heat, spicy foods
  - do not take aspirin or other NSAIDs - can make symptoms worse
- Most cases will resolve within a couple of weeks without treatment
- Advise to be alert to signs of anaphylaxis (see **Immediate management**)

S2	Cetirizine		Extended authority ATSIHP/IHW/IPAP
ATSIHP and IHW may proceed for adult and child › 12 only			
IPAP and RIPRN may proceed			
RN may administer; for supply see RN supplying, p. 11			
Form	**Strength**	**Route**	**Dose**		**Duration**
Tablet	10 mg	Oral	**› 12 years–adult**	10 mg mane ± repeat dose late afternoon	While symptoms persist
			6–12 years	10 mg daily **OR** 5 mg bd	
Oral liquid	5 mg/ 5 mL		**2–6 years**	5 mg daily **OR** 2.5 mg bd	
			1–2 years	2.5 mg bd	
Offer CMI: May cause drowsiness, fatigue, headache, nausea, or dry mouth. Avoid alcohol					
Note: If renal impairment seek MO/NP advice. Increased risk of sedation in elderly - monitor carefully					
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,7]					

5. Follow up

- If symptoms continue advise to see MO/NP at next clinic, or sooner if worsen/concerned

6. Referral/consultation

- As above

HMP Cellulitis - adult/child

Background[1,2]

- Acute serious spreading skin infection, often related to a recent break in the skin

1. May present with[1,2]

- Spreading area of red, tender, warm skin ±
  - fever, malaise, chills
  - tender/enlarged lymph nodes
  - red streaks/tracking from the infected area towards armpit or groin
- Can rapidly intensify

2. Immediate management[1]

- Do vital signs
- Screen for Sepsis, p. 62. If suspected continue to manage as per **Sepsis**
- If redness is around the eye - medical emergency. See Orbital/periorbital cellulitis, p. 275

3. Clinical assessment[1,2]

- Get history, including:
  - recent skin trauma (2–3 days ago) - when, what, where eg:
    - cut, abrasion, scabies, insect bite
    - surgery, IV drug use/skin popping
    - related to water immersion eg sea, fresh, brackish, mud, coral cut, marine bite
  - other symptoms - onset, severity, duration
  - diabetes, immunocompromised
- Do physical examination, including:
  - BGL
  - Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
  - palpate lymph nodes
  - assess for associated abscess/Boils, p. 295, although may be difficult if skin is hardened
- If wound ± exudate, take swab for MCS. See How to take a wound swab, p. 318
- Consider 'mimics' of cellulitis eg DVT, p. 119 , Gout, p. 321, septic arthritis[3]

4. Management[1,2]

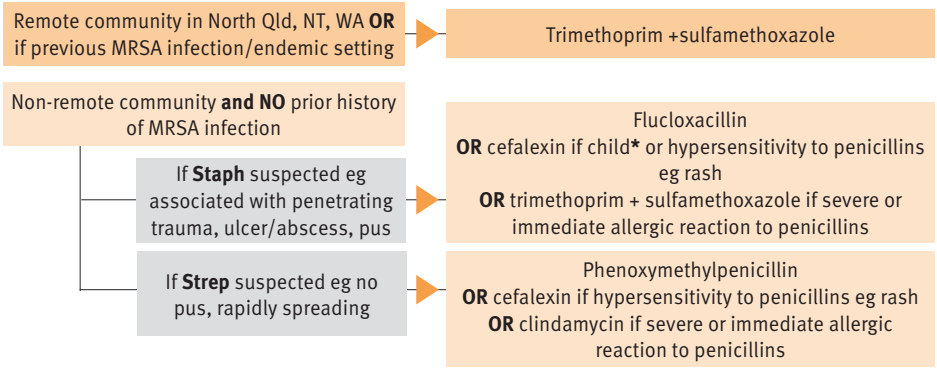
- Offer analgesia. See Acute pain, p. 32
- **Consult MO/NP promptly if patient is/has:**
  - a child
  - systemically unwell eg fever, malaise, chills
  - redness that is extensive **OR** on hand or face **OR** over a joint
  - abscess suspected **OR** severe pain/tenderness, or necrosis
  - diabetes, immunocompromised (↑ risk of rapid progression)
  - re-presented/lack of improvement/deterioration

- **If severe cellulitis/systemically unwell:**
  - insert IVC x 2
  - MO/NP may order:
    - blood cultures, IV antibiotics eg daily IV cefazolin + oral probenecid
    - ± retrieval/hospitalisation

If mild cellulitis + NOT systemically unwell[1]

- Give oral antibiotics:
  - if water immersion related, give antibiotics as per Water related wounds, p. 168
  - otherwise, give antibiotics as per flowchart below
- Dress any wound/site of injury:
  - if possible photograph to monitor response to treatment
  - **note:** resolving cellulitis may continue to spread up to 48 hours after antibiotics started
  - if related to surgery/sutured wound, sutures may need removing.[4] Consult MO/NP
- Advise:[1,2]
  - rest and elevate the affected area for as long as it is swollen, hot and red eg use sling/crutches
  - moisturise the area as it becomes less sore to prevent cracking and skin breakdown

Oral antibiotics for mild cellulitis[1,5]



*If unable to swallow capsules, as cefalexin liquid tastes better than flucloxacillin liquid

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd **Child ≥ 1 month** 4 mg/kg (max. 160 mg) bd *Dose as per trimethoprim component*	5 days
Oral liquid	40 + 200 mg/ 5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]				

S4	Flucloxacillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days
Offer CMI: Take on an empty stomach ½ hour before or 2 hours after food. May cause diarrhoea, nausea or thrush. Can cause cholestatic hepatitis				
Contraindication: History of cholestatic hepatitis with dicloxacillin or flucloxacillin. Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,7]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg, 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days
Oral liquid	250 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,8]				

S4	Phenoxymethylpenicillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg, 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days
Oral liquid	125 mg/5 mL 250 mg/5 mL			
Offer CMI: May cause diarrhoea, nausea or thrush. Food has little effect on absorption				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,9]				

S4	Clindamycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	150 mg	Oral	**Adult** 450 mg tds **Child** 10 mg/kg (max. 450 mg) tds	5 days
Offer CMI: May cause rash, diarrhoea, nausea, vomiting or abdominal pain. Take with a full glass of water. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Note: There is no oral liquid for children. For doses of a 'whole capsule' open the capsule and mix with a spoonful of food eg yoghurt or apple puree. For doses < 150 mg, open capsule and disperse contents into 10 mL of water to make a concentration of 15 mg/mL. Measure the required dose and give immediately. If smaller volumes are required, the capsule will disperse into 3 mL. The dispersion is highly unpalatable and may be mixed with juice before giving				
Contraindication: Allergy to lincomycin				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,10,11]				

5. Follow up[1]

- Follow up results of MCS if taken. If needed, modify antibiotics in consultation with MO/NP
- If not retrieved, advise to be reviewed daily initially for wound care or sooner if concerned:
  - **do vital signs** + monitor redness and any other skin changes eg blistering, necrosis
  - consult MO/NP if ↑ pain, unusual skin changes, develops systemic symptoms, or redness not improving after 48 hours. **Note:** ↑ pain may mean abscess, poor response to treatment, or more serious infection eg necrotising fasciitis

6. Referral/consultation

- Consult MO/NP as above

HMP Boils - adult/child
Carbuncles, folliculitis

Background[1]

- A boil (furuncle) is an infection of a hair follicle. Usually caused from Staph, occasionally in combination with Strep A

1. May present with[1,2]

Boil	• Starts as firm, tender, red, swollen, lump • May be much larger than it appears on the surface • Soon becomes painful + fluctuant (wave-like/boggy when palpated) • ± pustule on top ± oozing pus
Carbuncles	• Boil with multiple heads
Folliculitis	• Small boils/pustules that occur around hair follicles
Note: boils + carbuncles seldom cause systemic symptoms (eg fever, malaise) but may do, especially if surrounding Cellulitis, p. 291	

2. Immediate management
Not applicable

3. Clinical assessment[1,2]

- Get history, including:
  - previous or recurrent boils - when, treatment
  - immunocompromised, diabetes
  - acute rheumatic fever (ARF) or valve replacement
- Examine boil(s) and surrounding skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
- Palpate lymph nodes - check if enlarged/red/painful
- Do vital signs + BGL in adults

4. Management[1,2]

- Offer analgesia eg paracetamol. See Acute pain, p. 32
- **Consult MO/NP if patient is/has:**
  - a child
  - systemically unwell eg fever, malaise
  - carbuncles **OR** very large boil **OR** boil on face, hands, feet, perianal region or breast
  - immunocompromised
  - history of ARF or RHD, or valve replacement - to discuss antibiotics (lower threshold to give)
- **To stop infection spreading advise to:**[2,3]
  - wash hands regularly + after touching boil/folliculitis. Use soap or alcohol based hand sanitiser
  - not share towels/other personal hygiene items
  - shower/bath regularly + wash clothes/linen in hot water if possible
  - cover draining lesions at all times
- **Give oral antibiotics if:**
  - surrounding cellulitis or
  - boil › 5 cm in size
- **Further management** as per table below

Further management[2]

Folliculitis	• Advise to apply moist heat* • Usually resolves by itself. Manage more severe cases as per boils below
Small boil or not yet fluctuant	• Advise to apply moist heat* • **Do not squeeze** - can force bacteria into the bloodstream causing sepsis or severe illness • Check in 1–2 days to see if pus is draining. If not, may need incision + drainage
Larger fluctuant boil	• Needs **Incision and drainage**[1,4] • + take swab of pus for MCS
If recurring boils[5]	• Emphasise hygiene measures as above. May be reinfection from close contact • Encourage to stop smoking + improve diabetes control as relevant • Once current infection healed, refer to next MO/NP clinic, who may consider decolonisation of Staph (confirmed via nasal ± perineal swab) of patient ± household contacts

* **Moist heat** eg sodium chloride 0.9% compress, may ↑ blood flow and help establish drainage. Apply for 15–20 minutes several times a day

Oral antibiotics - if indicated[1]

Remote community in North Qld, NT, WA **OR** if previous MRSA infection/endemic setting

↓

Trimethoprim + sulfamethoxazole

*If unable to swallow capsules, as cefalexin liquid tastes better than flucloxacillin liquid

Non-remote community **and NO** prior history of MRSA infection

↓

Flucloxacillin
OR
cefalexin if child* or hypersensitivity to penicillins eg rash
OR
trimethoprim + sulfamethoxazole
if severe or immediate allergic reaction to penicillins

Incision and drainage (I&D) of boil[5,6]

- Wear protective eyewear/PPE, as pus may squirt out
- Instil/apply local anaesthetic:
  - instil lidocaine 1% using 25 G needle (may not be needed if boil is superficial and 'pointing'). Approach from side + slowly infiltrate the skin above the boil. Do not inject into the boil
  - or apply topical anaesthetic cream[7] eg Lidocaine + prilocaine, p. 551 (Emla®)
  - ± consider methoxyflurane or Entonox®. See Acute pain, p. 32
- Cleanse with povidone-iodine (eg Betadine®) or chlorhexidine
- **Incise** over area of greatest fluctuance with size 11 or 15 scalpel blade:
  - make a single cut long enough to drain the pus; follow skin creases if possible
- **Drain** - carefully separate the skin using forceps to drain the pus:
  - gently express the pus. **Do not squeeze**
  - in larger boils, use fingers/forceps to break down membranes inside boil
  - irrigate cavity with sodium chloride 0.9% until clear drainage
- If boil › 5 cm in size, or cavity looks like it may close, consider loosely placing a non-adhesive wick for about 12–24 hours. Do not tightly pack (to avoid skin necrosis)
- Cover with a dry dressing. Advise patient to change as needed

S4	Lidocaine	Extended authority ATSIHP/IHW/RIPRN

ATSIHP, IHW and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Injection	1% 50 mg/5 mL	Subcut	Up to 3 mg/kg (max. 200 mg)	stat

Offer CMI: It will hurt as it goes in. Report any drowsiness, dizziness, blurred vision, vomiting,tremors

Note: Use lowest dose that results in effective anaesthesia. Use with caution in inflamed or infected skin

Management of associated emergency: Ensure resuscitation equipment readily available. Consult MO/NP. See Anaphylaxis, p. 80 [8]

S4	Trimethoprim + sulfamethoxazole	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd **Child ≥ 1 month** 4 mg/kg (max. 160 mg) bd *Dose as per trimethoprim component*	5 days
Oral liquid	40 + 200 mg/5 mL			

Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids

Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice

Pregnancy: Do not use in the 1st trimester or in late pregnancy

Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,9]

S4	Flucloxacillin	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Capsule	250 mg 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	5 days

Offer CMI: Take on an empty stomach ½ hour before or 2 hours after food. May cause diarrhoea, nausea or thrush. Can cause cholestatic hepatitis

Contraindication: History of cholestatic hepatitis with dicloxacillin or flucloxacillin. Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,10]

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 1 g bd **Child** 25 mg/kg (max. 1 g) bd	5 days
Oral liquid	250 mg/5 mL		**If significant surrounding cellulitis** **Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,11]				

5. Follow up

- Advise to return if not improving, or if redness, fever/other symptoms develop
- If I&D, advise daily review initially, to assess and change dressings
- If infection does not improve within 72 hours of starting antibiotics (if given):[1]
  - modify treatment based on results of MCS - discuss with MO/NP

6. Referral/consultation

- Consult MO/NP as above

HMP Impetigo - adult/child
Infected skin sores, school sores, infected scabies

Recommend[1,2]

- **Treat promptly**
- Promote prevention - hand washing with soap at least once a day, showering, washing clothes

Background

- Highly contagious skin infection, most common in children. If untreated can result in bone and joint infections, abscesses, cellulitis and sepsis[1]
- Usually caused by Strep A in remote Aboriginal and Torres Strait Islander settings. Strep A can cause APSGN and ARF which can result in chronic kidney disease or rheumatic heart disease[1,2]
- **Impetigo photos** - see *National healthy skin guideline* https://infectiousdiseases.thekids.org.au/resources/skin-guidelines/ or *Dermnet* https://dermnetnz.org/images/impetigo-images

1. May present with[1,3]

- Sores from a break in skin that gets infected from eg:
  - scratching, scabies, insect bites, head lice/nits, tinea/ringworm, cuts/lacerations
- Sores start as round fluid/pus filled bumps:
  - progress into blisters, or
  - rupture + discharge forms golden-yellow crust on the skin. When crusts are removed, the area underneath is red and eroded

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Get history, including:
  - previous impetigo - when, treatment
- Do physical examination, including:
  - vital signs
  - weight - bare weight if < 2 years
  - urinalysis
  - examine skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
    - look for signs of Scabies, p. 303
  - assess for signs of systemic infection eg fever, malaise; and sequelae eg APSGN, p. 494, ARF, p. 498, Sepsis, p. 62, Cellulitis, p. 291 or Septic arthritis, p. 537
- Take swab for MCS if unsure of diagnosis or if recurrent impetigo.[4] See How to take a wound swab, p. 318

4. Management

- Consult MO/NP if:
  - oedema eg puffy face, rapid weight gain, BP/urinalysis abnormal - may indicate APSGN, p. 494
  - systemically unwell eg fever, malaise
- If present, treat Scabies, p. 303 or Head lice/nits, p. 306
- **Give antibiotics for anyone with impetigo, regardless of severity:**[1,4]
  - **note:** if on Secondary prophylaxis for ARF, p. 502 still needs more antibiotics unless given ≤ 7 days prior. If given today, advise RHD Register ✆ 1300 135 854 ArfRhdregister@health.qld.gov.au. The next secondary prophylaxis dose will be due in 28 days ie the clock is reset from this dose[4]

Antibiotics for impetigo[1,4]

Remote community in North Qld, NT, WA OR if previous MRSA infection/endemic setting

- One or multiple skin sores → Oral trimethoprim + sulfamethoxazole **bd** or **daily dose** OR **single dose IM** benzathine benzylpenicillin (Bicillin L-A®)

Non-remote community and NO prior history of MRSA infection

- Multiple skin sores OR recurrent infection → Oral flucloxacillin **OR** cefalexin if child* or hypersensitivity to penicillins eg rash **OR** trimethoprim + sulfamethoxazole if severe or immediate allergic reaction penicillins
- One/localised skin sores → Topical mupirocin ointment. **Note:** do not use in remote communities in North Qld, NT, WA as high rate of resistance

*If unable to swallow capsules, as cefalexin liquid tastes better than flucloxacillin liquid

Parent/carer advice[1,2]

- Wash hands regularly with soap or alcohol based hand sanitiser. Ask others in the household to do the same
- Try not to touch the sores
- Have regular showers/bathing
- If needed, wash sores with soap and water
- Don't share towels
- Cover sores on exposed areas with waterproof dressing, until sores are dry[5]
- Keep home from school/child care until 24 hours of antibiotics have been given[5]

Importance of preventing skin infections (wash hands with soap each day); getting early treatment of skin sores and scabies (untreated skin sores can cause acute rheumatic fever and kidney problems)

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	bd dose *preferred* **Adult** 160 + 800 mg **Child ≥ 1 month** 4 mg/kg (max. 160 mg)* **OR** daily dose *eg daily supervised* **Adult** 320 + 1600 mg **Child ≥ 1 month** 8 mg/kg (max. 320 mg)* **Dose as per trimethoprim component*	**bd** for **3** days **OR** **daily** for **5** days
Oral liquid	40 + 200 mg /5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,6]				

S4	Benzathine benzylpenicillin (Bicillin L-A®)				Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP					
RIPRN may proceed					
Form	**Strength**	**Route**	**Dose**		**Duration**
Prefilled syringe	1.2 million units/ 2.3 mL	IM	< 10 kg	450,000 units 0.9 mL	stat Inject slowly over at least 2–3 minutes
			10– < 20 kg	600,000 units 1.2 mL	
			≥ 20 kg	1.2 million units 2.3 mL	
Offer CMI: May cause diarrhoea, nausea and pain at injection site					
Note: Ventrogluteal, p. 552 or outer mid-thigh sites preferred. Do not give in deltoid. See Managing injection pain, p. 551					
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems					
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,7]					

S4	Flucloxacillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 500 mg qid **Child** 12.5 mg/kg (max. 500 mg) qid	7 days Stop earlier if infection has resolved
Offer CMI: Take on an empty stomach ½ hour before or 2 hours after food. May cause diarrhoea, nausea or thrush. Can cause cholestatic hepatitis				
Contraindication: History of cholestatic hepatitis with dicloxacillin or flucloxacillin. Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,8]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 1 g bd **Child** 25 mg/kg (max. 1 g) bd	7 days Stop earlier if infection has resolved
Oral liquid	250 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,9]				

S4	Mupirocin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ointment	2%	Topical	Apply to crusted areas tds	5 days
Offer CMI: Avoid contact with eyes and mouth. May cause itch, burning, redness, stinging, dryness, pain and swelling. Before applying, soak affected area and remove crusts eg using wet disposable cloth				
Note: Do not use in remote communities in North Qld, NT, WA as high rate of resistance				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,10]				

5. Follow up

- If treated for widespread impetigo, advise to be reviewed daily initially
- If not responding to antibiotics:[4]
  - modify treatment based on results of MCS if done - discuss with MO/NP as needed
  - take swab for MCS if not initially done
- If recurrent impetigo:[4,11]
  - emphasise hygiene measures. May be reinfection from a close contact
  - once current infection healed, refer to next MO/NP clinic, who may consider decolonisation of Staph (if confirmed via nasal ± perineal swab) of patient ± household contacts

6. Referral/consultation

- Consult MO/NP as above

HMP Scabies - adult/child

Recommend[1]

- **Treat promptly.** Skin infections from scratching can cause APSGN and ARF

Background[1]

- Caused by infestation with scabies mite. Spread by close physical contact
- The mite causing dog scabies (mange) does not affect humans
- **Scabies photos** - see *National healthy skin guideline* https://infectiousdiseases.thekids.org.au/resources/skin-guidelines/ **or** *Dermnet* https://dermnetnz.org/images/scabies-images

1. May present with[1]

Scabies	• Small bumps/papules, blisters ± tiny burrows • Very itchy, worse at night • **Commonly found** in webbing of fingers/toes, elbows, wrists: – **other sites** - armpit, belt line, abdomen, breasts, buttocks, thighs, genitals – **infants** - pustules on palms + soles of feet (or widespread + head, neck)
Crusted (Norwegian) scabies Thousands of mites which shed with the skin	• Scaling + crusting on the skin, creamy coloured, often not itchy • Few patches or can cover whole body • Usually on buttocks, elbows/arms. Palms and soles of feet may be cracked • May look similar to Tinea/ringworm, p. 307, psoriasis, eczema or dermatitis • **Highly infectious**

2. Immediate management Not applicable

3. Clinical assessment[1]

- Get history, including:
  - immunocompromised
- Do vital signs
- Examine skin:
  - see Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
  - look for signs of infected scabies (skin sores/impetigo):
    - pus or honey coloured filled bumps/blisters, weeping/glistening/redness/crusts
- **If crusted (Norwegian) scabies suspected**:
  - take skin scraping for microscopy to confirm presence of mites
  - ask about living arrangements - is very infectious

4. Management

Scabies[1]

- Treat with:
  - topical permethrin **OR**
  - oral ivermectin
- Treat asymptomatic household/close contacts at same time with a single dose of ivermectin or single application of permethrin.[1] **Note:** if permethrin give enough for repeat application + to treat all household/close contacts[2]
- Give **Scabies advice**
- If infected scabies, treat skin infection at same time. See Impetigo, p. 299

Scabies advice[1,3]

If using permethrin - apply first treatment in clinic if needed

- Apply after shower in evening to **whole body** including:
  - face + scalp (not lips and eyes)
  - between fingers, toes, soles of feet, under nails (use nail brush), behind ears, genitalia
  - in all body creases eg elbows, knees etc
- Leave on overnight - wash off with warm, soapy water 8–14 hours later. Or if prior treatment failure and › 6 months old, leave on for 24 hours
- Reapply if washing hands. Put on child's hands again before bed
- **If infant ‹ 6 months** - cover hands to avoid infant sucking the medication. Leave on for 6–8 hours
- Repeat in 7 days

Stop scabies spreading[1,3,4]

- Treat asymptomatic household + close contacts with single application of permethrin or single dose of ivermectin at the same time[1]
- Wash clothes/bedding morning after treatment + dry in the sun (may help)
- Keep home from school/childcare until the day after 1st treatment[5]

Crusted (Norwegian) scabies[1]

- Consult MO/NP in all cases, who may seek infectious disease specialist advice
- If severe, patient may need to be hospitalised
- If managed in community MO/NP may order ivermectin:
  - **PLUS** 2nd daily benzyl benzoate lotion (can use permethrin if not available)
  - **PLUS** Calmurid® cream (10% urea, 5% lactic acid in sorbolene cream) - to reduce scaling/ soften skin crusts:
    - use on days when benzyl benzoate not applied
    - apply after shower to crusted/thickened skin
    - the next day, soak/scrub the crusts with a sponge, then apply benzyl benzoate
- Prompt treatment and community control efforts are essential:
  - can cause scabies outbreaks - get advice from Public Health Unit

Crusted (Norwegian) scabies advice[1]

- Wash clothes/sheets/towels in hot water **daily** and dry in the sun **OR** put in sealed plastic bag for 8 days to kill the mites
- Vacuum floors and furniture in the house + the floors and seats in cars, to remove mites + skin flakes
- Treat household + close contacts for scabies. Regularly check for signs of scabies

Unscheduled	**Permethrin**			
ATSIHP, IHW, IPAP, MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose (approx.)**	**Duration**
Cream	5% 30 g tube	Topical	**› 12 years to adult** up to 1 tube **5–12 years** up to 1/2 tube **1–5 years** up to 1/4 tube **‹ 12 months** up to 1/8 tube	Apply on day 1 Repeat in 7 days
Offer CMI: May temporarily increase itch, redness and swelling. Wash off next day (8–14 hours)				
Note: Can be applied to scratched/broken skin. Only avoid if obvious irritation occurs				
Pregnancy: Safe to use. If breastfeeding, wash off nipples before feeding and reapply afterwards				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [6]				

S4	Ivermectin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP, MID and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	3 mg	Oral	**Adult and child ≥ 5 years and › 15 kg** **Weight (kg)** / **Dose** 15–24 / 3 mg 25–35 / 6 mg 36–55 / 9 mg 56–65 / 12 mg 66–79 / 15 mg › 80 / 18 mg or 200 microg/kg (round up to nearest 3 mg)	**Scabies** Once. Repeat in 7 days **Crusted scabies** Once on days 1, 2 and 8
Offer CMI: May cause headache, fatigue, dizziness, abdominal pain, vomiting or diarrhoea. Resistance can occur after repeated use				
Pregnancy: Avoid if pregnant. May be used if breastfeeding				
Contraindication: Child ‹ 15 kg				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,7,8]				

Unscheduled	Benzyl benzoate			
ATSIHP, IHW, IPAP, MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Lotion	25%	Topical	**Adult** apply undiluted **2–12 years** dilute with equal parts water **6 months–2 years** dilute with 3 parts water	**Scabies** Once. Repeat in 7 days **Crusted scabies** Apply every 2nd day for 1 week, then 2–3 times a week until cured
Offer CMI: May cause stinging/burning sensation when first applied. Do not use on acutely inflamed, raw or weeping skin. If skin irritation in adult (test first), use diluted instead. Wash off 24 hours later				
Pregnancy: Permethrin preferred if pregnant or breastfeeding				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,9]				

5. Follow up

- **Scabies:**[1]
  - if develops skin sores, advise to return to clinic promptly - **untreated skins sores can cause acute rheumatic fever or kidney disease.** Treat as per Impetigo, p. 299
  - itch can persist 2–4 weeks after treatment. If problematic, MO/NP may order a corticosteroid cream
  - if itch still present › 4 weeks after treatment check treated correctly, contacts were treated, and household measures followed.[3] Consider:
    - unidentified source of re-infestation
    - switching treatments eg if permethrin used, consider ivermectin or benzyl benzoate instead[4]
    - supervised treatment
    - other diagnosis/specialist advice - consult MO/NP[1,3,4]
- **Norwegian/crusted scabies:**
  - if not hospitalised, provide ongoing treatment support until cured (daily initially)[1]

6. Referral/consultation[10]

- If crusted (Norwegian) scabies consult Public Health Unit. **Note:** is notifiable in NT ☽

Head lice/nits - adult/child

1. May present with[1]

- Itchy scalp and neck
- White eggs (nits) or lice in hair
- Sores on head

2. Immediate management Not applicable

3. Clinical assessment[1]

- Look in hair/scalp + eyebrows/lashes for:
  - eggs attached to the base of hairs
  - moving louse - use **Wet combing** to detect
  - infected sores from scratching.[2] If any, look for signs of APSGN, p. 494 and ARF, p. 498

Wet combing[1]

- Apply a generous amount of hair conditioner to wet hair. Conditioner stuns the lice for 20 minutes
- De-tangle hair, divide into sections. Comb sections with a fine-toothed comb eg nit comb
- Wipe conditioner off the comb onto paper towel or tissue. Look for lice and nits

4. Management[1]

- If infected sores **treat promptly** at the same time.[2] See Impetigo, p. 299
- Advise parent/carer to treat with wet combing method or head lice treatment below
- **Wet combing method:**
  - repeat wet combing (as above) daily until no lice are found. About 40% success rate
- **Head lice treatment** eg:
  - dimeticone gel eg Hedrin®, or
  - malathion (KP24®), or
  - pyrethrins + piperonyl butoxide eg Banlice Mousse® or Pyrenel Foam®

Head lice treatment[1]

- Apply as per instructions on container. Repeat treatment in 7 days
- Use wet combing the day after each treatment to check for live lice:
  - if live lice are found, despite correctly applied treatment, the lice may be resistant
  - try another topical treatment OR use wet combing method
- In between treatments, use the wet combing method twice. Remove eggs from the scalp with a fine-toothed comb or pull off with fingernails

- **Advise parent/carer**:
  - repeat wet combing weekly for several weeks after cure to detect recurrence
  - wash pillow cases and comb/brush in hot water
  - check household contacts using wet combing and treat if needed
  - treat before going to school next day
  - to prevent lice - avoid sharing hats, hair elastics, brushes etc

5. Follow up[1]

- Advise to return if lice continue regardless of treatment - try another topical treatment

6. Referral/consultation[1]

- Consult MO/NP if not responding to all topical treatments. May consider ivermectin single dose repeated in 7 days, as per drug box in Scabies, p. 303

HMP Tinea/ringworm - adult/child
Jock itch, athletes foot, fungal infection of nail

1. May present with[1,2]

Ringworm eg tinea corporis	• ≥ 1 ring shaped red patches/plaques. Has central clearing as it expands • Border well-defined, slightly raised, sometimes scaly • May appear tan/grey in darker pigmented skin • Usually on trunk, face, arms or legs. Often itchy
Scalp ringworm Tinea capitis	• Itchy, scaly plaques or patches on scalp • Patches of hair loss; black dots where hair broken off • Most common in 3–7 year olds • May be a hardened, boggy, pustular mass which looks like a boil
Jock itch Tinea cruris	• Red itchy, scaly rash on upper thigh and groin. Not usually on scrotum • May appear tan/grey in darker pigmented skin • Most common in adolescent and adult males • Risk factors - sweating in groin, occlusive clothing, immunocompromised
Athletes foot Tinea pedis	• Itching or burning ± odour of feet, especially between toes • Scaling, maceration or sloughing of skin • Often spreads to nails
Fungal infection of nail Onychomycosis	• Nail discolouration + thickening, separation of nail from nail bed

2. Immediate management Not applicable

3. Clinical assessment[1,2]

- Get history, including:
  - onset, duration, itchy/burn/tenderness
  - prior infections/treatment
  - animal contact, hot humid weather
  - immunocompromised, diabetes
- Do vital signs
- Examine skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
- If jock itch - check feet as possible source of infection:
  - consider differential diagnosis of Candidiasis (skin), p. 310. **Note:** treatment is the same
- Look for signs of a secondary bacterial infection eg tender/red skin, weeping/glistening, crusts
- Consider other diagnoses (can be hard to tell the difference) eg eczema, dermatitis, psoriasis. If in doubt, get MCS eg from skin scraping[1]

4. Management[1,2]

- If secondary bacterial skin infection, treat first. See Impetigo, p. 299 or Cellulitis, p. 291
- Refer to next MO/NP clinic if:
  - widespread skin involvement
  - on nails, scalp, palms or soles
  - immunocompromised
  - recurrent infection or not responded to topical treatment
  - **MO/NP may order** oral antifungal eg terbinafine + fungal MCS (skin scraping from edge, under nail debris, nail clippings or plucked hair)

- Treat all other tinea with antifungal cream eg:[1]
  - terbinafine (preferred) or miconazole
- Offer **Tinea advice/preventative measures**[2]

Tinea advice/preventative measures[2]

- Exclude child from school/daycare until day after antifungal treatment started[3]
- Keep area as dry as possible eg wear loose clothing, dry well between toes
- Avoid walking barefoot in public showers. Put moist footwear in sun to dry
- Improve diabetes/weight control as relevant. Avoid infected pets/farm animals
- Is spread by direct contact (via break in skin) with infected people, pets or contaminated objects eg combs, clothing, footwear, bedding or shared towels

S2	Terbinafine			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Cream	1%	Topical	Apply a thin layer once or twice a day	1–2 weeks
Offer CMI: Clean and dry affected areas well before applying to the affected and surrounding skin. For treatment to be successful you have to use it regularly. Do not cover with a dressing. Complete the full course even if your skin looks better				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,5]				

S2	Miconazole			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Cream	2%	Topical	Apply a thin layer bd	Continue using for 2 weeks after symptoms have gone
Offer CMI: Apply to the affected and surrounding skin. Pay particular attention to skin folds. For treatment to be successful you have to use it regularly				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [5,6]				

5. Follow up[3]

- Advise to see MO/NP at next clinic if used topical cream and no improvement after 2 weeks

6. Referral/consultation

- Consult MO/NP as above

HMP Tinea versicolor (pityriasis versicolor) - adult/child

1. May present with[1,2]

- Flat patches of hyper/hypo-pigmented skin eg pink, tan, brown or red:
  - in dark skinned people can cause light patches of skin
  - ± fine scales
  - common on chest, back, neck, upper arms (not face)
  - usually no symptoms. May be slightly itchy
- Common in adolescents and young adults in tropical climates/heavy sweating

2. Immediate management

Not applicable

3. Clinical assessment[2]

- Get history
- Do vital signs
- Examine skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
- Consider other diagnoses eg Tinea/ringworm, p. 307, secondary Syphilis, p. 452, Leprosy, p. 314

4. Management[1-3]

- Treat with an antifungal shampoo eg:
  - selenium sulfide shampoo (Selsun Gold®) - can buy from supermarket:
    - apply to wet skin, leave on for 10 minutes or overnight. Repeat daily for 7–10 days[1]
  - ketoconazole shampoo
  - econazole foaming liquid
- Advise:
  - wash whole body with the antifungal shampoo, including the hair
  - caused by yeast infection, that is normally present on skin
  - treatment is only needed for cosmetic reasons
  - it may take several weeks or months for skin to return to its normal colour
  - recurrence is common and repeated treatment may be needed

S2	Ketoconazole shampoo			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Shampoo	2%	Topical	Apply, leave for 5 minutes then wash off	Use daily for up to 5 days
Offer CMI: May cause burning, stinging, itch or redness. A single application may be effective				
Pregnancy: Avoid; safe in breastfeeding				
Management of associated emergency: Consult MO/NP [1,4]				

5. Follow up[1]

- Advise to see MO/NP if persistent. Oral fluconazole may be required

6. Referral/consultation

- Consult MO/NP as above

HMP Candidiasis (skin) - adult/child

1. May present with[1,2]

- Red, itchy, moist rash/patches ± small blisters, pustules or slight scaling
- Most common in warm/moist areas eg axillae, groin, under breasts, abdominal folds, nappy area

2. Immediate management

Not applicable

3. Clinical assessment[1,2]

- Get history, including:
  - onset, duration, prior infections/treatment, other symptoms
  - pre-disposing factors eg:
    - diabetes, immunocompromised
    - taking antibiotics or corticosteroids
    - obesity, immobility
- Do vital signs + BGL in adults
- Examine skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468

4. Management[1,2]

- Refer to next MO/NP clinic if widespread or immunocompromised:
  - may order oral fluconazole ± MCS
- Otherwise, treat with antifungal cream eg miconazole
- Advise:
  - keep skin as clean and dry as possible
  - improve diabetes/weight control as relevant
  - if severe itch, short term topical hydrocortisone combined with topical antifungal cream may help[1]

S2	Miconazole			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID and RIPRN may proceed				
RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Cream	2%	Topical	Apply a thin layer bd	Continue using for 2 weeks after symptoms have gone
Offer CMI: Apply to the affected and surrounding skin. Pay particular attention to skin folds. For treatment to be successful you have to use it regularly				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

5. Follow up[1]

- Advise to be reviewed at next MO/NP clinic if no improvement after 2 weeks

6. Referral/consultation

- Consult MO/NP as above

HMP Nappy rash - adult/child
Incontinence associated dermatitis

Background

- A type of contact dermatitis from exposure to excess moisture and prolonged contact with faeces and urine[1]
- Incontinence associated dermatitis is a significant cause of skin breakdown in aged care[2]

1. May present with[1]

- Rash in nappy area:
  - mild - scattered pinpoint red papules
  - moderate - mild redness, some maceration and chafing
  - severe - extensive redness, maceration, superficial erosions + discomfort/pain

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Get history, including:
  - duration of rash
  - recent diarrhoea/frequent stools
  - use of fragrance powders, creams, soaps/detergents - consider new contact allergy to product
- Examine skin. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468

4. Management[1,3]

- Offer **Nappy rash advice**

Nappy rash advice[1,3]

- Use disposable nappies if possible. If unable/prefers not to, advise to change nappies 2 hourly, avoid plastic over-pants and liners
- Frequent nappy changes + periods of nappy free time
- Apply a barrier cream, ointment or paste at every nappy change eg zinc and castor oil, zinc oxide
- Use fragrance free wipes or plain water/soap substitute. Do not wipe excessively

- **If widespread/severe** - consider consulting with child health nurse, midwife or MO/NP:
  - hydrocortisone 1% cream bd for 3–5 days may also help[3]
- **Consider secondary infection if:**
  - shiny red patches with satellite lesions ± oral thrush ± rash persisting for › 3 days. Suspect fungal infection. Treat as per Candidiasis (skin), p. 310
  - pustules, erosions, ulcers or weeping. Suspect bacterial infection:[1]
    - take swab for MCS
    - treat with antibiotics as per Impetigo, p. 299
- **Consider non-accidental injury or neglect** where presentation is inconsistent with history or is unexpected eg scaled skin, bruising, object shaped lesions in nappy area, poor hygiene, developmental delay. Also see Child protection, p. 539

5. Follow up

- Advise to be reviewed if no improvement after 1–2 days or concerned

6. Referral/consultation

- Consult child health nurse/midwife/MO/NP

HMP Shingles - adult/child

Background[1]

- Shingles is reactivation of the varicella-zoster virus (VZV) in a person, usually › 50 years, who has had chickenpox. It causes a painful blistering rash, lasting for 10–15 days
- Usually self-limiting, but can result in persistent pain for › 3 months or rarely complications eg blindness, pneumonia, hearing problems, swelling of the brain, death[2]

1. May present with[1,3]

- Rash that develops into small blisters (vesicles) within 24–48 hours:
  - on 1 side of the body along a nerve pathway
  - crusts over by 7–10 days
- 48–72 hours prior to rash appearing, may have:
  - headache, photophobia, malaise
  - itching, tingling or severe pain in the area/along nerve pathway

2. Immediate management Not applicable

3. Clinical assessment[1,3]

- Get history, including:
  - history of rash
  - other signs and symptoms
  - immunocompromised
  - prior chickenpox
- Do vital signs
- Examine Rash, p. 286
- Take dry swab of lesion for VZV PCR[4,5]

4. Management[3]

- **Consult MO/NP promptly** if:
  - child
  - rash on face/nose or eye. Will need retrieval/review by ophthalmologist:
    - + MO/NP may order oral valaciclovir, or if immunocompromised, IV aciclovir[6]
  - immunocompromised
  - pregnant
- **For relief of pain:**[7]
  - offer paracetamol ± ibuprofen. See Acute pain, p. 32
  - ice packs and protective dressings may help
  - lidocaine or similar numbing ointment may be tried for a few days
  - if severe pain and above does not work, consult MO/NP who may order:
    - oral prednisolone, amitriptyline or oxycodone
- **If rash started ‹ 72 hours ago**, give adult:
  - oral valaciclovir
  - advise this will reduce pain, duration of rash and complications
- If skin infection also present, treat as for Impetigo, p. 299 or Cellulitis, p. 291
- Give **Shingles advice - how to stop spreading to others**
- Advise they can still receive the zoster vaccine at the recommended age.[1] See the *Australian Immunisation Handbook*

Shingles advice - how to stop spreading to others[2]

- Direct contact with the fluid in blisters can cause chickenpox (not shingles)
- Cover rash if possible. Exclude child from school/daycare until blisters have dried + crusted. Exclude adult if blisters unable to be covered with waterproof dressing[8]
- Avoid touching or scratching the rash
- Wash hands often

Avoid contact with these people until the blisters have developed crusts

- Children and pregnant women who have never had chickenpox or the chickenpox vaccine (although not harmful to your unborn baby if you have shingles)
- Premature or low birth weight babies
- People with weakened immune systems eg chemotherapy, taking medicines that weaken their immune system, had a transplant, living with HIV

If contact with any of the above, tell clinician who may get advice from Public Health Unit[7]

S4	Valaciclovir			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Adult** 1 g tds	7 days
Offer CMI: Drink plenty of fluids - at least 1.5 L/day. May cause nausea, vomiting, diarrhoea, headache				
Note: If renal impairment seek MO/NP advice				
Pregnancy: Aciclovir preferred. May be used from 36 weeks gestation				
Contraindication: Allergy to aciclovir				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,9]				

5. Follow up

- Advise to see MO/NP at next clinic

6. Referral/consultation[8]

- Notify Public Health Unit ✆ if probable or confirmed shingles

Leprosy (Hansen's disease) - adult/child

Recommend[1]

- Consider leprosy in patients with persistent undiagnosed skin lesions in Northern Australia
- **Note:** transmission requires prolonged close contact (over months)[2]

1. May present with[1-3]

- Lighter (or reddish) patches of skin/ulcer with loss of sensation
- Thickened or enlarged peripheral nerve with loss of sensation ± weakness of the muscles supplied by that nerve

2. Immediate management

Not applicable

3. Clinical assessment[1,3]

- Get history, including:
  - onset, duration, location, loss of sensation of lesions
  - other signs or symptoms eg neurological, chronic runny nose ± bloody discharge
- Do vital signs
- Examine lesions. See Skin assessment - adult, p. 21 or Skin assessment - child, p. 468
  - use cotton wool to test for sensation on lesions - roll the cotton wool to a point and touch the skin so the point bends (don't stroke the skin)[2]
  - palpate for thickened or enlarged nerves - feel wrist, elbow or behind knee, neck
  - check for other sensory changes and weaknesses, especially in hands, feet and face

4. Management[1,3]

- If leprosy suspected, consult MO/NP who may consider:
  - leprosy PCR - biopsy of lesion (preferred) **OR** if an open lesion, swab. Seek advice from pathology
  - **note:** Guidelines for the control of leprosy in the Northern Territory 2018 provide instructions on taking pathology and detailed physical examination for leprosy
- If leprosy suspected/confirmed, MO/NP will treat in consultation with specialist. Requires long-term medication, follow up and contact tracing

5. Follow up[3]

- Monitor medicine regimen and provide support to patient to complete course as needed

6. Referral/consultation[4]

- Notify Public Health Unit ✆ if confirmed leprosy

Diabetic foot infection

HMP Diabetic foot infection ± osteomyelitis - adult

Recommend[1]

- Diabetic foot infection should always be considered serious. It is often worse than it appears
- Be alert for Charcot foot - a serious + potentially lower limb-threatening complication of diabetes

1. May present with[1]

- For an ulcer to be considered infected, ≥ 2 of the following need to be present:
  - local swelling or localised hardening of soft tissue
  - redness extending › 0.5 cm in any direction from the wound
  - local tenderness or pain
  - local warmth
  - purulent discharge
- Always consider Charcot foot:
  - red hot swollen foot, localised unilateral swelling ± pain, deformity, wound

2. Immediate management

- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment[1]

- Consider other causes of inflammation eg trauma, gout, thrombosis
- Get history, including:
  - peripheral arterial disease
  - onset of ulcer
  - past episodes, when, treatment
  - fevers, rigors or other systemic symptoms
  - current medications, adherence
  - recently taken antibiotics
  - smoking, alcohol intake
- Check for risk factors for Charcot foot:
  - peripheral neuropathy, foot deformity, recent trauma or surgery to foot/ankle, previous Charcot foot
- Do physical examination, including:
  - BGL
  - palpate pedal pulses - bounding pulses may indicate Charcot foot
  - check for ↑T of affected site compared to same spot on other foot
  - test for protective sensation with monofilament if available
  - measure redness from wound margin - if ≤ 2 cm + involves only the skin + subcutaneous tissue with no systemic features - indicates mild infection
  - note size, location + depth of ulcer:
    - probe using a sterile probe, with slow gentle force. Assess all extents of the ulcer. If bone can be probed - indicates high risk of osteomyelitis, consider x-ray
    - take photos if available
- Take wound swab for MCS. See How to take a wound swab, p. 318

4. Management

- Consult MO/NP in all cases, who may advise/arrange:[1,2]
  - antibiotics ± retrieval/hospitalisation depending on severity + comorbidities eg kidney function/renal disease, malnutrition[1]
  - **note:** if osteomyelitis MO/NP may order IV antibiotics
  - ± bloods - HbA1c, FBC, CRP, ESR, UE + GFR, glucose
  - x-ray if available to rule out osteomyelitis
  - urgent surgical review - if signs of inadequate vascular status, osteomyelitis, gangrene, necrosis, or strong unrelieved pain
- Offer analgesia. See Acute pain, p. 32
- If mild infection treated in community, MO/NP may order antibiotics eg:[1]
  - trimethoprim + sulfamethoxazole - MRSA/remote area in North Qld, NT, WA
  - flucloxacillin - other areas/low risk of MRSA
- If not retrieved, refer/manage in collaboration with closest high risk foot clinic, for advice on:[1]
  - interventions - offloading pressure devices are critical eg moon or soft boots, removable cast[2]
  - wound care/dressing regime eg initial antimicrobial dressing[2]
  - management of hyperglycaemia, vitamin C + thiamine supplements if indicated
- Advise patient to rest, use offloading devices when suitable, reduce weight-bearing activities + encourage smoking cessation if appropriate[1]

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	160 + 800 mg bd	As per MO/NP Treat until infection resolved, wound/ulcer may remain
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

5. Follow up

- If not retrieved:
  - review daily initially as patient can deteriorate rapidly
  - check MCS result + contact MO/NP if need to modify antibiotics based on results
  - continue antibiotics until infection is resolved but not necessarily until the ulcer is healed[1]
- As per MO/NP/diabetes team/high risk foot team
- See *Chronic Conditions Manual* as appropriate

6. Referral/consultation

- Refer to diabetes educator, podiatrist, high risk foot clinic if available

Chronic wounds

HMP Chronic wounds - adult

1. May present with

- Chronic wound/ulcer ± infection

2. Immediate management Not applicable

3. Clinical assessment

- **Ask about wound:**[1]
  - onset eg spontaneous, traumatic, caused by foreign body
  - duration
  - what concerns do they have about their wound eg pain, restricted mobility, swelling, exudate leakage, odour
  - treatments already used + response
  - any recent radiotherapy or surgery near wound
- **Get medical/surgical history, including:**[1]
  - any risk factors eg diabetes, smoking, alcohol intake, heart disease, blood disorders, rheumatoid arthritis, disorders affecting nutrition
    - **note:** if diabetic + suspected infection, go to Diabetic foot infection, p. 315
  - current medications + allergies
  - previous ulcers, when, treatment, any imaging/investigations
- **Do vital signs + BGL**
- **Do physical examination** + look for signs of:[1]
  - vascular disease eg oedema, ↓ or absent lower limb pulses, pale, cold or tender foot
  - anaemia eg pallor
  - systemic infection eg fever, ↑ HR, swollen lymph nodes
  - dehydration, signs of malnutrition
- If dressing in situ - remove gently. If adhered soak off with warm sodium chloride 0.9% or drinking water

Examine wound[1]

- **Tissue** - at ulcer base eg black necrosis, slough, hypergranulation:
  - if visible deeper tissue eg bone, tendon or muscle - measure length, width + depth
  - probe using a sterile probe:
    - foot ulcer - with slow gentle force, assess all extents of the ulcer. If bone can be probed - indicates high risk of osteomyelitis,[1] see Diabetic foot infection, p. 315
    - sacrum, buttock or hip area - check for sinus tracts, bone, cavity
- **Infection/inflammation** - check for delayed healing, ↑ pain, exudate, odour + spreading cellulitis:
  - if signs of infection take wound swab for MCS before starting antibiotics[1]
  - **note:** do not take MCS from non-infected ulcers/wounds
- **Moisture balance** - any exudate, amount + type eg serous, purulent, scant. Ask about time taken for exudate to reach surface of dressing
- **Edge + skin within 4 cm of wound edge** eg flat, sloping, indistinct, punched out, not attached:
  - **note:** tender, warm, swollen reddened wound edge indicates expanding deep wound infection

How to take a wound swab[2]

- Cleanse + debride the wound with warm sterile sodium chloride 0.9% or drinking water
- Moisten swab tip with sterile sodium chloride 0.9% + advise patient it may cause discomfort
- Firmly press swab tip into cleanest area of wound (avoid slough or necrotic tissue). Rotate for 5 seconds with sufficient pressure so that tissue fluid is produced
- On pathology form - note wound location, duration, any significant comorbidities, clinical indication eg signs/symptoms + current or recent antibiotic use

4. Management[3]

- Offer analgesia. See Acute pain, p. 32
- Consult MO/NP for ongoing management if:
  - strong, unrelieved wound pain - may indicate serious problem eg acute ischaemic limb
  - non-healing leg ulcer
  - suspected osteomyelitis or signs of infection
  - wound located on:
    - hands, face with extensive necrotic tissue or exposed bone, or
    - groin/perineum with strong pain + tissue necrosis - can indicate Fournier's gangrene
- MO/NP may seek specialist advice + order:
  - specialist wound cleansing agents/strategies
  - antibiotics, bloods
  - retrieval/hospitalisation depending on severity/cause

Wound care + dressing[4]

- Cleanse + debride as needed with warm sterile sodium chloride 0.9% or drinking water
- Use the table below to guide dressing options for the amount of exudate

Dressings for optimal moisture balance

Dry wounds	Minimal exudate	Moderate exudate	Heavy exudate	Fragile skin or extensive wound
• Hydrogel	• Semi-permeable film • Hydrocolloid + other polymer • Thin foam	• Foam • Absorbent pad	• Super absorbent pad • Alginate fibre • Gelling fibre	• Wound contact layer or tulle eg silicone mesh • Low adherent • Thin foam

- **Consider other wound features eg:**
  - **cavity** - may need packing, be mindful not to over pack. Use a dressing that does not lose integrity when saturated + can be removed in 1 piece without causing tissue trauma or leaving dressing residue. Always leave a 'tail' of dressing outside the wound
  - **infected** - use antimicrobial dressing for shortest time possible, review after 2 weeks:
    - if infection has resolved change to non-antimicrobial dressing[2]
  - **malodorous** - more frequent dressing changes + wound cleansing to ↓ odour. Consider debridement, foam dressing or antimicrobial dressing, topical metronidazole gel if malignant/palliative wound - as per MO/NP/wound specialist
  - **hypergranulation tissue:**
    - if bleeds easily, soft and spongy + exceeds the margins, consider hypertonic saline gauze with an antimicrobial dressing or silver containing dressing in conjunction with good exudate absorption
    - if area of dense body hair eg scalp, gluteal cleft - clip hair to above skin level in 3–4 cm margin to prevent irritation from growing hairs

  - **pain** - dressings with silicone are often comfortable + can be removed with minimal trauma eg foams with a silicone contact surface or a silicone wound contact layer
- Apply a secondary dressing if needed for absorption/protection + consider protecting skin around the wound eg cleanse with pH appropriate skin cleanser, avoid soap, and apply/rub in well a barrier protection eg zinc oxide ointment to cover 2–4 cm margin
- Most dressings do not need to be changed until at least 75% saturated
- Reassess dressing regime within a week + then at each dressing change. Unless there is a clear problem eg pain, excessive exudate, do not alter regime for at least 2 weeks or as per MO/NP/wound specialist
- Advise patient about wound healing as indicated:[2]
  - general dietary advice, protein + energy requirements are higher for chronic wounds. Consider/offer referral to dietitian
  - moderate alcohol intake and cigarette smoking - can delay healing + ↑ risk for infection. Encourage to stop at each review

5. Follow up

- As per MO/NP/wound specialist or podiatrist

6. Referral/consultation

- As above

Swollen/painful joint

HMP Acutely swollen/painful joint - adult

Recommend[1,2]

- Causes can be difficult to diagnose. Be suspicious of septic arthritis (orthopaedic emergency), acute osteomyelitis + ARF, p. 498

1. May present with[1-3]

- Painful, red + swollen joint(s) ± fever, malaise

2. Immediate management[1,3]

- Vital signs
- Screen for Sepsis, p. 62

ALERT suspect **septic arthritis** if hot, swollen, acutely painful joint + marked ↓ in range of motion
Contact MO/NP urgently[3]

3. Clinical assessment[1,3,4]

- Assess for **Red flags**

Red flags

- Systemic symptoms eg ↑HR, fever, malaise, night sweats, weight loss, chills, rigors
- Recent joint surgery
- Recent trauma, injury/wound - can be minor
- Prosthetic joint

- Get history, including:
  - pain - sudden or gradual onset
  - past episodes ± diagnosis
  - ARF, p. 498 OR rheumatic heart disease diagnosis or family history of[1]
  - recent infection eg throat infection, UTI, gastrointestinal, postoperative, skin[1]
  - other symptoms eg sore throat, diarrhoea, fatigue, rash
  - STIs, IV drug use[1]
- Examine joints - swelling, tenderness, warmth + mobility
- Check for swollen lymph nodes + risk factors and signs of ARF, p. 498 (especially if pain seems out of proportion to joint signs)

4. Management[1,2]

- **Always consider** septic arthritis, acute osteomyelitis and ARF, p. 498 as cause
- Contact MO/NP - urgently if any **Red flags**, who may advise:
  - blood cultures, IV antibiotics, x-ray
  - retrieval/hospitalisation ± referral to orthopaedic specialist
- If highly suggestive of gout, see Gout, p. 321
- If suspected sprain/soft tissue injury, also see Sprains/soft tissue injury, p. 157
- Offer analgesia. **Note:** if ARF, p. 498 suspected, do not give ibuprofen - can complicate diagnosis. See Acute pain, p. 32

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Gout - adult

Background[1]

- Gout occurs from deposits of urate crystals in the body. Causes joint pain + swelling

1. May present with[1,2]

- Rapid onset severe joint pain ± redness + swelling eg big toe, knee
- Attack of gout

2. Immediate management Not applicable

3. Clinical assessment[1,2]

- Get history, including:
  - previous diagnosis, past episodes of gout + treatment eg urate lowering medicines
- Vital signs
- Examine joint(s) for swelling, tenderness, warmth and mobility:[2]
  - hard nodules over elbows, knees + feet may indicate chronic gout[1]

4. Management[1,2]

- Always consider another cause of the pain. See Swollen/painful joint, p. 320
- Consult MO/NP if:
  - systemic symptoms eg ↑HR, fever, malaise, night sweats, weight loss
  - first attack of gout (can mimic septic arthritis, an orthopaedic emergency)[1]
  - re-presentation for this attack
- If acute attack of previously diagnosed gout, offer short-term pain relief:[1,3]
  - NSAID eg ibuprofen or indomethacin for 3–5 days. See Acute pain, p. 32
  - colchicine as a single 1 day course (start as soon as possible)[3]
  - advise if already taking urate lowering medicine(s), to not stop/change - can worsen attack[1]

S4	Colchicine			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 microg	Oral	1 mg then 500 microg 1 hour later	stat
Offer CMI: May take up to 48 hours for inflammation to subside. May cause diarrhoea, nausea, vomiting, abdominal discomfort or sore throat. Do not repeat the course within 3 days. If already taking colchicine wait at least 12 hours before next dose				
Note: If renal or hepatic impairment, severe GI disease, or corneal ulcer seek MO/NP advice				
Contraindication: Blood dyscrasias				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

5. Follow up

- Advise to be seen at next MO/NP clinic for ongoing management

6. Referral/consultation

- As above

Mosquito borne diseases

HMP Mosquito borne diseases - adult/child

Ross River virus, Barmah Forest virus, dengue fever, malaria, Japanese encephalitis virus

Recommend

- Consider testing for mosquito borne diseases if fatigue, malaise + joint pain where other causes have been excluded eg Acute rheumatic fever, p. 498
- Have a low threshold for malaria testing from January to June (inclusive) in the Torres Strait[1]

1. May present with

Common Australian mosquito borne diseases

Disease	Signs and symptoms	
Ross River virus (RRV)[2]	• Occurs Australia wide • Fever, fatigue, malaise, headache, swollen lymph nodes • Joint pain/swelling, especially wrists, knees, ankles + small joints of hand	• Rash usually lasts 1–10 days - before/during/after joint pain
Barmah Forest virus (BFV)[3]	• Occurs Australia wide • Similar symptoms to Ross River virus	• Fever, malaise, joint pain/swelling, muscle aches ± rash
Dengue[4]	• Consider if travelled to endemic area/ country* and: – fever, headache – nausea, vomiting – joint + muscle aches – red or macular rash – metallic taste	• **Severe signs:** – persistent vomiting/dehydration, severe abdominal pain – lethargy, restlessness, confusion – bleeding eg mouth, gums, nose, heavy menstrual bleeding, vomiting blood
Malaria[1]	• Consider if resides in Torres Strait/ travelled overseas to endemic area* eg PNG and: – fever eg cyclical fever, rigors + profuse sweating, malaise – headache, muscle aches	• **Severe signs** eg: – respiratory distress or pulmonary oedema – ↓ LOC, seizures, shock – too weak to feed (child), jaundice, haematuria, ↓ urine output – hypoglycaemia
Japanese encephalitis (JEV)[5]	• Consider if recently been in JEV known area and: – fever, headache, vomiting, abdominal pain	• **Symptoms can progress rapidly to:** – ↓ LOC – seizures, paralysis

*Endemic area/country + more information see *Mosquito borne diseases* https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/diseases/mosquito-borne

Note: this table does not include all mosquito borne diseases, if in doubt contact Public Health Unit

2. Immediate management

- If severe signs/symptoms contact MO/NP urgently + retrieval/hospitalisation

3. Clinical assessment[1-5]

- Get history, including onset + severity:
  - fatigue/malaise
  - fever, rigors, sweating
  - muscle ± joint aches/swelling
  - headache, neck stiffness
  - rash - where
  - bleeding eg gums/mouth/nose/heavy menstrual
  - abdominal pain, nausea/vomiting
  - recent:
    - travel overseas in prior 3 months - where, when
    - outdoor activities/camping
    - vector exposure/near eg mosquitoes, ticks, rats, pigs, water birds, horses, JEV known area
  - recent antibiotic or antimalarial use
- Do physical assessment, including:
  - vital signs + BGL
  - Hydration assessment - adult, p. 202 or child, p. 522
  - check for Rash, p. 286 - type, distribution
  - do pregnancy test if reproductive age
  - lymph nodes - swelling/tenderness
  - palpate joints for swelling/pain
- If a mosquito borne disease suspected, consult MO/NP who may advise **Pathology testing**

Pathology testing	
Malaria suspected[1]	• Do rapid diagnostic test • FBC, parasite count (at least 2 mL adult, 1 mL child. Request thick + thin films) • UEC, LFT, BGL
RRV or BFV[2,3]	• IgG (RRV ± BFV) or RRV/BFV serology
Dengue[4]	• LFT, FBC ± coagulation studies • If ≤ 9 days since onset of symptoms, PCR ± NS1 AND serology **OR** if ≥ 10 days since onset, serology • Note onset date on pathology form + if recent overseas travel • Advise pathology will also test for Zika
Japanese encephalitis virus[5]	• Acute period - flavivirus antibodies, JEV PCR (write 'suspected JEV, acute phase') • 3–4 weeks post onset - flavivirus antibodies (write 'suspected JEV, convalescent phase') • Write on pathology form if - vaccinated for JEV/yellow fever, past dengue infection, or any autoimmune disease

4. Management

- See **Mosquito borne disease management** table

Mosquito borne diseases management[1-5]	
Malaria likely	• MO/NP ± Public Health Unit will advise • **Prompt presumptive treatment** as per local guidelines, as soon as blood film taken. Do not delay treatment for investigations • Advise patient + household to sleep under bed net, and wear insect repellent
Ross River virus **Barmah Forest virus**	• Offer NSAID if joint pain. See Acute pain, p. 32 • Advise to combine plenty of rest + gentle exercise to keep joints moving + prevent over tiredness • Ross River virus - can have prolonged symptoms, up to a year in some cases • Barmah Forest virus - recovery usually takes several weeks. Symptoms may persist › 6 months
Dengue	• **Notify Public Health Unit immediately on clinical suspicion** who will provide further advice (do not wait for results) • Get travel history to help determine if it was acquired overseas or locally ie have they travelled overseas within 2 weeks of onset of symptoms • **Advise:** – take paracetamol for pain or fever. **Avoid** NSAID + aspirin – get plenty of rest, drink plenty of fluids – recovery is usually ‹ 1 week + not prolonged • **To avoid mosquito transmission to others, advise:** – stay in screened room + have someone stay home to look after them – patient + household should use insect repellent during daylight hours – household should take measures to avoid being bitten, especially while patient is febrile • If family members/contacts develop a fever, return immediately
Japanese encephalitis virus	• Usually asymptomatic if not severe infection • Get plenty of rest, drink plenty of fluids • Take paracetamol for pain or fever

In all cases advise preventive measures[1-5]
• The best prevention is to avoid mosquito bites by: – avoiding outdoor activities when mosquitoes are most active, around dawn and dusk – use insect repellents (with DEET or picaridin) and wear protective, light coloured clothing – screen living/sleeping areas, use bed nets, ensure water tank screen is in good order + use lanterns/coils/plug-in repellent devices – reduce breeding sites by emptying containers holding water around the house weekly eg pot plants, old tyres, rubbish that holds water • JEV vaccination as appropriate, see Immunisations, p. 542

5. Follow up

- As per MO/NP/Public Health Unit
- Advise to return if develops severe symptoms - contact MO/NP urgently

6. Referral/consultation

- Notify Public Health Unit ✆ on suspicion/probable[1-5]

HMP Supply of chronic condition medicines by A&TSIHP and IHW

Recommend[1,2]

- This HMP is for Aboriginal and Torres Strait Islander Health Practitioners (A&TSIHP) and Authorised Indigenous Health Workers (IHW) to give a treatment dose (supply) of 'chronic disease medicines' listed in Appendix 3 of the A&TSIHP and IHW Extended Practice Authorities (EPA)
- This topic is not intended for assessment and treatment of acute conditions

Background

- A&TSIHP and IHW may be required to give a treatment dose of medicines prescribed by an MO/NP for chronic conditions if ‹ 6 months (IHW)[1] or ‹ 9 months (A&TSIHP)[2] since last medical consultation

1. May present with

- Diagnosis of chronic condition and medicine(s) prescribed by MO/NP
- Patient requesting supply of medicines for chronic condition eg for ongoing management of:
  - diabetes, asthma, hypertension, COPD, chronic heart or kidney disease

2. Immediate management Not applicable

3. Clinical assessment[1,2]

- Check order for medicine is current and written within last 6 months (IHW) or 9 months (A&TSIHP)
- Check medicine is approved for supply (ie ‘give a treatment dose’) by the clinician - it will be listed in Appendix 3 ‘Chronic Disease Medicines’ of the Extended Practice Authority (EPA):
  - EPA - **Aboriginal and Torres Strait Islander Health Practitioners** OR
  - EPA - **Indigenous Health Workers**
  - access EPAs at https://www.health.qld.gov.au/system-governance/licences/medicines-poisons/medicines-poisons-act/legislation-standards

Where practical, check and complete actions according to the patient’s 'cycle of care' at the time of supply. Refer to *Chronic Conditions Manual* for guidance

- Ask how patient is going with medicines:
  - are they taking the medicine as prescribed; any difficulties taking
  - any side effects or other concerns
- Check medicine allergies

If medicine(s) is for management of diabetes:

- Check BGL - if outside of normal ranges, consult MO/NP for advice
- Check and complete 'cycle of care' items on diabetes and high risk foot care plan(s)

If medicine(s) is for management of hypertension:

- Check BP - if outside of normal ranges, consult MO/NP for advice
- If sBP ≥ 200 ± dBP ≥ 130, contact MO/NP urgently. See Hypertensive emergency, p. 113
- Check and complete care items on hypertension 'cycle of care'

If medicine(s) is for management of asthma:

- As appropriate, check inhaler technique + discuss smoking and passive smoking
- Ensure patient has an Asthma Action Plan

- Check and complete care items on asthma 'cycle of care'

If medicine(s) is for management of chronic obstructive pulmonary disease (COPD):

- As appropriate, check inhaler technique + discuss smoking and passive smoking
- Check and complete care items on COPD 'cycle of care' according to severity

If medicine(s) is for management of chronic kidney disease (CKD):

- Check and complete care items on CKD 'cycle of care' according to stage of kidney disease

If medicine(s) is for management of cardiovascular disease:

- Check and complete care items on relevant cardiovascular disease 'cycle of care'

4. Management

Offer lifestyle modification advice to prevent chronic conditions

- Smoking cessation
- Healthy eating
- Social and emotional wellbeing
- Alcohol intake
- Physical activity

Refer to *Chronic Conditions Manual* for guidance

- Consult MO/NP if:
  - condition is worsening or not managed well with medicines
  - BGL or BP remains elevated; shortness of breath; any other concerns for their health
  - patient has any concerns about their medicine
  - any concerns about reading the medicine order
  - any concerns or you are unsure about anything
- Check non-inpatient rural and remote medication chart for medication order:
  - check date order written - A&TSIHP and IHW may only supply if order is within last 6–9 months
  - can you read the order properly
  - is the medicine in stock
  - when did the patient last get the medicine
- Select medicine for supply according to MO/NP order:
  - check the generic name of the medicine - ensure patient is not already taking the same medicine with a different brand name
  - if patient requests more than 1 months supply, contact MO/NP for approval
  - label appropriately
  - record supply
- Offer consumer medicine information as appropriate including:[1,2]
  - how to take the medicine
  - what it is for and how it works
  - warnings/precautions, such as when the medicine should not be taken eg with alcohol
  - common side effects
  - how to store

5. Follow up

- Discuss next MO/NP appointment as appropriate
- Support access to specialist appointments

6. Referral/consultation

- If concerned condition is worsening or not managed well with medicines, consult MO/NP
- Refer as appropriate eg diabetes educator, dietician, exercise physiologist, podiatrist, physiotherapist

Mental health and alcohol withdrawal

Mental health

HMP Mental health emergency - adult/child
Acute severe behavioural disturbance (ASBD)

Recommend

- Focus on attempts to de-escalate the behaviour with verbal + nonverbal communication and environmental modification[1]

Key resources (if outside of Qld, refer to local policies)

- 1300 MH Call ✆ 1300 642 255 - triage service for clinicians + the public, 24 hours/7 days
- **Emergency examination authorities (EEA)** forms https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/emergency-examination-authorities-eeas
- **Recommendation for assessment (RA)** forms under the *Mental Health Act* 2016 https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/clinical-staff/mental-health/act/policies-guidelines

1. May present with

- Behaviour that puts the patient or others at immediate risk of serious harm eg:[1,2]
  - threatening or aggressive behaviour
  - extreme distress
  - serious self-harm which may cause major injury or death
  - possession of a weapon

In Qld, if a **police or ambulance officer** presents with an involuntary patient to a non-inpatient hospital, they must:[3]

- Seek approval from the Director of Nursing/person in charge prior to bringing patient in, and
- Complete **Part A** of an EEA form, then give to the clinician to complete **Part B**
- The patient may be detained under an EEA for 6 hours for an examination

2. Immediate management[1,2]

- **DRSABCD**
- If a non-fatal attempted suicide/self-harm, manage accordingly eg hanging, see Traumatic injuries, p. 131, Spinal injuries, p. 144

Stay safe

- Never approach a patient who has a weapon
- If needed take protective measures eg lock yourself in the pharmacy/safe room, leave the facility
- Consider risks in the immediate environment eg access to knives, scissors, IV poles
- Note exits for escape, be familiar with duress alarms
- Remove other people and bystanders
- Assess in an open space
- Minimise distractions + give full attention to the patient
- Use a calm, confident manner, avoid sudden or threatening gestures
- Avoid prolonged eye contact, and do not confront, corner or stand over the patient

Then

- Call police on triple zero (000) if concerned about safety

- Contact MO/NP urgently
- Ensure at least 2 staff are on hand at all times, where available
- Always remain with patient unless your safety is at risk

Attempt verbal de-escalation

- Listen. Allow patient to speak without interruption
- Be empathic, non-judgemental + respectful
- Use a slow, clear + steady voice and do not raise your voice
- Explain you are here to help and that you will work together to make the patient feel safe
- Ask open questions to learn what is happening, aim to identify patient's needs that have not been met
- If the patient raises their voice, pause + listen to the patient vent their frustrations
- **If child** - check with + where appropriate, involve family/carer:[2]
  - calming or de-escalation techniques they have used previously
  - reassure/help them to contain their own anxiety, if it is felt that their presence is ↑ agitation consider separating them
- If patient responds to de-escalation, go to **Clinical assessment**

Only consider sedation after all de-escalation techniques have been attempted[2]

- **If adult:**
  - offer oral medication first
  - if patient is not accepting of oral medication + poses a safety risk to themselves or staff, see **Sedation assessment tool (SAT)** on next page **and** *Management of patients with ASBD in Emergency Departments* (Qld) https://www.health.qld.gov.au/__data/assets/pdf_file/0031/629491/qh-gdl-438.pdf
- **If child/adolescent, frail or medically compromised, or pregnant** - consult MO/NP or psychiatrist

Avoid physical restraint[2]

- Rural and remote facilities lack the resources to undertake restraint safely
- **Note:** physical restraint should only ever be used as a last resort, and:
  - must be undertaken by **trained staff** with police presence, and
  - be in accordance with *Physical Restraint* (Qld policy) https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/clinical-staff/mental-health/act/policies-guidelines
- As a matter of urgency:
  - call police on triple zero (000)
  - protect yourself + others - retreat from the situation

Sedation assessment tool (SAT)[2,4]

Have de-escalation techniques been attempted prior to sedation

YES
Notify MO/NP you are proceeding to sedation

NO
Continue to use de-escalation techniques

Assess need for sedation
Use scale below to assign a single score between +3 and −3 according to the patient's responsiveness and speech

Responsiveness	Speech	Score
Combative, violent, out of control	Continual loud outburst	+3
Very anxious and agitated	Loud outburst	+2
Anxious/restless	Normal/ talkative	+1
Awake and calm/ cooperative	Speaks normally	0
Asleep but rouses if name is called	Slurring or prominent slowing	−1
Responds to physical stimulation	Few recognisable words	−2
No response to stimulation	None	−3

Contact MO/NP who may order:
- IM droperidol or IM ketamine if droperidol fails

Repeat **SAT** every 15 minutes.
Aim for score of **0**
Continuous SpO_2 + vital signs for all patients receiving IM sedation

Oral diazepam **OR** oral lorazepam **OR** oral olanzapine

No sedation required

Repeat **SAT** every 30 minutes.
Aim for score of **0**

Notify MO/NP immediately if:
- **Adult** - SpO_2 ‹ 94%, RR ‹ 10, HR ‹ 50, BP ‹ 90/50, GCS motor score of ‹ 5
- **Child or adolescent** - CEWT score › 2 for any domain

For reversal of benzodiazepine induced respiratory depression give flumazenil

S4	Diazepam	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed. **Note:** if non-consenting patient must consult MO/NP

Form	Strength	Route	Dose	Duration
Tablet	5 mg	Oral	**Adult** 10 mg (max. 60 mg/24 hours) *If elderly ± debilitated consult MO/NP + halve usual dose*	stat Further doses on MO/NP order

Offer CMI: May cause drowsiness, over-sedation, light-headedness, hypersalivation, ataxia, slurred speech or effects on vision

Note: Monitor RR closely

Contraindication: Respiratory depression, myasthenia gravis, severe hepatic impairment

Management of associated emergency: If RR ‹ 10 after administration, reverse with flumazenil (next page). Consult MO/NP urgently [2,5]

S4	Lorazepam	Extended authority ATSIHP/IHW/RIPRN

ATSIHP, IHW and RN must consult MO/NP

RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances allow

Form	Strength	Route	Dose	Duration
Tablet	1 mg	Oral	**Adult** 1 mg (max. 8 mg/24 hours)	stat Further doses on MO/NP order

Offer CMI: May cause drowsiness, over-sedation, light-headedness, hypersalivation, ataxia, slurred speech or effects on vision

Note: Monitor RR closely

Contraindication: Respiratory depression, myasthenia gravis, severe hepatic impairment

Management of associated emergency: If RR ‹ 10 after administration, reverse with flumazenil (next page). Consult MO/NP urgently [4,6-8]

S4	Olanzapine	Extended authority ATSIHP/IHW/RIPRN

ATSIHP, IHW and RN must consult MO/NP. **ATSIHP and IHW may administer to adult only**

RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances allow **for adult only. Must consult MO/NP for child**

Form	Strength	Route	Dose	Duration
Tablet/ wafer	2.5 mg 5 mg 10 mg	Oral	**Adult only** 5–10 mg (max. 30 mg/24 hours) *If elderly ± debilitated consult MO/NP + halve usual dose* **Child** **‹ 40 kg** 2.5–5 mg; **› 40 kg** 5–10 mg	stat Further doses on MO/NP order

Offer CMI: Caution if moving from lying to sitting or to standing position

Contraindication: Drug overdose

Management of associated emergency: Give benzatropine (next page) as antidote for extrapyramidal side effects eg acute dystonic reaction. Consult MO/NP urgently [2,4,6,8,9]

S4	Flumazenil			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN must consult MO/NP unless circumstances do not allow, in which case notify the MO/NP as soon as circumstances do allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 microg/ 5 mL	IV	**Adult** 100 microg	stat Inject undiluted over 15 seconds Repeat every 60 seconds if necessary to max. 2 mg
Offer CMI: May cause nausea and vomiting				
Note: Use with caution in patients with epilepsy receiving long-term benzodiazepine treatment. **Patients may become agitated, anxious or fearful on awakening.** Use with caution in those who have mixed overdose of benzodiazepines and proconvulsant drugs - can result in death. **Half life** approx. 1 hour (much shorter than that of all benzodiazepines) - observe for at least 4 hours after dose				
Pregnancy: Do not use in benzodiazepine dependent women, risk of precipitating withdrawal in fetus				
Management of associated emergency: Consult MO/NP [6,10,11]				

S4	Droperidol			Prescribing guide
MID, RIPRN and RN only. Must be ordered by an MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	10 mg/ 2 mL	IM	**Adult** 2.5–10 mg (max. 30 mg/24 hours)	stat May be repeated after 20 minutes
Offer CMI: May cause hypotension, respiratory depression (especially if given with benzodiazepines) or extrapyramidal side effects (rare)				
Note: Monitor closely after administration. QT prolongation may occur (rarely clinically significant with doses used for ASBD)				
Management of associated emergency: Give benzatropine as an antidote for extrapyramidal side effects eg acute dystonic reaction. Consult MO/NP urgently [2,12,13]				

S4	Benzatropine			Extended authority ATSIHP/IHW/RIPRN
ATSIHP, IHW and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	2 mg	Oral	**Adult** 1–2 mg	stat Further doses on MO/NP order
Injection	2 mg/2 mL	IM		
Offer CMI: May cause drowsiness, dizziness or blurred vision. May increase effects of alcohol				
Contraindication: GIT or urinary obstruction, myasthenia gravis				
Management of associated emergency: Consult MO/NP [4,14,15]				

3. Clinical assessment[1,2]

- Once imminent risk of harm is addressed, do:
  - vital signs
  - BGL + SpO_2 to exclude glycaemic + hypoxic causes
  - check for **Red flags. Note:** ASBD can have many causes + may not be mental illness related

Red flags - if any contact MO/NP urgently

- ≥ 45 years + first episode of ASBD
- Abnormal vital signs
- Signs of Head injury, p. 140
- Focal neurological findings
- ↓ awareness with difficulty paying attention
- Substance withdrawal or intoxication
- No clear trigger in patient with intellectual disability or autism
- Exposure to toxins
- Signs of infection eg sepsis

Qld forms - see Background for links	
Non-consenting or uncooperative patient[4]	• Forms are required by law before examination or treatment • **If brought in by police/QAS under an EEA**: – examination of patient can be done for 6 hours (extended to 12 if needed) – involuntary detention under the EEA expires after the 12 hours or examination is complete – if patient requires further examination then complete a RA form • **If patient presents otherwise eg with family:** – MO/**authorised** mental health practitioner, who believes the patient may have a mental health condition, needs to complete a RA form (can be telehealth) – patient can be detained for 1 hour before form completed – keep copy in records + send copy with patient if retrieved
If police assistance is required[4]	• **If patient absconds under an EEA +** – they are at **risk of harm** to themselves or others, call triple zero (000) for urgent police assistance + any clinician can complete a *Public Health Act* 2005 *Request for Police Assistance* form – they are **not at risk of harm** to themselves/others, attempt to contact + encourage them to return voluntarily • **If patient is under a RA and police assistance needed** eg to examine, treat or transport: – a MO or **authorised** mental health practitioner can complete a *Mental Health Act* 2016 *Request for Police Assistance* form

- **Get history from patient, family + friends, including:**
  - any potential medical, psychiatric or other causes
  - known mental health condition + if the current presentation is consistent with this
  - suicidal thoughts/thinking of suicide eg expresses intent to die, has a plan in mind, **has access to lethal means eg gun, knives**
  - situational crisis eg relationship conflict, financial stress, bereavement
- **If child**, ask family/carer about any sudden or significant, unexplained changes of behaviour/emotional state eg:
  - unusual fearfulness or severe distress eg inconsolable crying
  - self-harm, social withdrawal or disengagement from typical activities eg school, sport
  - aggression or running away from home
  - indiscriminate attention seeking with adults
  - development of new behaviours eg soiling or wetting, thumb sucking
  - always consider alternate cause if presentation is inconsistent with history. See Child protection, p. 539
- **Do physical examination**, including:
  - if any injuries, consider if consistent with self-harm
  - **Mental State Examination** (next page)
  - bloods/i-STAT - electrolytes + urine drug screen - if possible

Mental State Examination (MSE) observations and example questions[16,17]	
Appearance	• Gender, ethnicity, apparent age, clothing, grooming, hygiene + cultural appropriateness
Behaviour	• Agitation, aggression, eye contact, cooperativeness, motor activity, retardation, inappropriate or unusual behaviour
Speech	• Rate, rhythm + volume of speech. Is it spontaneous
Mood	• Ask patient to describe their mood eg elevated, depressed, labile, angry, happy
Affect	• The outward appearance of the patient's emotional state eg blunted, flattened, euphoric, anxious
Perception	• Auditory or non-auditory hallucinations • Does the patient believe the hallucinations or voices are real • What are the voices saying. Commands to harm self or others. Has the patient responded to the voices
Thought form	• Are the patient's ideas or thoughts connected in a strange or illogical fashion. Record some quotes of the patient's speech • Is the patient incoherent, use words that rhyme, or have secret meanings different to actual meaning
Thought content	• Explore anxieties, obsessions, preoccupations and delusions ie patient is certain their ideas are reasonable despite being grandiose, persecutory or bizarre eg television is talking to them • Does patient think their concerns are excessive • Are beliefs different to cultural and religious background
Judgement	• Assess patient's capacity for responsible decision making eg to care for children
Insight	• Does the patient acknowledge their symptoms, diagnosis or need for treatment
Cognition	• Orientation to time, person and place • Memory, attention and ability to concentrate ie need for redirection or repeating • Alert, drowsy, delirium, stupor • Impression of current abilities, awareness to confusion of self

4. Management

- Refer to relevant topic:
  - Suicidal behaviour, p. 336
  - Severe behavioural and psychological symptoms of dementia (BPSD), p. 338
  - Psychosis, p. 341
  - Mood disorders, p. 343
  - Anxiety, p. 344
  - Delirium, p. 129
- Ongoing management as per MO/NP/psychiatrist/Mental Health Team
- This can be frightening and scary for family/carers and children:
  - provide support
  - consider immediate safety needs of vulnerable people in the patient's care ie children

5. Follow up

- As per MO/NP/psychiatrist/Mental Health Team

6. Referral/consultation

- As above

Engaging with a person who may be in a crisis

- Approach the person with respect and empathy with the aim of working together to gather information and find solutions[1]
- Be mindful of your own values and beliefs in relation to mental health[2]
- Use **Engagement strategies** as a guide

Engagement strategies[1,3]	
Nonverbal communication	• Allow time for open communication. Don't rush • Move slowly and gently • Use culturally appropriate eye contact • Sit down - indicates you have time/not rushed and willing to communicate • Trauma informed care - recognise that trauma causes significant distress and 'symptoms' can be indicative of traumatic experiences
Verbal communication	• Keep the conversation centred on the person's needs[1] • Actively listen. Allow patient to speak without interruption • Develop and maintain rapport, explain procedures step by step • Ask open questions to build discussion[1] • Convey a sense of warmth, non-judgemental acceptance, and an interest in understanding the person and the cause of emotional distress • **Avoid:** – minimising the patient's experience(s) – stigmatising language eg suggesting self-harm is attention seeking[2]
Environment	• Ensure privacy, use a quiet room • Offer a support person to stay with them during examinations • Physical safety eg consider removing items that may be used to self-harm[4]
Gathering assessment information	• Be aware of the past experiences and individual needs of the person eg cultural identity, gender identity, trauma history and preferred language • Seek information from many sources eg: – the person – family, friends and carers while respecting the person's right to privacy – medical records, management plans, *My Health Record* (consent needed)

Suicidal behaviour - adult/child

1. May present with

- Expressing suicidal ideas/suicidal intent ± suicide attempt
- Brought in by family/friends/QAS/police - concerned about the patient's safety, behaviour or mood
- ± **Warning signs**[1]

Warning signs			
Feelings	**Behaviours**	**Communications**	**Physical signs**
• Hopelessness • Burdensomeness • Guilt/shame • Disconnected • Feeling trapped • Heightened anxiety	• Self-harm • Withdrawal • Agitation • Substance use • Crying/distress • Risk taking	• Talking about suicide or death "I might as well end it" • Talking about giving away possessions, will, suicide notes • Withdrawing	• Crying/distress • Self-inflicted wounds/injuries • Weight loss/gain • Poor hygiene • Intoxication

2. Immediate management[1]

- **DRSABCD**
- Do not leave patient alone
- Assess and treat any injuries
- If the patient is highly agitated, aggressive, violent or imminent risk of suicide. See Mental health emergency, p. 328

3. Clinical assessment[1]

- Engage compassionately + aim to understand the patient's perspective, to identify their care/support needs. See Engagement strategies, p. 335 as a guide
- **Ask directly and sensitively about suicide.** Ask questions like:
  - when people tell me they are feeling really trapped or in pain, they also have thoughts about killing themselves. Have you been having any thoughts like that
  - given all the pain you have been going through, I am wondering if you have been having thoughts about killing yourself
- A patient in suicidal distress may feel extremely vulnerable. **Respond with validation + empathy eg**
  - thank you for sharing that with me. I can see you are in a lot of pain. I am glad you have been able to share that with me
  - thank you for being so open with me. The clinic/ED is one of the safest places you can be
  - it sounds like things have been very difficult for you
  - I am sorry to hear things have been so hard
- Check for **Key risk factors**

Key risk factors	
Static (past)	**Dynamic (current)**
• Past suicide attempt(s) • Exposure to suicide • Family history of mental illness • Trauma history • Previous self-injury	• Increased substance use • Current situational/interpersonal stressors • Active symptoms of mental illness • Physical pain • Grief

- **Ask about the facts of suicide plan/thoughts:**
  - details about the method and plan
  - what event or thing triggered the thought
  - other facts, such as steps taken etc
- **Ask what happened:**
  - what were you thinking of doing, where were you
  - when was this, did you have the method with you
  - what happened next, what was it that stopped you
  - where is the method now
- Do a Mental State Examination, p. 334 + vital signs and physical examination as required
- **Consider additional risks**, including:[2]
  - aggression, ask questions like:
    - have you ever been aggressive/violent in the past, have you recently felt so frightened/angry that you had thoughts of harming anyone
  - if woman in perinatal period ask about thoughts of harm to herself or baby/child
  - vulnerability eg physical or intellectual disability, financial
  - Child protection, p. 539, Domestic and family violence, p. 232
- Ensure that comprehensive documentation is completed

4. Management

- Use local pathways eg Suicide Prevention, where available to guide management
- Always contact MO/NP, who may consult Mental Health Team/psychiatrist:
  - ± arrange retrieval/hospitalisation or plan ongoing management in the community
- If the patient is the primary carer for children/vulnerable people, consider alternative care arrangements
- Discuss the behaviour with family/friends to ↓ their anxiety or anger towards the patient
- **If retrieved** - monitor closely, offer support person to stay:
  - if patient leaves the clinic, contact MO/NP or if imminent risk of suicide, call police on triple zero (000) - consider identifiable/physical features eg clothing, build, age
- **If ongoing management in community** - plan support + safety in collaboration with MO/NP, including:[1,3]
  - acute problems are identified and managed/treated
  - a treatment plan has been arranged for current mental health + medical problems
  - identify suitable, responsible support persons
  - work with the patient and support persons to limit access to means of suicide. See **Lethal means counselling**
  - follow up arrangements have been documented with a copy given to the patient and support persons
  - 24 hour access to clinical support should be available if managed in the community

Lethal means counselling

- Discuss who is responsible for managing lethal means eg guns, knives, ropes, drugs, medications, poisons, high places; and removing, restricting or limiting access (may include supervision of the patient, reduction of prescription medicine quantities to non-lethal amounts)
- Discuss if the patient's occupation gives access to lethal means eg council workers accessing pesticides, police officer accessing guns, clinicians accessing medicines
- If patient has access to a firearm notify the Police/Weapons Licensing Branch https://www.police.qld.gov.au/weapon-licensing/mental-and-physical-health

- Develop a **Safety Plan** with the patient, including:[3]
  - recognising warning signs and triggers
  - making surroundings safe
  - reasons to live
  - things that can make them feel strong
  - people and places to connect with
  - family and friends they can talk or yarn with
  - professional support/access eg ✆ 1300 MH CALL (Qld only - 1300 642 255), Lifeline 13 11 14, Suicide Call Back Service 1300 659 467
  - give a copy to the patient and support person + advise to enact if their situation deteriorates
  - safety planning information https://www.beyondblue.org.au/get-support/beyondnow-suicide-safety-planning

5. Follow up

- As per MO/NP/psychiatrist/Mental Health Team and health worker

6. Referral/consultation

- As above

HMP Severe behavioural and psychological symptoms of dementia (BPSD) - adult

Background

- BPSD arise/worsen as dementia progresses + the patient loses the ability to communicate[1]

1. May present with[1]

- **Known dementia ±**
  - psychotic symptoms - hallucinations, delusions
  - agitation or aggression
  - depression, anxiety

2. Immediate management

- **DRSABCD**
- If significantly distressed, or considered a threat to themselves/others, see Mental health emergency, p. 328
- **Promptly assess for delirium, which can be confused with dementia.** Important differences with delirium are:[2]
  - ↓ LOC, impaired attention
  - rapid onset over hours to a few days, fluctuation of symptoms
  - if suspected, see Delirium, p. 129 + contact MO/NP urgently

3. Clinical assessment

- Assess + manage calmly in a quiet area, with a familiar person present[3]
- Get history, including:
  - current mental health management plan + related presentations
  - patient's behaviour + personality prior to presentation
  - alcohol + drug use

- **Always try to identify the trigger:**[1,3]
  - side effects or toxicity from medicines. Check medication history, see BPMH, p. 548
  - signs of infection or presence of wounds eg acute febrile illness + altered mental status
  - herpes simplex virus leading to encephalitis eg headache, seizures, focal neurological signs
  - acute thiamine deficiency eg double or blurred vision, repetitive/uncontrolled eye movements, ataxia, confusion
  - environmental stimuli eg temperature extremes, noise
  - unmet needs eg pain, hunger, toileting, lack of privacy, lack of meaningful activities, communication
  - conflicts or poor communication within the family/between staff, carer stress
  - vision or hearing difficulties
  - separation from family
- **Ask about the behaviour**, including:[3]
  - what happened, frequency, timing and any consequences eg injury, fall
  - does it cause significant distress to patient/others eg verbal aggression, use of a weapon
- Consider elder abuse if non-accidental injury/cause if inconsistent with history or is unexpected.[3] See Domestic and family violence, p. 232
- Do physical examination +
  - vital signs
  - BGL + SpO_2 to exclude glycaemic or hypoxic causes
  - urinalysis if able
- Use table below to distinguish from an episode of delirium or depression[4]

Distinguishing signs and symptoms of dementia, delirium and depression

	Dementia	Delirium	Depression
Onset	Slow + insidious onset	Acute illness, medical emergency	Recent change in mood persisting ≥ 2 weeks
Course	Stable during day	Short + fluctuating, often worse at night + on waking	Can be self-limiting, recurrent or chronic. Worse in morning, improves during day
Duration	Progressive over a long period of time, not reversible	Hours to < 1 month, usually reversible with treatment of underlying condition	Months or years, usually reversible with treatment
Orientation	Impairment progressively worse, loss of ability to recognise function of everyday objects	Disoriented to time and place	Selective disorientation
Memory	Impaired short-term, unconcerned about memory loss	Impaired short-term	May be impaired, concerned about memory loss
Speech	Repetitive, trouble finding words, confabulates	Incoherent, loud, belligerent	Quiet + minimal, can be belligerent, aggressive. Language skills intact
Sleep	Disturbed, day/night reversal	Disturbed, changes hourly	Disturbed, early morning wakening, sleepy during day
Contributing factors	Advancing age, cardiovascular deficits, substance dependence or unknown cause	Infection, drug side-effect, renal failure, head trauma, substance use	Recent or cumulative loss, medicine toxicity

4. Management[1,3]

- Aim to address any identified triggers eg polypharmacy, pain, UTI
- Consult MO/NP, who may advise:
  - pharmacological options to manage behaviour/symptoms
  - Thiamine, p. 347 if suspected deficiency eg starvation or excessive alcohol intake[5]
  - retrieval for comprehensive management
  - bloods/i-STAT - FBC, TFT, PTH, UE, Ca, vitamin B12, folate, niacin, thiamine ± MSU for MCS and drug screen
- Offer analgesia if indicated. See Acute pain, p. 32
- Encourage a behavioural management plan with patient, carer/family, including:[3]
  - how to anticipate + manage severe BPSD including de-escalation techniques
  - reduce access to dangerous items + exits if patient is wandering
  - prevention strategies eg:
    - over-stimulation eg too many people in house, excessive noise, clutter
    - under-stimulation eg lack of activities or items of interest to patient
    - have a routine
  - physical exercise, music, limiting access to alcohol/drugs

5. Follow up

- As per MO/NP - may advise regular review if commenced on pharmacological management[3]
- For ongoing dementia management, see *Chronic Conditions Manual*

6. Referral/consultation

- Geriatrician/psychiatrist/Older Persons Mental Health Team - as needed
- Consider the Aged Care Assessment Team (ACAT), through *My Aged Care*, for assessment of long-term care needs https://www.myagedcare.gov.au/
- Dementia Support Australia ✆ 1800 699 799 - 24 hour helpline for clinicians + carers[1]
- Seniors Enquiry Line ✆ 1300 135 500, information for seniors, their family, friends/carers on topics of interest for seniors

Psychosis - adult

Background[1]

- Psychosis is a general term used when a patient has lost some contact with reality and may have distorted thinking, perception and mood
- Can be drug-induced, schizophrenia, depression, postpartum psychosis, brief psychotic disorder, bipolar psychosis

1. May present with[1]

- Delusions - firm fixed belief of things that are not true eg:
  - someone/people are trying to harm them, their baby is the devil
- Hallucinations - seeing or hearing things that are not there eg:
  - voices giving commands
- Disorganised:
  - thought + behaviours eg purposeless, strange or repetitive movements
  - speech eg incoherent, responds to questions with unrelated answers, says illogical things or shift topics frequently
- Disturbed sleep, walking or pacing at night
- Very suspicious and paranoid of others
- Family/friends report strange, disruptive or frightening behaviour
- Woman in the postpartum period - sudden onset in the days/weeks after birth[2]
- Intoxicated - alcohol, drugs

2. Immediate management[2]

- **DRSABCD**
- Do not leave patient alone
- Assess and treat any injuries
- If the patient is highly agitated, aggressive, violent or imminent risk of harm. See Mental health emergency, p. 328
- Promptly assess for delirium:
  - ↓LOC, impaired attention
  - rapid onset over hours to a few days, fluctuation of symptoms
  - if suspected, see Delirium, p. 129 + contact MO/NP urgently

3. Clinical assessment

- See Engagement strategies, p. 335 as a guide
- Get history, including:[1]
  - current mental health management plan + related presentations/episodes
  - behaviour and personality prior to presentation
  - other psychiatric comorbidities eg depression, anxiety
- Ask about possible causes/triggers:[1,3]
  - adverse effect from medication
  - substance use - alcohol, tobacco + other drugs:[3]
    - time of last ingestion, consider if withdrawal related
  - recent head injury, trauma or seizures
  - STIs - syphilis, HIV (check pathology results)

- If suspected postpartum psychosis, ask about:[4]
  - pregnancy + birth - any complications
  - any postpartum infection, consider Sepsis, p. 62
  - risk factors - antenatal depression, previous episodes, history of bipolar disorder including family history[1]
  - thoughts of harming herself or her baby
  - family supports + consider capacity to safely care for the baby - high risk of self-harm + harm to baby
  - if mother + baby together - observe their interactions eg cuddling, eye contact, responding to cues
- Do physical examination +
  - vital signs
  - BGL + SpO_2 to exclude glycaemic or hypoxic causes
  - Mental State Examination, p. 334
- **Consider additional risks**, including:
  - experiencing suicidal thoughts/thinking about Suicide, p. 336
  - aggression, ask questions like:
    - have you ever been aggressive/violent in the past, have you recently felt so frightened/angry that you had thoughts of harming anyone
    - if woman in perinatal period ask about thoughts of harm to baby
  - vulnerability eg physical or intellectual disability, financial
  - Child protection, p. 539, Domestic and family violence, p. 232

4. Management[2]

- Consult MO/NP who will plan immediate management ±
  - arrange retrieval/hospitalisation or ongoing management in community
  - order antipsychotic + sedation. See Mental health emergency, p. 328
  - bloods ± syphilis serology, HIV
  - urinalysis ± MCS + drug screen
- If woman with postpartum psychosis - may need psychiatric care in a mother-baby unit[2]
- If retrieved, monitor closely:
  - do not leave patient alone especially if intoxicated, suicidal or homicidal thoughts/ideation
- Reassure patient and family/carers - symptoms may be frightening and scary

5. Follow up

- As per MO/NP/Mental Health Team/psychiatrist
- If postpartum psychosis - once recovered, advise woman that she is at ↑ risk of further episodes in subsequent pregnancies. Seek advice early in future pregnancies for prevention planning[1]

6. Referral/consultation

- Mental Health, Alcohol and Other Drugs Team, Indigenous Health Worker - as needed

Mood disorders - adult/child
Depression, bipolar

1. May present with

Mood disorder	Signs and symptoms
Depression[1]	• Insomnia or sleep pattern changes, getting up earlier than usual • Appetite changes, weight loss/gain • Irritability, low mood, tiredness, inappropriate guilt • Difficulty concentrating • Concerns about social problems eg finances or relationships • Feelings of helplessness or hopelessness • Use of alcohol or other substances • Irritability may be a prominent symptom in child
Mania (bipolar)[2]	• Elevated, irritable mood or anger • Inflated self-esteem • Decreased or unable to sleep, active all night • Pressured speech and racing thoughts • Excessive goals, plans and activities • Poor judgement, impulsive + risk taking eg excessive spending, promiscuous behaviour
Note: May also have psychotic symptoms eg delusions, hallucinations or disorganised thoughts, behaviour or speech	

2. Immediate management Not applicable

3. Clinical assessment[1,2]

- See Engagement strategies, p. 335 as a guide. **Note:** if mania - be aware of your own feelings if patient is behaving oddly, maintain dignity + respect
- **Ask about** - frequency, intensity and duration of episodes
- **Get history:**
  - current mental health management plan + related presentations/episodes
  - behaviour and personality prior to presentation, ask family/friends if needed
  - treatment and engagement with psychotherapy
  - medical - chronic illnesses, physical disorders, recent trauma eg head injury
  - STIs - syphilis, HIV (check pathology results) - as appropriate
- **Ask about possible causes/triggers:**[1]
  - recent loss or stressors
  - are they taking medications, are they taking them correctly
  - substance use - alcohol, tobacco + other drugs:
    - time of last ingestion, consider if withdrawal related
- **If a woman in the perinatal period:**[3,4]
  - offer to screen using EPDS, Kimberley Mum's Mood Scale https://kahpf.org.au/kmms and check/compare with antenatal/pregnancy health record
    - **note:** this can be a risky time for fathers, they can also be screened with EPDS
  - family history of bipolar disorder
  - consider her capacity to safely care for her baby + family support, including thoughts of harm to self, baby or others
  - if mother + baby together observe interactions eg cuddling, eye contact, responding to cues

- **Do physical examination** +
  - vital signs
  - BGL + SpO_2 to exclude glycaemic or hypoxic causes
  - Mental State Examination, p. 334
- **Consider additional risks**, including:[1]
  - experiencing suicidal thoughts/thinking about Suicide, p. 336
  - aggression, ask questions like:
    - have you ever been aggressive/violent in the past, have you recently felt so frightened/angry that you had thoughts of harming anyone
  - vulnerability eg physical or intellectual disability, financial
  - Child protection, p. 539, Domestic and family violence, p. 232

4. Management

- Consult MO/NP who will/advise:
  - plan immediate management + coordination
  - consider retrieval for comprehensive management
  - ± consider sedation if mania.[2] See Mental health emergency, p. 328
  - bloods - TFT, CHEM20, lithium + sodium valproate levels if relevant
  - urinalysis + MSU for MCS, drug screen, pregnancy test if reproductive age
- If woman in the perinatal period contact + refer to midwife, and see Qld Clinical Guidelines *Perinatal mental health*
- If child - referral to paediatric/adolescent mental health

5. Follow up

- As per MO/NP/psychiatrist/midwife/paediatric/adolescent mental health
- For ongoing depression management, see *Chronic Conditions Manual*

6. Referral/consultation

- Mental Health, Alcohol and Other Drugs Team as needed

Anxiety - adult/child

Panic attack

1. May present with

- **Anxiety**[1] - usually develops over months ±
  - restlessness or nervousness, easily fatigued, poor concentration, irritability, muscle tension, sleep disturbance
  - sweating, light-headedness, palpitations, dizziness, chest pain
- **Panic attack**[2] - sudden attack of fear or anxiety, usually brief ±
  - difficulty breathing/SOB, highly distressed, unable to concentrate, chest pain
  - can be so severe patient thinks they might collapse, die or 'having a heart attack'

2. Immediate management

- Do vital signs + BGL + SpO_2 to exclude glycaemic or hypoxic causes
- If chest pain, go to Chest pain assessment, p. 100. **Note:** assume serious cause until proven otherwise[3]
- If SOB, consider PE, p. 120 and other medical causes

Panic attack[2]

- Give reassurance that symptoms will stop + stay with the patient for support
- Start slow/deep breathing technique:
  - the patient breathes in for 4 seconds + holds for 2 seconds
  - then breathes out slowly over 6 seconds
  - do this with the patient + repeat for a minute
- Try a grounding technique ie ask patient to look for and name 3 green things etc (it can be difficult to slow/control breathing during a panic attack)
- If overwhelming/unresolving, contact MO/NP who may order a benzodiazepine[3]

3. Clinical assessment[1,3]

- See Engagement strategies, p. 335 as a guide
- Get history, including:
  - family history of anxiety, depression or other mental health conditions
  - physical or emotional trauma, anxiety, depression or substance misuse/dependence issues
  - response to any previous treatment for anxiety or other mental health conditions
  - physical health problems
- Ask about:
  - current stress levels
  - effect of anxiety symptoms on employment and socialising
- Do physical examination +
  - offer to screen using a scale eg DASS (access online)
- If a woman in the perinatal period:[4]
  - offer to screen using EPDS or Kimberley Mum's Mood Scale https://kahpf.org.au/kmms and check/compare with antenatal/pregnancy health record
    - **note:** this can be a risky time for fathers, they can also be screened with EPDS
  - consider her capacity to safely care for her baby + family support
  - if mother + baby together observe interactions eg cuddling, eye contact, responding to cues

4. Management[1,3]

Anxiety

- Contact MO/NP who may order medication
- Refer to Mental Health Team for psychotherapy eg cognitive behaviour therapy
- For ongoing management + patient education/resources, see *Chronic Conditions Manual*

Panic attack

- If fully resolved, no further management needed
- Advise to return if reoccurs or needs additional support:
  - if reoccurring refer to Mental Health Team

5. Follow up

- As per MO/NP/Mental Health Team

6. Referral/consultation

- As above

Alcohol withdrawal

HMP Alcohol withdrawal - adult
Alcohol withdrawal delirium

Recommend

- Alcohol withdrawal delirium (delirium tremens) is a life-threatening medical emergency. Treat with benzodiazepines not anti-epileptics[1]
- **This topic is intended for unplanned alcohol withdrawal/patient presenting in crisis**. Use local pathways where available for planned withdrawals

Background

- Onset within 6–24 hours of last alcohol intake, peak 48–72 hours and wanes ≤ 5 days[1]

1. May present with[1]

- Heavy or prolonged alcohol use + stopped/reduced within hours or days ±
  - anxiety, insomnia, 'the shakes' hand tremor, sweating, nausea + vomiting, 'the DTs'
  - alcohol withdrawal delirium - hallucinations, delusions, profound confusion, coarse tremor
  - seizure/post seizure, go to Seizures, p. 84

2. Immediate management[2]

- Rapidly assess date/time of last alcohol intake + **Alcohol withdrawal scale (AWS):**
  - **if moderate-severe** - contact MO/NP urgently + give diazepam
  - **if mild** - give thiamine then go to **Clinical assessment**

ALERT give thiamine before food or glucose in any form, regardless of AWS
Glucose may deplete thiamine stores causing Wernicke encephalopathy

Alcohol withdrawal scale (AWS)[1]

Perspiration	**0.** Nil **1.** Moist skin **2.** Beads on face and body **3.** Profuse, whole body wet	**Temperature**	**0.** ‹ 37 **1.** 37.1–37.5 **2.** 37.6–38 **3.** 38.1–38.5 **4.** › 38.5
Tremor	**0.** No tremor **1.** Tremor can be felt in fingers **2.** Visible tremor but mild **3.** Moderate tremor, arms out **4.** Severe, arms not extended	**Hallucinations** Note if visual, tactile or auditory	**0.** Lucid **1.** Infrequent, aware **2.** Brief, persuadable **3.** Frequent, distressed **4.** No meaningful reality
Anxiety	**0.** Calm **1.** Uneasy **2.** Apprehensive **3.** Fearful, slow to calm **4.** Unable to calm/panic	**Orientation**	**0.** Fully oriented **1.** Unsure of time **2.** Unsure time, place **3.** Unsure time, place, person **4.** Disorientated
Agitation	**0.** Able to rest **1.** Unsettled, fidgety **2.** Restless, tossing, turning **3.** Excitable, pacing **4.** Constant movement	**Scoring Key** ‹ 4 = mild 5–14 = moderate › 15 = severe	

S4	Diazepam			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed to administer **1st dose only (max. 10 mg),** then must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	5 mg	Oral	**Moderate AWS 5–14** 10–20 mg **Severe AWS › 14** 20 mg	stat Further doses on MO/NP order
Offer CMI: May cause drowsiness, over-sedation, light-headedness, hypersalivation, ataxia, slurred speech or effects on vision				
Note: Monitor RR closely. **Halve the dose in the elderly ± debilitated or discuss with MO/NP**				
Contraindication: Respiratory depression, myasthenia gravis, severe hepatic impairment				
Management of associated emergency: Contact MO/NP. See Anaphylaxis, p. 80 [2-4]				

Unscheduled	Thiamine			
ATSIHP, IHW, IPAP, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	300 mg/3 mL	IV/IM	300 mg	stat IV - infuse over at least 30 minutes
Preparation: IV dilute in 100 mL of sodium chloride 0.9%. **IM** undiluted. Consider giving in 2 separate sites				
Offer CMI: Given to prevent Wernicke encephalopathy				
Note: Give IV/IM thiamine before glucose to patients at risk of alcohol-related thiamine deficiency; administration of glucose without thiamine may precipitate Wernicke encephalopathy				
Management of associated emergency: Contact MO/NP. See Anaphylaxis, p. 80 [5,6]				

3. Clinical assessment[1-3]

- Assess in a quiet room with low lighting with a friend/family/support person
- If patient is frightened, reassure and avoid confrontation
- **Get history of alcohol intake:**
  - amount, type and duration
  - other alcoholic compounds ie methanol, ethylene glycol, methylated spirits
  - past withdrawal experience, any severe complications eg severe anxiety, seizures, delirium, hallucinations
- Identify the reason for stopping or reducing alcohol use
- Ask about:
  - other current substance use
  - medical comorbidities eg epilepsy, severe hepatic disease, pain
  - psychiatric conditions eg anxiety, psychosis, depression
  - are they pregnant/possible pregnancy
- Screen for Sepsis, p. 62 if febrile + looks generally unwell[3]
- Do physical examination, including:
  - vital signs + GCS, p. 550
  - BGL + SpO_2 to exclude glycaemic or hypoxic causes

  - look for signs of:
    - Wernicke encephalopathy eg double or blurred vision, repetitive/uncontrolled eye movements, ataxia, confusion[7]
    - Head injury, p. 140
  - consider pregnancy test if reproductive age

4. Management[1-3,8]

- Contact MO/NP for ongoing management, may require retrieval/hospitalisation
- **Withdrawal can progress quickly** - monitor closely, at least 30 minutely if moderate-severe:
  - vital signs, conscious level + pupils
  - AWS - give diazepam as per MO/NP until good symptom control
- If pregnant, see Qld Clinical Guidelines *Perinatal substance use: maternal*
- Symptomatic relief as needed:
  - nausea - offer metoclopramide, see Nausea and vomiting, p. 40
  - gastritis - an antacid ± proton-pump inhibitor if severe
  - diarrhoea - consider loperamide
  - headache - offer paracetamol, see Acute pain, p. 32
- Consider if suitable for home detox, in consultation with MO/NP:
  - no previous complicated withdrawals, including seizures
  - no significant medical comorbidities
  - responsible adult at home + suitable/stable home environment
- If suitable for home detox, MO/NP may order **oral** diazepam tapering doses + thiamine:
  - see table as a guide. **Note:** only supply 24 hours of medication at a time[8]

Day	Diazepam	Thiamine
1	10 mg qid	100–200 mg daily
2–3	5–10 mg tds	
4	5 mg bd	100 mg daily thereafter
5	5 mg nocte	

5. Follow up[8]

- Consider Child protection, p. 539
- If for home detox, review next day:
  - repeat AWS
  - ask about any alcohol intake since last review
    - if any, give reassurance that relapses are normal (addiction is an ongoing battle)
  - contact MO/NP if poor symptom control/increasing AWS, over sedation, or alcohol intake
- MO/NP/drug and alcohol RN should see the patient daily for the first 3–4 days. Then continue daily or second daily contact until withdrawal is completed
- For alcohol cessation resources, see *Chronic Conditions Manual*

6. Referral/consultation

- Refer to Mental Health, Alcohol and Other Drugs Team for close follow up over next few weeks, to avoiding relapsing[1]

6

Obstetrics and neonatal

Antenatal

Antenatal care

Recommend

- Use Qld *Pregnancy health record* (PHR) https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/maternity-clinical-pathways or local clinical pathway
- Woman centred care - based on her needs, preferences + empowerment in decision making[1,2]
- See Qld Clinical Guidelines: if risks/complications eg ↑BMI, diabetes, ↑BP, syphilis, RHD, and for *National midwifery guidelines for consultation and referral*

Background

- In Qld several babies have died from congenital syphilis, which is preventable with adequate testing + management[3]

1. May present with

- Pregnant

2. Immediate management Not applicable

3. Clinical assessment[1]

- At first presentation:
  - confirm pregnancy by urine/blood test (β-hCG)
  - ask the woman how she is feeling about the pregnancy, consider - planned/unplanned/wishes to proceed with pregnancy[2]
  - **take 1st visit bloods + urine today** (see next page)
  - refer to midwife/MO for antenatal care. Midwife/MO will:
    - plan visits/care with woman, based on woman's individual needs[2]
    - aim for around 10 visits if 1st pregnancy and 7 in next pregnancies
    - **note:** if complications, extra visits may be needed

1st visit (long visit)[2]	
• Ideally at < 10 weeks pregnant • If later presentation, do all 1st visit care + appropriate antenatal care/tests according to gestation	
Estimate date of birth/ gestational age[2]	• Ask about usual menstrual cycle, contraception • Calculate due date from first day of last normal menstrual period - if known • Offer dating USS at **8–13+6 weeks** (most accurate 8–10 weeks). May be done locally by credentialed midwife/MO, or arrange appointment + travel • Offer to book First trimester screening/Nuchal screening - done between **11–13+6 weeks** (can get both tests in single USS)
Get past history[2]	• **Obstetric** - previous pregnancies, gestation, place of birth, labour - duration + induced/spontaneous, type of birth, weight of baby, infant feeding, any complications eg APH, preeclampsia, diabetes, baby with early onset GBS disease, preterm labour, perineal trauma, PPH • **Gynaecological** - last CST, fertility problems, STIs, syphilis, surgery • **Medical/surgical** - hypertension, RHD, blood conditions, thyroid problems, asthma, mental health, diabetes, oral health • **Medications** - review for safety in pregnancy • **Social/family** - support available, financial issues, social environment

Ask about	• **Smoking, vaping, alcohol, other drugs** - use screening tools. Initiate brief intervention[4] • **Physical activity, nutrition**
Physical examination[1]	• Vital signs. If BP ↑, see Hypertension in pregnancy, p. 367 • BMI • Auscultate heart (if skilled) for murmurs in areas with high prevalence of RHD[2] • If ≥ 12 weeks - assess fundal height + FHR • Ask about symptoms of Syphilis, p. 452 eg lesion/chancre - if lesion, do dry swab for syphilis PCR
1st visit pathology[2]	• **Bloods:** – FBC, ferritin,[5] blood group and antibodies, rubella antibodies, BGL – hep B, hep C, syphilis serology, HIV – + if Aboriginal and Torres Strait Islander/other high risk, do HbA1c + iron studies – **consider:** – NIPA bloods › 12 weeks - if Rh –ve blood group + risk factors. See Rh D immunoglobulin, p. 355 – vitamin D - if risk factors eg darker skin, increased BMI, winter – LFT, UE - if ↑ BMI or history of hypertension – TFT - if age › 30, or ≥ 2 previous pregnancies, or risk factors for thyroid dysfunction[2] – cytomegalovirus (CMV) - if frequent contact with large numbers of young children eg teacher, childcare worker • **Urine:** – dipstick + MSU for MCS – PCR for baseline proteinuria – chlamydia PCR. If Aboriginal and Torres Strait Islander or ↑ risk for STIs, also do gonorrhoea PCR (+ trichomonas PCR if symptoms). See STI/BBV tests, p. 433 • **Other:** – HVS for Bacterial vaginosis, p. 441 if prior preterm birth – CST if due eg self-collected[6]
Discuss chromosomal anomalies test options regardless of woman's age[2]	• Support rural and remote women to access • **Nuchal screening USS + bloods** for free ß-hCG + PAPP-A: – bloods after 10 completed weeks (preferably 3–5 days prior to USS). Include EDD and current weight on pathology form – USS at 11–13+6 weeks • **NIPT blood test** › 12 weeks gestation (if available, not covered by Medicare) • **Diagnostic tests** - chorionic villus sampling ‹ 14 weeks; amniocentesis ≥ 16 weeks • **Reproductive carrier screening**
Risk assessments [2,4]	• Use risk assessment tools eg: – VTE prophylaxis eg as per PHR – EPDS + SAFE start or similar tool – **do not document disclosures of DFV in PHR or any take home information**[7] • Assess for risk factors as per Qld Clinical Guidelines: – preeclampsia - if moderate/high risk, start low-dose aspirin preferably ‹ 16 weeks ± calcium supplement[8] – Diabetes and pregnancy, p. 363 - may need OGTT in first trimester[9] – prior preterm birth - may need vaginal progesterone – obesity[10]

Assess if at **increased risk of syphilis**[3]	• **High risk sexual activity** - oral, anal or vaginal sex without condom/other barrier method with new, multiple or anonymous people, or with sexual partner who has other concurrent sexual contacts • **STI in last 12 months** • **Complex social circumstances** - may include (but not limited to): – limited healthcare engagement – adolescent – drug or alcohol use impacting health – domestic and family violence – concern for mental health – financial hardship eg homelessness, poverty, coercion – discrimination/intergenerational trauma – incarceration (woman or sexual partner)
Discuss ± give recommended supplements + vaccines[2]	• **Supplements:** – **folic acid** at least 400 microg daily - 1 month before conception until 12 weeks: – if ↑ BMI, 2.5–5 mg daily – **iodine** 150 microg daily. If pre-existing thyroid condition get MO/NP/EM advice – vitamin D - if levels ‹ 50 nmol/L – if low in omega-3 - daily omega-3 long-chain polyunsaturated fatty acids – **if available** give pregnancy multivitamin eg containing folic acid, iodine and iron (**note:** iron not routinely recommended in pregnancy) • **Vaccines:**[11] – **influenza + COVID-19** - any time during pregnancy – **pertussis (dTpa)** 20–32 weeks, **RSV** 28–36 weeks
Complete at every visit[2,4]	
Discuss	• Wellbeing, concerns/issues, psychological preparation for parenthood • When to seek medical advice and contact details • Test results. Reassess plan/refer as needed • If Rh D –ve blood group, Rh D immunoglobulin, p. 355 - why/when needed: – see Qld Clinical Guidelines Consumer information *Rh D negative woman and pregnancy*
Do	• BP, vital signs, abdominal palpation/fundal height + FHR: – if › 24 weeks graph fundal height cm in PHR • Urinalysis - MSU for MCS if indicated. See UTI in pregnancy, p. 360: – **note:** if ≥ 2+ of protein or persistent 1+ of protein, confirm by urine PCR • Weight - offer to be weighed, discuss recommended weight gain + self monitoring • Further **Antenatal care according to gestation** (next page) • Tobacco, vaping, drug, alcohol re-screening as appropriate. If available use Smokerlyzer® tool for smoking intervention and carbon monoxide monitoring • Be alert to DFV risk factors/indicators, p. 232
Syphilis reassessment[3]	• Check syphilis serology results reviewed and actioned • Consider risk of syphilis infection + ask about Syphilis, p. 452 symptoms. If lesion, do dry swab for syphilis PCR + full STI/BBV tests, p. 433 • Do syphilis serology if risk of exposure or woman requests
If ≥ 20 weeks	• Check for signs of Preeclampsia, p. 370 eg ↑ BP, proteinuria • **Discuss Safer Baby Bundle** https://saferbaby.org.au/ including:[12] – safe maternal sleep position, quitting smoking, fetal growth assessment – **importance of getting to know pattern of baby's movements:** – start feeling 16–24 weeks. If pattern changes it may be a sign baby is unwell - contact midwife/clinic immediately. **Do not wait until next day**

ALERT - if woman **concerned about baby's movements** eg absent, reduced, weaker, very vigorous, assess within **2 hours** by midwife/MO/NP ± contact RSQ senior midwifery advisors. See Qld Clinical Guidelines *Fetal movement* 'Flowchart: Altered fetal movements' **for recommended assessment**

Antenatal care according to gestation[2]

From 15 weeks	• If Rh D –ve and **no** preformed anti–D antibodies, offer **Rh D–NIPT** blood test (to predict if baby Rh D –ve or +ve). Get request form from Aust Red Cross Lifeblood
18–20 weeks[2,4]	• USS for morphology and cervical length. If cervix ‹ 2.5 cm seek expert advice: Note BMI on request form. If ↑ BMI, consider morphology USS at 22 weeks
28 weeks	• **Bloods/pathology:** – OGTT. If had bariatric surgery may not be suitable. See Diabetes and pregnancy, p. 363 – FBC, ferritin[5] – Rh D antibody screen – syphilis serology[3] - all women at **26–28 weeks** – if Aboriginal and Torres Strait Islander or ↑ risk for STIs, also do urine PCR for gonorrhoea + chlamydia. See STI/BBV tests, p. 433 • **Advise** - sleep on side from now until birth. May reduce risk of stillbirth[12] • **Do** - repeat SAFE start and EPDS[4,7] • **Give:**[4] – Anti-D if Rh D –ve blood group: – see Rh D immunoglobulin, p. 355. Take bloods 1st, as above – iron supplements if Hb results indicate need: – advise weekly supplements are as effective as daily to prevent iron deficiency anaemia, with fewer side effects[1]
29–34 weeks[2]	• **32 weeks** - repeat USS if placenta over cervical os or low lying on morphology USS • **34 weeks** - 2nd dose of anti-D if Rh D –ve. See Rh D immunoglobulin, p. 355 • Check dTpa given. Advise dTpa for close contacts if last dose › 10 years ago - at least 2 weeks before contact with baby (to protect baby from pertussis)[11] • **Discuss:** – signs of early labour and when to seek advice – labour and birth planning; what to expect – breastfeeding[2,4]
34–36 weeks[2]	• **36 weeks - bloods/pathology:** – syphilis serology - all women. If Aboriginal and Torres Strait Islander or ↑ risk for STI/BBVs, also do - HIV, urine PCR for gonorrhoea + chlamydia (+ trichomonas if symptoms). See STI/BBV tests, p. 433 – FBC + ferritin if iron supplements given - to check response[5] • **Check:** – fetal presentation - do palpation. If unsure, confirm with USS in collaboration with MO/EM. If breech, discuss options – VTE risk (reassess)[4] – any risk factors for early onset Group B Strep, p. 379 – BMI. If ↑ see Qld Clinical Guidelines *Obesity in pregnancy* – SAFE start screening (repeat)[7] • **Offer advice/discuss:** – care of new baby, safer infant sleeping, newborn screening tests (hearing and bloodspot), vitamin K, hep B, labour, birth, support in postnatal period – transfer for birth, ensure PHR goes with woman + copy for medical record

General pregnancy advice[1]	
If transfer out of community planned/ required	• Discuss at each visit. Consider cultural, social and medical situation • Email booking in referral to hospital for birth at approx. 12–20 weeks • Assist + support planning transfer that optimises maternal and neonatal outcomes, minimises dislocation from supports/disruption to family unit
Nutrition and physical activity	• See Australian guide to healthy eating • Foods to avoid eg alcohol, sources of listeria and fish high in mercury[2,4] • Usual physical activity is beneficial and safe
Medicines	• Limit use to where the benefits outweigh the risks • The effectiveness and safety of herbal preparations varies according to the herbal preparation and the condition being treated • Supplements of vitamin A, C and E are of no benefit and may cause harm[2]
Common pregnancy symptoms	• See Pregnancy & birth, the Royal Women's Hospital
Breastfeeding (BF)	• See PHR and Australian breastfeeding association: – skin to skin contact at birth, initiation of BF, demand feeding, safe formula feeding if chosen – positioning + attachment, signs baby is getting enough milk – why teats/dummies are discouraged early on – benefits of exclusive BF for around 6 months
Safer infant sleep	• Infant on back to sleep, head + face uncovered, smoke free environment, keep sleep space clear for every sleep.[13] See Qld Clinical Guidelines *Safer infant sleep*
Travel	• Correct use of 3 point seatbelts eg above and below the bump, not over it • Long-distance air travel can ↑ risk of venous thrombosis[1] • Discuss travel vaccinations with midwife/MO/NP
Oral health	• Advise to have check-up. Treatment is safe during pregnancy
Safe sex practices	• Advise safe sex practices eg condoms, to prevent syphilis infection + other STIs during pregnancy. Encourage disclosure of change in/additional sexual partners
Cytomegalovirus Toxoplasmosis[2]	• Discuss measures to avoid infection as appropriate • Offer screening if at risk

4. Management

- Discuss with MO/EM/obstetrician risks/concerns
- As appropriate treat:
  - anaemia
  - syphilis
  - STI/BBVs
  - UTI in pregnancy, p. 360

5. Follow up

- As above

6. Referral/consultation[2]

- Consider referral eg diabetes educator, dietitian, mental health clinician

HMP Rh D immunoglobulin

Recommend[1]

- Rh D immunoglobulin (IG)/anti-D is recommended for pregnant women with Rh D –ve blood group

Background[1]

- If the mother is Rh D –ve and the baby is +ve, the baby's blood may stimulate an immune response in the mother's blood (alloimmunisation). This can result in maternal antibodies crossing the placenta causing haemolytic disease of the fetus and newborn (HDFN) in subsequent pregnancies. Rh D IG prevents alloimmunisation
- **Non-Invasive Prenatal Analysis (NIPA)** blood test predicts fetal Rh D status. Medicare funded ≥ 12 weeks gestation to **high risk Rh D –ve women** eg alloimmunised, prior feto-maternal haemorrhage (FMH), or intrauterine fetal death, or if unable to have Rh D IG eg allergy, cultural/religious beliefs[2]
- Also see Qld Clinical Guidelines *Rh D negative woman and pregnancy*

1. May present with[1]

- Rh D –ve blood group at 28 or 34 weeks, or with a sensitising event:
  - + does not have pre-formed anti-D antibodies
  - + if Rh D–NIPT or NIPA test is done, fetus is predicted to be Rh D +ve

2. Immediate management

Not applicable

3. Clinical assessment

- Use table below to identify **Sensitising events**

Sensitising events[1,3]	
First 12+6 weeks of pregnancy	**From 13+0 weeks of pregnancy**
• Miscarriage (not threatened miscarriage, unless the bleeding is repeated, heavy, associated with abdominal pain or significant pelvic trauma) • ToP - medical or surgical from 10+0 weeks • Ectopic pregnancy • Molar pregnancy • Chorionic villus sampling	• Genetic studies: – chorionic villus sampling – amniocentesis – cordocentesis • Abdominal trauma • Antepartum haemorrhage - revealed or concealed • External cephalic version (successful or attempted) • Miscarriage or ToP • Birth of baby regardless of mode - greatest risk

4. Management[1,3]

- If if Rh D–NIPT or NIPA test done and fetus is predicted to be Rh –ve, Rh D immunoglobulin is **NOT required**

Routine Rh D immunoglobulin at 28 and 34 weeks

- Take bloods for antibody screen PRIOR to giving Rh D immunoglobulin at 28 weeks:
  - if results +ve, consult MO/NP/midwife
- If not possible to give at 28 and 34 weeks - give as soon as practical within 2 weeks of due administration date[3]
- If 28 week dose missed, give as soon as recognised, then give the 2nd dose 6 weeks later

Rh D immunoglobulin for a sensitising event

- Give as soon as able (within 72 hours). If delayed, can be given up to 10 days after sensitising event (lower efficiency)
- If ongoing uterine bleeding, repeat doses may be needed at 6 weekly intervals[1]
- **If › 20 weeks of pregnancy** take bloods first (no need to wait for results):
  - group + antibodies and Kleihauer to assess magnitude of FMH
  - **at birth**, also collect cord blood for group and DAT test - **all babies**, even if Rh D–NIPT or NIPA test predicted baby to be Rh D –ve[3]
  - be guided by laboratory/obstetric advice for additional tests/doses
- Still give 28 and 34 week Rh D immunoglobulin if extra doses are given for sensitising events

S4	Rh D immunoglobulin			Extended authority ATSIHP/IHW/IPAP/MID
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	250 units 625 units	IM	**Antenatal - 28 and 34 weeks** 625 units **Sensitising event** First 12+6 weeks - 250 units From 13+0 weeks - 625 units	stat Inject deep and slowly If more than 5 mL divide doses in different sites
Offer CMI: See Red blood cell alloimmunisation handout (RANZCOG)				
Note: Supplied from Australian Red Cross Service. Bring to room temperature immediately before administration. If ↑BMI give in deltoid. Observe for at least 20 minutes post administration				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,3-5]				

5. Follow up[2]

- If antibodies are already present in antenatal bloods, consult MO/NP/midwife as ongoing monitoring required

6. Referral/consultation

- As above

Pregnancy complications

HMP Ectopic pregnancy

Recommend[1,2]

- **Do pregnancy test in all females/people with a uterus of reproductive age with abdominal pain ± irregular vaginal bleeding (spotting)**. If +ve, assume ectopic pregnancy until proven otherwise

Background[1,2]

- Ectopic pregnancy is non-viable and occurs outside of the uterus eg in a fallopian tube
- **Rupture can result in life-threatening haemorrhage**
- May occur prior to an expected period ie before 4–6 weeks

1. May present with[1,2]

- May not know they are pregnant
- Abdominal or pelvic pain/cramping:
  - ± missed period ± irregular vaginal bleeding (spotting)
- **If ruptured,** haemorrhage into abdominal cavity may cause:
  - sudden severe pain in abdomen/pelvis
  - shoulder tip pain
  - **signs of shock:**[3]
    - pale, sweaty, restless, cool clammy skin
    - ↑HR, ↓BP, ↑RR
    - capillary refill › 2 seconds
    - ↓LOC

2. Immediate management[1,2]

- **Do pregnancy test** - unless pregnancy already confirmed:
  - if +ve, assume ectopic pregnancy until proven otherwise
  - **needs urgent USS to confirm intrauterine pregnancy**
- **Note:** if intrauterine pregnancy already confirmed, ie by transvaginal USS, consider alternative diagnoses eg Miscarriage, p. 358, UTI in pregnancy, p. 360, PID, p. 446, appendicitis[2]
- **Urgently contact MO/NP for retrieval for USS**
- Do vital signs
- Offer analgesia. See Acute pain, p. 32
- Insert IVC x 2 eg 16 G
- Take bloods for urgent FBC, group and hold, ß-hCG
- Nil by mouth
- Avoid bimanual examination - bleeding risk[4]
- **If signs of shock**:
  - give bolus IV sodium chloride 0.9% or Hartmann's 10–20 mL/kg:
    - ongoing IV fluids as per MO/NP
  - insert IDC

3. Clinical assessment[1,2]

- **Get rapid history:**
  - date of first day of LNMP
  - bleeding/spotting - amount, when did it start, any clots
  - pain/cramping - where, diffuse or to 1 side, severity

  - STI and PID history, previous surgery or endometriosis, prior ectopic pregnancy
  - dysuria/frequency of urine
- **Do:**
  - urinalysis ± MSU and STI/BBV tests, p. 433
  - very gentle abdominal palpation - tenderness, rigidity, guarding, distension

4. Management[1]

- As per **Immediate management**
- Consider need for Rh D immunoglobulin, p. 355 as indicated

5. Follow up

- Support/acknowledge the woman's psychological needs. Consider counselling and be proactive in assessing psychological wellbeing[1]

6. Referral/consultation

- As above

HMP Vaginal bleeding in early pregnancy

Up to 20 weeks gestation, possible miscarriage

Recommend[1]

- The patient's psychological needs should be acknowledged and considered at all times
- Also see Qld Clinical Guidelines *Early pregnancy loss*

1. May present with[1,2]

- Pregnancy ≤ 20 weeks gestation with spotting or bleeding ±
  - abdominal ± shoulder tip pain
  - backache
  - passage of products of conception (POC)
  - **note:** if bleeding › 20 weeks, see APH, p. 374
- If bleeding very heavy, may have **signs of shock:**[3]
  - pale, sweaty, restless, cool clammy skin
  - ↑ HR, ↓ BP, ↑ RR
  - capillary refill › 2 seconds
  - ↓ LOC

2. Immediate management[1,2]

ALERT if intrauterine pregnancy not confirmed (eg by transvaginal USS), **assume ectopic pregnancy until proven otherwise,** regardless of amount of bleeding/pain. See Ectopic pregnancy, p. 357

- **If signs of shock:**[1]
  - call for help
  - contact MO/NP urgently
  - insert IVC x 2 eg 16 G
  - give bolus IV sodium chloride 0.9% or Hartmann's 10–20 mL/kg:
    - ongoing IV fluids as per MO/NP/EM
  - if skilled, do urgent speculum examination to remove POC from cervix/vagina - this may stop bleeding and restore BP

- insert IDC
- take blood for urgent FBC, group and hold
- bedside point-of-care ultrasound (POCUS) if available
- vital signs - continuously monitor or at least 15 minutely

- **For non-viable pregnancy + persistent bleeding where ectopic pregnancy has been excluded, MO/NP/EM may consider/order:**[1]
  - IV/IM ergometrine 250 microg ± PR misoprostol 800–1,000 microg:
    - see Primary PPH, p. 398 for doses
  - ± activation of massive transfusion protocol

3. Clinical assessment[1,2]

- **Ask about:**
  - bleeding - timing, extent and severity
  - pain - lower abdominal cramping or backache
  - feeling faint when standing (postural syncope)
  - vomiting
  - shoulder tip/diaphragmatic pain - may indicate intra-abdominal bleeding
  - recent abdominal trauma
  - other symptoms/concerns
- **Pregnancy history:**
  - menstrual history and LNMP
  - date of +ve pregnancy test
  - calculate gestation based on dating scan or LNMP
  - previous pregnancies and outcomes, particularly miscarriages
  - if assisted conception, which method eg IVF
  - USS results if available - check location of placenta
  - symptoms of early pregnancy
  - check if pathology done - quantitative ß-hCG, blood group and antibody status
- **Medical history:**
  - bleeding disorders
  - medicines and allergies
  - chronic diseases - RHD, diabetes
  - any abnormalities of the reproductive tract
  - STIs/PID - when, treatment, last tested
- **Do:**
  - vital signs
  - confirm pregnancy by urgent serum quantitative ß-hCG **or** urine pregnancy test if delay likely
  - check loss on pad - amount, rate of loss, colour of blood - bright, dark, presence of clots + size
  - urinalysis + MSU if indicated
  - gently palpate abdomen - any tenderness, rigidity, guarding, distension

4. Management[1,4,5]

- Keep nil by mouth
- Consult MO/NP/EM who may advise:
  - bloods - FBC + blood group, serial ß-hCG levels
  - urgent retrieval/hospitalisation for USS, further investigations/treatment
  - IV antibiotics - if fever or offensive cervical discharge

  - screen for STIs if clinically indicated or high risk. See STI/BBV tests, p. 433
  - speculum examination if skilled, check for:
    - blood coming through os
    - os closed or open/POC protruding - gently remove with sponge forceps
    - offensive cervical discharge ± swab for MCS
- If POC collected or passed spontaneously send for histopathology. Be sensitive to cultural considerations of loss
- Monitor closely until retrieval:
  - vital signs, blood loss, pain
- If Rh D –ve blood group, assess need for Rh D immunoglobulin, p. 355
- Offer analgesia. See Acute pain, p. 32
- Consider Domestic and family violence, p. 232

5. Follow up[1]

- Offer referral to counselling for parents who have experienced pregnancy loss
- If not retrieved/hospitalised advise patient to be reviewed as per MO/NP/EM
- If applicable follow up STI test results and treat

6. Referral/consultation

- As above

HMP Urinary tract infection (UTI) in pregnancy

Recommend[1,2]

- Consider Ectopic pregnancy, p. 357 + PID, p. 446 if presenting with low abdominal pain
- MSU culture is the standard for diagnosing asymptomatic bacteriuria (ASB)
- In rural + remote areas, dipstick tests for nitrites may be used to exclude ASB, with +ve results confirmed by urine culture. Appropriate storage of dipsticks is essential for accuracy

Background[2-4]

- Untreated ASB is associated with prelabour rupture of membranes, preterm birth, ↓ birth weight + ↑ risk of pyelonephritis
- Antibiotics significantly ↓ risk of developing pyelonephritis

1. May present with[4]

- **Asymptomatic bacteriuria (ASB):**
  - detected on antenatal screening MSU/urinalysis (no symptoms)
- **Cystitis** - infection of the bladder:
  - urinary symptoms - frequency, urgency, dysuria, haematuria
  - low abdominal /suprapubic pain
- **Pyelonephritis** - infection of the kidney:
  - T ≥ 38, flank pain, nausea, vomiting
  - ± urinary symptoms

2. Immediate management

- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment[1,5,6]

- **Ask about:**
  - urinary symptoms - frequency, urgency, dysuria, haematuria
  - pain - abdominal, suprapubic
  - vaginal discharge
  - fever, rigors, flank tenderness
  - nausea, vomiting, intake/appetite
  - if › 20 weeks ask about fetal movements - normal, decreased or any concerns
  - other symptoms/concerns
- **Check:**
  - antenatal history
  - estimate gestation based on dating scan or LNMP
  - previous UTIs - when, treatment:
    - check previous urine pathology results to ensure no resistance to antibiotics recommended
  - medical history eg diabetes, anatomical abnormalities with urinary tract
  - STIs - when, treatment, last tested
- **Do:**
  - palpate abdomen. Any:
    - tenderness - loin, groin or suprapubic area - may indicate calculi or upper UTI
    - contractions, tightening
  - if › 12 weeks listen to FHR if skilled - infection can ↑ FHR
  - MSU for MCS prior to giving antibiotics[4]
  - STI/BBV tests, p. 433 for:
    - gonorrhoea, chlamydia and trichomonas PCR + bacterial vaginosis
    - syphilis serology as per Antenatal care, p. 350

4. Management[1,2,4]

- If symptomatic, also consider differential diagnoses eg STI, PID, ectopic pregnancy - consult MO/NP/EM if uncertain
- **If pyelonephritis:**
  - consult MO/NP/EM urgently + arrange retrieval/hospitalisation
  - insert IVC x 2
  - MO/NP/EM will order IV gentamicin + ampicillin
- **If acute cystitis:**
  - start antibiotics based on symptoms, give:
    - nitrofurantoin - except if near delivery or › 37 weeks **OR**
    - cefalexin **OR** trimethoprim (not in first trimester)
- **If ASB:**
  - treat based on results of urine MCS **OR**
  - if dipstick suggests ASB (nitrites ± leucocytes) and treatment might be delayed eg waiting for results:
    - give antibiotics without waiting as per acute cystitis
- Offer analgesia. See Acute pain, p. 32
- Encourage ↑ fluid intake + complete bladder emptying to avoid retention

If Group B Strep (GBS) on culture, **antibiotic cover in labour is needed**, even if previously treated. Make a note in antenatal record and advise woman.[4] See Group B Strep, p. 379

S4	Nitrofurantoin	Extended authority ATSIHP/IHW/IPAP/MID/RIPRN

ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM

MID and RIPRN may proceed

Form	Strength	Route	Dose	Duration
Capsule	50 mg, 100 mg	Oral	100 mg qid	5 days

Offer CMI: Take with food or milk to reduce nausea + improve absorption. May cause nausea, vomiting, anorexia, diarrhoea, abdominal pain, headache, drowsiness or dizziness. Report if develop difficulty breathing, cough or numbness or tingling. May make urine a brownish colour. Do not use with urinary alkalisers (eg Ural®, Citravescent®) as they reduce the antimicrobial effect

Note: If renal impairment seek MO/NP/EM advice. Avoid close to delivery (› 37 weeks) due to risk of neonatal jaundice and haemolytic anaemia

Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 4,7

S4	Trimethoprim	Extended authority ATSIHP/IHW/IPAP/MID/RIPRN

ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM

MID and RIPRN may proceed

Form	Strength	Route	Dose	Duration
Tablet	300 mg	Oral	300 mg nocte	3 days

Offer CMI: May cause fever, itch, rash or nausea

Note: Can be safely used in 2nd and 3rd trimesters. In last 3 months if given trimethoprim or had trimethoprim resistant *E. coli* UTI avoid use. If renal or hepatic impairment or on an ACEI, seek MO/NP/EM advice

Pregnancy: Avoid in 1st trimester - associated with congenital anomalies and ↑ risk of miscarriage

Contraindication: Megaloblastic anaemia

Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 4,8

S4	Cefalexin	Extended authority ATSIHP/IHW/IPAP/MID/RIPRN

ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM

MID and RIPRN may proceed

Form	Strength	Route	Dose	Duration
Capsule	250 mg, 500 mg	Oral	500 mg bd	5 days

Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush

Note: If renal impairment seek MO/NP/EM advice

Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems

Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 4,9

S4	Amoxicillin + clavulanic acid		Extended authority ATSIHP/IHW/IPAP/MID/RIPRN	
ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg + 125 mg	Oral	500 mg + 125 mg bd	5 days
Offer CMI: Take with food. May cause rash, diarrhoea, nausea or thrush. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems. Avoid if PROM - may be ↑ risk of neonatal necrotising enterocolitis				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [4,10]				

5. Follow up[4]

- Check results of MSU + modify antibiotics based on culture and sensitivity testing
- Repeat urine MCS 1–2 weeks after treatment completed. If persistent bacteriuria, treat with a second course of antibiotics
- Following resolution, repeat MSU at antenatal visits to monitor:
  - **note:** dipstick for nitrites is useful to exclude ASB, but is not accurate for diagnosis. Use MSU wherever possible as it is the most accurate[2]
- If recurrent infections, or at risk of complications eg has diabetes, consider prophylaxis for remainder of pregnancy - discuss with MO/NP/EM
- Follow up STI test results + treat as required

6. Referral/consultation

- As above

Diabetes and pregnancy

Recommend[1-3]

- Women with pre-existing diabetes or gestational diabetes mellitus (GDM) are at increased risk for complications. Refer early to diabetes educator + dietitian, and follow local pathway
- If pre-existing diabetes - high dose folate commencing 1 month pre-pregnancy as per MO/NP/EM

Background

- Also see Qld Clinical Guidelines *Gestational diabetes mellitus*

1. May present with[1]

- Pregnant with:
  - **Risk factor(s) for GDM** ± diagnosis of GDM
  - pre-existing diabetes type 1 or 2

2. Immediate management Not applicable

3. Clinical assessment[1]

- **If pre-existing diabetes and +ve pregnancy test:**
  - do medication history + check if medicines safe in pregnancy with MO/NP/EM/pharmacist
  - refer to MO/NP/EM/obstetrician for further assessment and individualised planning of care

- For **Screening and diagnosis of GDM** - see flowchart below
- **Note:** if post bariatric surgery eg gastric banding - OGTT may not be suitable. Consult MO/NP/EM

Screening and diagnosis of GDM

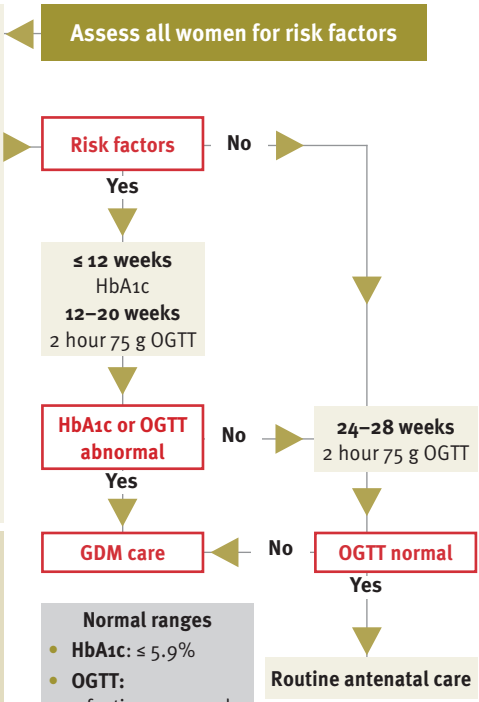
Risk factors for GDM

- BMI › 30 pre-pregnancy/on entry to care
- Ethnicity (First Nations, Pacific Islander, Maori, Asian, Indian subcontinent, Middle Eastern, non-white African)
- Previous:
  - GDM or elevated BGL
  - birth weight › 4500 g or › 90th percentile
  - unexplained perinatal loss
  - preterm birth or congenital anomaly
  - pregnancy-induced hypertension
- Maternal age ≥ 40 years
- Family history DM (1st degree relative or sister with GDM)
- Polycystic ovary syndrome, hypothyroidism, assisted reproductive therapy
- Medications - corticosteroids, antipsychotics
- Multiple pregnancy

GDM diagnosis

- **HbA1c** 1st trimester only: 6.0–6.4%
- **OGTT** 1 or more of:
  - fasting 5.3–6.9
  - 1 hour ≥ 10.6
  - 2 hour 9.0–11.0

Results exceeding these may indicate Diabetes in Pregnancy (undiagnosed diabetes detected for first time)



4. Management[1]

- Ongoing management as per multidisciplinary team + routine Antenatal care, p. 350
- Provide advice on the importance of:
  - monitoring + controlling BGL. May ↓ risk of early induction of labour + caesarean section
  - breastfeeding for mother + baby
- Provide emotional support to the woman

Pre-existing diabetes in pregnancy or Diabetes in pregnancy (DIP)[1-3]

- First antenatal visit should occur as soon as possible once pregnancy confirmed
- Initial evaluation may include:
  - additional bloods to routine antenatal testing
  - high dose folate until 12 weeks gestation as per MO/NP/EM
  - preeclampsia prophylaxis (aspirin ± calcium) start before 16 weeks gestation[1]
- An individualised care plan will be developed. May include:
  - dietary and daily physical activity advice
  - self-monitoring BGL - fasting and 1–2 hours after meals
  - insulin in place of oral hypoglycaemics, titrated as needed

- retina examination each trimester, more frequent if retinopathy is present
- renal function monitoring
- USS monitoring of fetal growth + amniotic fluid volume - 2–4 weekly from 28–36 weeks
- ↑ antenatal visits + monitoring for complications eg preeclampsia

Gestational diabetes mellitus (GDM)[1] - see **Antenatal schedule of care for GDM** (table)

- Suggested targets for self-monitoring BGLs for GDM:
  - fasting ≤ 5.2
  - 1 hour after commencing meal ≤ 7.4
  - 2 hours after commencing meal ≤ 6.7
- Insulin may be required for optimal control:
  - must be calculated and ordered by clinician with expertise in diabetes in pregnancy
  - will need regular review and titration to achieve glycaemic goals

Antenatal schedule of care for GDM[1]

At initial GDM diagnosis		
Discuss/review/refer		**Considerations**
☐	Review history	Previous GDM, medications
☐	Diabetes educator consult/NDSS registration	For GDM education within 1 week of diagnosis
☐	Dietitian review	Within 1 week of diagnosis
☐	Psychosocial assessment/support	Refer as required
☐	BGL self-monitoring	Commence self-monitoring
☐	BMI (pre-pregnancy)	Discuss healthy weight gain targets
☐	Physical activity, lifestyle advice	Include smoking cessation
☐	Baseline ultrasound scan (USS)	At 28–30 weeks
☐	Initial laboratory investigations	☐ Serum creatinine
☐	If Diabetes in pregnancy (DIP)	☐ Optometrist/ophthalmologist review for diabetic retinopathy ☐ Microalbuminuria for diabetic nephropathy
Each visit		
Discuss/review/refer		**Considerations**
☐	Clinical surveillance	Review for complications eg preeclampsia
☐	Weigh	Review weight gain trends, diet, exercise
☐	Test urine	Investigate proteinuria, ketonuria
☐	Review BGL self-monitoring record	Review patterns, trends and mean BGL
☐	Psychosocial assessment/support	Refer as required
☐	Fetal growth and wellbeing (abdominal circumference; USS 2–4 weekly as indicated)	
☐	If pharmacological therapy commenced	☐ Follow up contact within 7–10 days ☐ Weekly diabetes educator/BGL review ☐ Dietitian/pharmacist review
☐	Review suitability of model of care (low risk not suitable if insulin or metformin required)	☐ Low risk GDM ☐ Diabetic Clinic ☐ Obstetric ☐ Other
☐	Review next contact requirements (increase frequency if: suboptimal BGL, early diagnosis, diabetes in pregnancy, pharmacological therapy commenced)	☐ Fortnightly until 38 weeks ☐ Fortnightly until 36 weeks ☐ Weekly until birth ☐ Other

Hypoglycaemia in pregnancy[1]

- Fasting BGLs tend to decrease in pregnancy
- Levels of 3.5 may be physiologically normal and asymptomatic
- Hypoglycaemia is uncommon in women with GDM:
  - if asymptomatic confirm the accuracy of results prior to treatment
  - for symptoms. See Hypoglycaemia, p. 89
- Mild hypoglycaemia:
  - BGL < 4.0 ± symptoms of low BGL
- Severe hypoglycaemia:
  - BGL very low, generally < 3.0
  - confusion, potential loss of consciousness

Treating hypoglycaemia in women on glucose lowering medication[1]

- Give 15 g serve of fast acting carbohydrates eg:
  - 5–7 glucose jelly beans
  - glass of soft drink - not diet
  - Lucozade® 100 mL
  - 3 heaped teaspoons of sugar or honey dissolved in water
- If after 15 minutes symptoms persist or BGL < 4.0
  - repeat 1 serve of above
  - do not over treat with fast acting carbohydrates, as may lead to rebound hyperglycaemia
- When BGL is ≥ 4.0 give sandwich, crackers, a glass of milk (longer lasting carbohydrate) or usual meal if within 30 minutes
- MO/NP/EM review as may require medication reduction

5. Follow up[1]

- As per individualised care plan
- If GDM advise to be screened for:
  - persistent diabetes at 6–12 weeks postpartum using the OGTT and non-pregnancy diagnostic criteria
  - diabetes at least every 3 years and early glucose testing in future pregnancy
  - cardiovascular disease
- If DIP advise to be screened to confirm diagnosis - as per care plan

6. Referral/consultation

- Early referral for a multidisciplinary approach as per local pathways/individualised care plan

HMP Hypertension in pregnancy

Recommend[1]

- **Severe hypertension in pregnancy is a life-threatening medical emergency**
- Hypertension in pregnancy (chronic or new) is a significant risk to mother + baby and must always be managed in consultation with an MO/obstetrician
- Correct BP cuff and measurement technique is critical for correct diagnosis
- Dipstick testing is the least accurate method to check for proteinuria (high false +ve). Where possible use PoCT + confirm proteinuria of ≥ 2+ or repeated 1+ with urine P/C ratio

Background

- Also see Qld Clinical Guidelines *Hypertension and pregnancy*

1. May present with[1]

- Pregnant woman with:
  - new onset of hypertension arising › 20 weeks
  - prenatal diagnosis of chronic hypertension with increase in BP

Hypertension in pregnancy[1]	
Mild–moderate hypertension	BP measured at least 4 hours apart, with elevation occurring at least twice: • Systolic BP (sBP) ≥ 140 (but ‹ 160) **and/or** • Diastolic BP (dBP) ≥ 90 (but ‹ 110)
Severe hypertension	• sBP ≥ 160 **and/or** dBP ≥ 110
Medical emergency	• sBP ≥ 170 **with or without** dBP ≥ 110

2. Immediate management[1]

- **Contact MO/NP/RSQ urgently if**:
  - severe hypertension
  - ± signs of Preeclampsia, p. 370
  - ± concerns about fetal wellbeing eg decreased fetal movements
- **If severe hypertension**:
  - **note:** woman may not appear ill. Do not delay treatment
  - insert IVC x 2 eg 16 G
  - take bloods - FBC, UEC, urate, LFT including LDH
  - MO/NP/EM may order nifedipine ± hydralazine
  - **target BP:**
    - sBP 130–150 and dBP 80–90
    - aim for gradual and sustained reduction in BP so blood flow to the baby is not compromised
  - monitor BP 15–30 minutely until stable, then minimum 4 hourly
  - listen to FHR frequently + continuous CTG if › 28 weeks, if available
  - urgent retrieval for obstetric care

3. Clinical assessment[1]

- Refer to midwife/MO/NP for clinical assessment. If midwife not available, complete what you can within your scope of practice and always consult MO/NP

- **Ask about:**
  - any symptoms of Preeclampsia, p. 370 + any other symptoms
  - fetal movements - normal, decreased, any concerns
  - obstetric history:
    - current gestation, BP during this pregnancy
    - pre-existing proteinuria - if so, has this increased
  - past history. Ask about:
    - previous pregnancies and outcomes
    - diabetes, kidney disease, endocrine disorders - Cushing's syndrome, SLE
    - known prenatal hypertension
    - medicines + allergies
- **Do:**
  - vital signs
  - listen to FHR + every 30 minutes, or continuous CTG if › 28 weeks, if available
  - urinalysis dipstick for protein. Use PoCT if possible:
    - if ≥ 2+ or repeated 1+ proteinuria, or preeclampsia is suspected, do urine P/C ratio
  - check for signs of Preeclampsia, p. 370

S4	Nifedipine			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM				
RIPRN must consult MO/NP/EM unless circumstances do not allow, in which case notify MO/NP/EM as soon as circumstances do allow				
MID may proceed to a max. of 2 doses				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet (immediate release)	10 mg 20 mg	Oral	10–20 mg	stat May be repeated after 45 minutes on MO/NP/EM order (max. 80 mg)
Offer CMI: May cause nausea, headache, flushing, dizziness, hypotension or peripheral oedema				
Note: May increase effects of magnesium sulfate and risk of hypotension; use cautiously				
Contraindication: Cardiogenic shock				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,2]				

S4	Hydralazine			Prescribing guide
MID, RIPRN and RN only. Must be ordered by an MO/NP/EM				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	20 mg	IV	***Intermittent bolus dose** 5–10 mg injected over 3–10 minutes If required, repeat doses of 5 mg, 20 minutes apart (max. 30 mg)	stat Cease if maternal HR › 125
			Infusion (via controlled infusion device) Commence at 10–20 mg/hour and titrate to BP	
Offer CMI: May cause tachycardia, headache, flushing or palpitations				
Note: *5 mg if fetal compromise. Monitor BP and HR continuously during administration and until stable. For detailed administration advice see Appendix C of Qld Clinical Guidelines *Hypertension and pregnancy*				
Contraindication: SLE, severe tachycardia, myocardial insufficiency and right ventricular heart failure				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,3]				

4. Management[1]

- Consult MO/NP/EM in all cases of hypertension in pregnancy
- **If mild–moderate hypertension**:
  - MO/NP/EM may consider oral antihypertensives if:
    - sBP persistently › 140 **and/or** dBP persistently › 90 on subsequent checks
    - and no signs/symptoms of preeclampsia
  - suggested targets sBP 110–140, dBP 85
- Further management in collaboration with MO/NP/EM and may include:
  - retrieval to facility with access to urgent obstetric care
  - USS for fetal growth, amniotic fluid volume and umbilical artery doppler assessment
  - close monitoring if pre-existing hypertension. A strong risk factor for preeclampsia
  - if moderate/high risk of preeclampsia, daily aspirin (ideally before 16 weeks) ± calcium supplement
- Advise woman to present immediately if any symptoms of preeclampsia

5. Follow up[1]

- Ongoing care according to the woman's clinical needs and MO/NP/EM advice

6. Referral/consultation

- As above

HMP Preeclampsia/eclampsia

Recommend[1]

- **Women with preeclampsia must be retrieved/hospitalised for obstetric care**
- Magnesium sulfate is the preferred anticonvulsant for prevention + treatment of eclampsia
- ↑BP is commonly (but not always) the first manifestation. Correct BP cuff + measurement technique is critical for correct diagnosis
- Dipstick testing is the least accurate method to check for proteinuria (high false +ve). Where possible use PoCT + confirm proteinuria of ≥ 2+ or repeated 1+ with urine P/C ratio

Background[1]

- **Preeclampsia** - a multi-system disorder characterised by hypertension, and involvement of 1 or more other organ systems ± the fetus. Clinical progression is unpredictable
- **Eclampsia** - 1 or more seizures superimposed on preeclampsia in the absence of other neurological conditions that could account for the seizure
- Also see Qld Clinical Guidelines *Hypertension and pregnancy*

1. May present with[1,2]

- Pregnant woman with:
  - **hypertension** - sBP **≥ 140** and/or dBP **≥ 90,** arising after 20 weeks (confirmed on 2 or more occasions) **AND**
  - ANY **Signs of preeclampsia** (table below)

Signs of preeclampsia[1-3]	
	• Proteinuria on dipstick ≥ 2+ or repeated 1+. Confirm with urine P/C Ratio • Fetal growth restriction
Severe signs[1]	• Headache • Epigastric pain ± right upper quadrant pain • Visual disturbances eg blurred vision, flashing lights/sparks • Nausea, vomiting • Reduced urine output • Sudden or progressive peripheral oedema • Changed or decreased fetal movements[1] or any concern for fetal wellbeing • sBP ≥ 160 or dBP ≥ 110 (confirmation within 15–30 minutes is sufficient) or difficult to control BP • Difficulty breathing, pulmonary oedema • Abnormal blood tests eg HELLP syndrome • Stroke
Imminent eclampsia	**Can be difficult to predict. May have any signs, or at least 2 of:**[1] • Ongoing or recurring severe headaches • Visual disturbance • Altered level of consciousness • Hyperreflexia ± sustained clonus
Eclampsia	• **Seizure(s)**

2. Immediate management[1,2]

If seizure

- Send for help
- Start resuscitative measures + give O_2 by mask:
  - **note:** most seizures are 1–3 minutes + may not require drug treatment
- Insert IVC x 2 eg 16 G
- Give midazolam if:
  - seizures occur/ongoing while preparing or during administration of magnesium sulfate OR
  - if seizures reoccur during giving of magnesium sulfate
- **Urgently contact MO/NP/RSQ** who will order **magnesium sulfate**
- Further management as per MO/NP, including:
  - urgent retrieval
  - nifedipine or hydralizine. See drug boxes, p. 368
  - vital signs 5 minutely
  - insert IDC - measure urine output hourly, maintain strict fluid balance
  - RR + patella reflexes hourly
  - listen to FHR frequently - continuous CTG if › 28 weeks, if available

If signs of severe preeclampsia or imminent eclampsia[1]

- **Urgently contact MO/NP/RSQ,** who may order:
  - nifedipine or hydralazine. See drug boxes, p. 368
  - ± magnesium sulfate to prevent eclampsia
- Insert IVC x 2 eg 16 G
- Urgent retrieval
- Vital signs 5 minutely
- Get rapid history/examination as per **Clinical assessment**

S4	Midazolam			Extended authority ATSIHP/IHW/MID/RIPRN
ATSIHP and IHW must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	5 mg/5 mL 5 mg/mL	**IV/IM** (ATSIHP and IHW may NOT administer IV)	5–10 mg	stat
	5 mg/mL	**Buccal**		If IV, inject over 2–5 minutes Further doses on MO/NP/EM order
		Intranasal		
Administration advice: Buccal slowly drip into mouth between gums and cheek using a syringe or squeeze directly from the *plastic ampoule*. **Intranasal** use mucosal atomisation device (MAD) or 1–3 drops (*plastic ampoule),* 1 at a time into alternative nostrils until full dose is given (over 15 seconds)				
Note: Monitor for sedation and respiratory depression				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,4,5]				

Unscheduled	Magnesium sulfate			Prescribing guide
MID, RIPRN and RN only. Must be ordered by MO/NP/EM				
Use local protocols for administration of magnesium sulfate if available				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	2.5 g/5 mL	IV	**Loading dose** **4 g**	Infuse over 20 minutes using syringe pump#
			Maintenance dose **1 g/hour (10 g)**	Infuse at 5 mL/hour for 24 hours using syringe pump
Prefilled syringe (Baxter®)	4 g/20 mL 10 g/50 mL		**New onset or persistent seizures while on magnesium sulfate** **2 g**	Infuse over 5 minutes Repeat in 2 minutes if seizures persist
Preparation: Do not dilute prefilled syringe. **Injection - dilute with sodium chloride 0.9%** **Loading dose** draw up 4 g (8 mL) in 20 mL syringe + dilute to a total of 20 mL **Maintenance dose** draw up 10 g (20 mL) in 50 mL syringe + dilute to a total of 50 mL **New onset or persistent seizures** draw up 2 g (4 mL) in 10 mL syringe + dilute to a total of 10 mL				
Offer CMI: May cause nausea, vomiting or transient hot flushing				
Note: If impaired renal function, reduce maintenance dose to 0.5 g/hour. Observe for signs of toxicity. **#If no syringe pump** - push loading dose slowly over 20 minutes				
Management of associated emergency: Contact MO/NP. Stop infusion. Calcium gluconate should be readily available in case of respiratory depression/overdose. Hypotension alone generally responds to IV fluids and calcium is rarely necessary. Also see Anaphylaxis, p. 80 [1,2,6-8]				

If magnesium sulfate ordered[1]		
See Appendix D of Qld Clinical Guidelines *Hypertension and pregnancy* (or local policy) for detailed advice		
Before starting ensure	• Calcium gluconate drawn up in case of respiratory depression/overdose • Resuscitation/ventilator support immediately available • Dedicated IV line • Do baseline vital signs, SpO_2, patella reflex, abdominal palpation, FHR	
During loading dose	• Vital signs 5 minutely until stable (minimum 20 minutes) then 30 minutely • SpO_2 continuously • Listen to FHR 15–30 minutely - continuous CTG if › 28 weeks, if available • **Monitor for signs of magnesium toxicity:** nausea, vomiting, flushing, hypotension, muscle weakness, muscle paralysis, blurred or double vision, CNS depression + loss of reflexes	
After loading dose	• Check patella reflex, then hourly	
Maintenance dose	• Start after loading dose	
Stop infusion + consult MO/NP urgently if	• RR ‹ 12 or › 4 below baseline • Absent patella reflex	• dBP decreases › 15 below baseline • Urine output ‹ 80 mL in 4 hours

Unscheduled	Calcium gluconate			Prescribing guide
MID, RIPRN and RN only. Must be ordered by MO/NP/EM				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	2.2 mmol/10 mL	IV	10 mL	Inject slowly over 5–10 minutes - **large peripheral vein**
Offer CMI: For overdose of magnesium sulfate				
Note: **High-risk medicine - rapidly fatal in overdose**. Extravasation can cause tissue necrosis				
Contraindication: Subcut and IM route				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [9,10]				

3. Clinical assessment[2,3]

- Refer to midwife/MO/NP for clinical assessment. If no midwife available, complete what you can within your scope of practice + always consult MO/NP
- **Ask about:**
  - associated symptoms
  - any **Signs of preeclampsia**
  - fetal movements - normal, decreased, any concerns
  - current + previous pregnancy, any problems
  - medications + allergies
- **Past history:**
  - renal disease, hypertension
  - risk factors for preeclampsia eg diabetes, first pregnancy, BMI › 30, past/family history of preeclampsia
- **Do:**
  - vital signs + listen to FHR
  - calculate gestation based on dating scan or LNMP
  - patella reflex
  - dipstick for proteinuria. **Note:** confirm proteinuria ≥ 2+ or repeated 1+ by urine P/C Ratio
  - check for **Signs of preeclampsia**
  - bloods - FBC, UEC, uric acid, LFT including LDH, coagulation studies, group + hold

4. Management[2]

- Promptly contact MO/NP if hypertension in pregnancy with any **Signs of preeclampsia**
- Will require retrieval/hospitalisation for further investigations

5. Follow up[6]

- If not retrieved, follow up as per MO/NP/EM

6. Referral/consultation

- As above

HMP Antepartum haemorrhage (APH)

Vaginal bleeding after 20 weeks pregnant

Recommend[1-3]

- **APH with maternal or fetal compromise is an obstetric emergency**
- Suspect placenta praevia in any woman › 20 weeks who presents with vaginal bleeding

Background

- Also see Qld Clinical Guidelines *Early pregnancy loss*

1. May present with[1,2]

- Pain without bleeding may be only symptom eg concealed placental abruption
- Vaginal bleeding › 20 weeks pregnant - spotting to massive haemorrhage
- Signs of shock (may be late sign):
  - pale, sweaty, restless, cool clammy skin
  - ↑HR, ↓BP, ↑RR
  - capillary refill › 2 seconds
  - ↓LOC

2. Immediate management[1,2,4]

- **If signs of shock:**
  - call for help
  - **contact MO/NP/RSQ urgently**
  - insert IVC x 2 eg 16 G
  - give bolus IV sodium chloride 0.9% or Hartmann's 10–20 mL/kg:
    - ongoing IV fluids as per MO/NP/EM
  - vital signs - continuously monitor or at least 15 minutely
  - do rapid history/examination - **do not perform digital vaginal examination**
  - take bloods - FBC, coagulation studies, group and x-match, LFT, UE
  - lie woman in left lateral position - not supine
  - ± activation of massive transfusion protocol

3. Clinical assessment[1-3]

- **Ask about:**
  - bleeding - amount, onset, any clots, gradual or sudden onset
  - did bleeding start after sex
  - pain - where, how severe, continuous/intermittent:
    - consider placental abruption if continuous, or labour if intermittent
  - recent trauma to abdomen - accidental or Domestic and family violence, p. 232. **Only discuss if woman is alone**
  - fetal movements - normal, decreased, any concerns
  - other symptoms/concerns
- **Check antenatal history:**
  - USS results if available - check location of placenta
  - estimate gestation based on dating scan or LNMP
  - blood group and antibody status
  - obstetric history - prior pregnancies/vaginal birth or caesarean, previous placenta praevia or placental abruption, miscarriages/ToP
  - ask about drug and alcohol use/smoking

- **Do:**
  - vital signs
  - check loss on pad - amount and rate, weigh pads/loss if possible
  - listen to FHR, needs confirming with USS if not heard
  - palpate abdomen, check:
    - is uterus soft/hard, tender/non-tender, contracting
    - fundal height
  - bloods - FBC, group + hold
  - consider possibility of concealed bleeding - in uterine cavity
  - USS to exclude placenta previa if placental site not already known - if available[1-3]

4. Management[1-3]

- Any bleeding heavier than spotting ± ongoing bleeding requires retrieval/hospitalisation
- Consult MO/NP/EM who may advise:
  - insert IDC
  - corticosteroids if risk of preterm birth. See Preterm labour, p. 381
- Nil by mouth
- Offer analgesia. See Acute pain, p. 32
- Continue to monitor:
  - blood loss, vital signs, pain
  - FHR 30 minutely OR continuous CTG if › 28 weeks, if available
- If Rh D –ve with no pre-formed anti-D antibodies[1] take bloods for Kleihauer (no need to wait for results) + give Rh D immunoglobulin, p. 355
- Keep woman informed, offer emotional support + encourage involvement of support person

5. Follow up

- As per MO/NP/EM

6. Referral/consultation

- For confirmed pregnancy loss - SANDS miscarriage, stillbirth & newborn death support https://www.sands.org.au ✆ 1300 308 307 (24 hour bereavement support line)

HMP Prelabour rupture of membranes (PROM)

Recommend

- If preterm, give antibiotics to ↓ risk of infection to mother + baby and delay the onset of labour[1,2]

Background

- Also see Qld Clinical Guidelines *Term prelabour rupture of membranes, Preterm prelabour rupture of membranes + Early onset Group B Streptococcal Disease*

1. May present with[1,3]

- Gush of fluid from vagina
- Intermittent or constant leaking of small amounts of fluid
- Sensation of wetness
- Seeing or feeling umbilical cord protruding from vagina - **obstetric emergency**. **Contact MO/NP/RSQ urgently** + go to Cord prolapse, p. 396

2. Immediate management[4]

- Listen to FHR - normal is 110–160:
  - if tachycardia or bradycardia:
    - reposition woman to left lateral + recheck
    - check for cord prolapse

3. Clinical assessment[1,5]

- Wherever possible a woman with suspected PROM should be assessed by a midwife or MO/NP
- **Ask about:**
  - date and time of fluid loss
  - how much - sudden gush or continued leak
  - colour of fluid - clear, yellow, green, bloody
  - any odour
  - fetal movements - normal, decreased, any concerns
  - abdominal or pelvic pain, contractions
  - fever, nausea/vomiting
  - other symptoms/concerns eg UTI, STIs[2]
- **Ask about this pregnancy:**
  - antenatal history - check records/pathology results eg GBS status
  - gravida/para
  - estimated gestation based on dating scan or LNMP
  - USS reports
  - any problems eg diabetes, hypertension
  - STI tests - when, results, treatment
- **Get past history:**
  - medicines, allergies
  - reproductive, sexual history
- **Do:**
  - vital signs
  - abdominal palpation - fundal height, fetal lie + presentation, contractions (strength/length/frequency), any tenderness

  - FHR + continuous CTG if › 28 weeks, if available
  - check vaginal loss on pad - amount, colour, consistency, odour, bleeding, meconium stained
- Avoid digital vaginal examination - may increase risk of infection[1,3]
- Sterile speculum examination **if skilled** to:[5]
  - exclude cord prolapse
  - observe the cervix for dilation/length
  - check for pooling of amniotic fluid or leakage from the cervical os with coughing:
    - if not obvious use PoCT eg AmniSure®, Actim Prom®, or pH indicator eg Nitrazine®[1,5]
  - take - HVS for MCS if ‹ 37 weeks
- **Take pathology:**
  - urinalysis and MSU for MCS + FCU for gonorrhoea and chlamydia PCR[1]
  - antenatal bloods if not already collected[1]
  - self-collected:
    - vaginal-anorectal or vaginal-perianal swab for GBS[2]

How to take a swab for culture for GBS[2]

- Either vaginal-rectal swab OR vaginal-perianal swab. **Woman may self-collect**
- Use 1 single dry swab stick - insert 2–4 cm into vaginal opening + then:
  - for vaginal-anorectal - insert into anus
  - for vaginal-perianal - swab the surface outside of the anus
  - place into standard bacterial transport medium
  - label 'GBS screening in pregnancy'

4. Management[1,3]

- Consult MO/NP for retrieval/hospitalisation + may order:
  - **‹ 37+0 weeks** - antibiotics:[1]
    - IV ampicillin PLUS oral erythromycin. Further doses as per MO/NP/EM
    - if penicillins allergy, give erythromycin only
  - **‹ 35 weeks** - Betamethasone, p. 382 to accelerate fetal lung maturation:[1,5]
    - **note:** if › 35 weeks betamethasone may still be indicated[1,5]
  - **‹ 30 weeks + birth likely in 24 hours** - magnesium sulfate **(in consultation with tertiary centre)**:
    - see Magnesium sulfate drug box, p. 372 for guidance[1,5]
    - **note:** if ‹ 34 weeks magnesium sulfate may still be indicated
- Monitor closely until retrieval:
  - vital signs, vaginal loss, signs of cord prolapse + FHR/CTG
  - if vaginal blood loss, fever, or suspected cord prolapse **contact MO/NP/RSQ urgently**

S4	Ampicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP. MID, RIPRN and RN must consult MO/NP/EM				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 mg 1 g	IV	2 g	stat Inject over 10–15 minutes *More rapid injection may cause seizures*
Offer CMI: May cause rash, diarrhoea, nausea and pain at injection site				
Contraindication: Severe hypersensitivity to penicillins, carbapenems and cephalosporins				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80				6-8

S4	Erythromycin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP. MID, RIPRN and RN must consult MO/NP/EM				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg	Oral	250 mg	stat
Offer CMI: Take on an empty stomach 1 hour before or 2 hours after food. May cause nausea, vomiting, diarrhoea, abdominal pain/cramps or thrush. Can be taken with food if causes stomach upset				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Contraindication: Severe or immediate allergic reaction to macrolides, use with some statins, severe hepatic impairment. Caution with myasthenia gravis and severe renal impairment				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [6,9]				

5. Follow up

- As per MO/NP/EM

6. Referral/consultation

- As above

HMP Group B Streptococcus prophylaxis

Background[1]

- Group B *Streptococcus* (GBS) in the vagina ↑ the risk of the newborn getting sepsis. Antibiotics are given during labour to ↓ risk
- Also see Qld Clinical Guidelines *Early onset group B streptococcal disease*

1. May present with

- Pregnant woman during antenatal visit, or in labour

2. Immediate management Not applicable

3. Clinical assessment[1]

- Assess for **Group B Strep (GBS) risk factors**

Group B Strep (GBS) risk factors - any of
Antenatal
☐ Previous baby with early onset GBS disease
☐ GBS detected in this pregnancy eg: • Urine pathology test • Vaginal swab - **note:** routine swabs for GBS are not done in Qld
During labour
☐ Any of the above risk factors
☐ Preterm labour < 37+0 weeks: • Intact OR ruptured membranes
☐ Mother has T ≥ 38*
☐ Membranes have ruptured: • > 14 hours and birth unlikely by 18 hours OR • > 18 hours

*Or signs of chorioamnionitis: febrile; offensive smelling vaginal discharge; tender abdomen without contractions

- Document in medical record/PHR
- Advise woman **antibiotics are recommended during labour** + to alert staff to this
- Give information about GBS + antibiotics. see Qld Clinical Guidelines Consumer information *GBS in pregnancy*

- Give **antibiotics during labour**
- Aim to give at least 4 hours before birth

4. Management[1]

If antibiotics indicated during labour

- **If maternal T ≥ 38 contact MO/NP/RSQ** who will:
  - order broad spectrum antibiotics that include an agent active against GBS (instead of antibiotics below), and
  - seek urgent advice from neonatologist/paediatrician
- **In all other cases** give:
  - IV benzylpenicillin 3 g at the onset of labour (loading dose)
  - 4 hours later IV benzylpenicillin 1.8 g, then continue 4 hourly until birth
  - **if allergic to penicillins**:
    - IV lincomycin 600 mg 8 hourly **OR** IV clindamycin as per MO/NP/EM

S4	Benzylpenicillin			Extended authority ATSIHP/IHW/IPAP/MID
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	600 mg 1.2 g, 3 g	IV	**1st dose** 3 g	At onset of labour
			Ongoing doses 1.8 g	4 hourly after 1st dose until birth
Preparation: Reconstitute with 10 mL water for injections, then dilute in 100 mL sodium chloride 0.9%				
Offer CMI: May cause diarrhoea or nausea				
Note: Rapid IV injection of large doses may cause seizures. **Infuse over 30 minutes to 1 hour**				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1-3]				

S4	Lincomycin			Extended authority ATSIHP/IHW/IPAP/MID
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	600 mg/2 mL	IV	600 mg	8 hourly until birth. Infuse over at least 1 hour
Preparation: Dilute in 100 mL sodium chloride 0.9%. **Only give by slow IV infusion** - IV injection can cause cardiac arrest, hypotension				
Offer CMI: May cause nausea, vomiting, diarrhoea, abdominal pain or cramps				
Note: If renal or hepatic impairment seek MO/NP advice				
Contraindication: IV injection. Severe or immediate allergic reaction to clindamycin				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,4,5]				

Management of baby[1]

- Babies at risk of GBS should be retrieved for neonatal/paediatric review as soon as possible
- Additionally, if antibiotics given to mother **< 2 hours before birth** see table below

Management of baby if antibiotics given < 2 hours before birth	
Preterm < 37+0 weeks	**Term ≥ 37 weeks**
• Urgent paediatric/neonatal advice - at ↑ risk of sepsis • Start antibiotics within 1 hour of birth • FBC, blood cultures	• Observe for signs of sepsis for 48 hours: – see Symptoms of unwell baby, p. 394 • FBC

5. Follow up

- As per MO/NP/EM

6. Referral/consultation

- As above

HMP Preterm labour
< 37+0 weeks gestation

Recommend[1]

- Aim for transfer before birth wherever possible and safe to do so
- Seek early advice/coordination of transfer by retrieval services

Background

- Also see Qld Clinical Guidelines *Preterm labour and birth ± Perinatal care of the extremely preterm baby*

1. May present with[1]

- Contractions - regular painful uterine cramping/tightening that comes and goes ±
  - rupture of membranes (ROM)/waters breaking
  - a bloody or mucousy show
  - lower back pain
  - pelvic pressure

2. Immediate management

- If there is an urge to push/bear down, birth may be imminent:
  - see Imminent birth, p. 386 + Newborn resuscitation, p. 390
  - send for help + **contact MO/RSQ/midwife urgently**

3. Clinical assessment[1]

- Get midwife/MO to assess woman whenever possible
- Use prompts in Labour 1st stage, p. 383 to ask about:
  - this presentation
  - pregnancy
  - past history
- Do:[1]
  - vital signs
  - palpate abdomen if skilled. Check:
    - uterine tone/activity/contractions, fundal height, presentation
  - listen to FHR
  - CTG if available and > 28 weeks
- Do sterile speculum examination if skilled:[1]
  - do PoCT to identify risk of preterm birth eg Actim Partus®. Follow kit instructions[1]
  - check if ROM ± liquor - clear, meconium stained, bloody, pink
  - visualise cervix - any dilatation, membranes[1]
  - HVS + LVS MCS for bacterial vaginosis
- Do:
  - vaginal-rectal OR vaginal-perianal swab for Group B Strep. See PROM, p. 376 for technique
  - urinalysis + MSU for MCS[1]
- **Do not do digital vaginal examination**, unless instructed by receiving obstetrician

4. Management[1]

- Insert IVC x 2
- **Consult MO/RSQ early**, who will arrange retrieval to an obstetrics facility with neonatal capability:
  - ± order/advise:
    - transvaginal USS to assess cervical length (if available/skilled staff)
    - analgesia
    - medication as per **Management guide** below
    - Observations during labour, p. 385/other monitoring until retrieval

Management guide[1]	
‹ 37 weeks	• **Nifedipine** to delay birth. If given, monitor: – FHR after contractions or CTG until contractions cease – BP, HR + RR 30 minutely for 1 hour, then hourly for 4 hours
22 to 34+6 weeks	• **Betamethasone** to accelerate fetal lung maturation:[2] – monitor BGL after giving if diabetes
‹ 30+0 weeks	• **Magnesium sulfate** if birth likely in 24 hours for fetal neuroprotection. May also be considered if 30 to ‹ 33+6 weeks. Same doses as for Preeclampsia, p. 370
In all cases	• **If labour continues** OR there is **risk of birth within 24 hours:** – give IV antibiotics for Group B Strep, p. 379 • **If signs of chorioamnionitis** eg T › 38, HR › 100, FHR › 160, uterine tenderness, offensive vaginal discharge: – labour should not be stopped. MO/NP/EM will order IV antibiotics

S4	Betamethasone			Extended authority ATSIHP/IHW/IPAP/MID
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	5.7 mg/mL	IM	11.4 mg	stat Further doses on MO/NP/EM order
Offer CMI: Given to prevent neonatal respiratory distress syndrome				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1-3]				

S4	Nifedipine			Extended authority ATSIHP/IHW/IPAP/MID
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed to a max. of 2 doses				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet (immediate release)	10 mg 20 mg	Oral Crush or chew first 2 doses to increase rate of absorption	20 mg	stat Repeat dose after 30 minutes if contractions persist MO/NP may order another dose if contractions persist for a further 30 minutes
Offer CMI: May cause nausea, headache, flushing, dizziness, hypotension or peripheral oedema				
Note: May increase effects of magnesium sulfate and risk of hypotension; use cautiously				
Contraindication: Maternal hypotension, cardiac disease; any condition that would make prolongation of pregnancy hazardous eg fetal death in utero, APH				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,4]				

5. Follow up

- As per MO/NP/EM

6. Referral /consultation

- As above

HMP Labour 1st stage

Recommend

- Birth during transport should be avoided unless there is significant risk to mother's life

Background[1]

- This topic is intended for facilities that do not have planned births
- **1st stage** of labour - from the onset of regular contractions until cervix is fully dilated (10 cm)
- Qld *Intrapartum record form* https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/maternity-clinical-pathways

1. May present with[1]

- Contractions - regular painful uterine cramping/tightening that comes and goes ±
  - rupture of membranes (ROM)/waters breaking
  - a bloody or mucousy show
  - lower back pain
  - pelvic pressure

2. Immediate management[1]

- **Check for signs of** Imminent birth, p. 386:
  - urge to push/need to open bowels
  - vulval gaping/bulging, anal dilation, baby visible
  - shakiness, irritability, nausea and vomiting - could be transitioning to birth

3. Clinical assessment[1]

- Get midwife/MO to assess woman whenever possible
- **Ask about:**
  - contractions - when started, frequency, duration, strength/pain, regular/irregular
  - if membranes ruptured - when, colour, amount, odour
  - vaginal loss - discharge, blood
  - fetal movements - normal or changed
- **Ask about the pregnancy** ± check *Pregnancy health record*:
  - weeks pregnant (dating scan most accurate):
    - preterm < 37 + 0 weeks. **If preterm, go to** Preterm labour, p. 381
    - term ≥ 37 weeks
  - antenatal care provider
  - any pregnancy complications eg hypertension, gestational diabetes, syphilis
  - how many pregnancies and births (gravida/para); vaginal births or caesareans, birth complications eg PPH, shoulder dystocia, preterm births
  - medicines, allergies
  - relevant medical, gynaecological, surgical, social history

- **Check results:**
  - USS for placental position
  - Hb, syphilis, blood group - check if Rh –ve
- **Assess Group B Strep, p. 379 risk:**
  - if at risk, will need antibiotics during labour, as baby at risk of sepsis[2]

Do physical examination[1]

- Vital signs + urinalysis
- Vaginal loss - discharge, blood, liquor. Note colour, odour, amount, consistency
- **Feel contractions** - rest hand on abdomen and feel tightening:
  - note strength, frequency and length of each contraction over 10 minutes
  - regular/irregular
- **Listen to baby's heart rate (FHR)** if skilled:
  - normal is 110–160/minute:
    - differentiate between baby's and mother's HR - take mother's radial pulse at same time
    - if brady/tachycardia, ask to change position and recheck. **Urgently contact MO/RSQ if still abnormal**
  - consider CTG if available
- **Palpate abdomen** if skilled (minimise lying flat on back):
  - fundal height (cm) - measure top of uterus (fundus) to suprapubic bone, may indicate gestation
  - fetal lie - longitudinal, transverse, oblique
  - presentation - cephalic (head), breech (buttocks/bottom)
  - position eg right occiput anterior (ROA)
  - descent into pelvic brim - 5ths of fetal head palpable above the symphysis pubis
- **Offer vaginal examination (VE)** if skilled (+ informed consent):
  - **do not do if** - antepartum haemorrhage, rupture of membranes and not in labour, placenta praevia, placental position unknown, suspected Preterm labour, p. 381
  - listen to FHR + ensure bladder empty prior
  - note - liquor, cervical dilatation + effacement, consistency (soft/firm), application of presenting part, membranes intact/not felt, level of presenting part to ischial spines (–3 to +3), fetal position
  - post VE listen to FHR

4. Management[1]

- Contact MO/midwife early for advice
- **If woman is in labour** a decision will need to be made regarding **retrieval or birth in community**:
  - consider - gestation, parity, stage/progression of labour, staff availability/skill level
  - **if retrieval** - ensure pregnancy health records/antenatal records go with woman
  - **if birth in community**:
    - ensure assistance available
    - prepare/check equipment eg imminent birth kit + neonatal resuscitation
- Insert IVC x 2 eg 14–16 G
- **Assist to comfortable positions**. Encourage upright positions:
  - avoid lying flat on back, as can cause supine hypotension + abnormal FHR
- **Support and reassure:**
  - ensure privacy, calmness. Involve support person/partner
  - encourage to eat and drink as desired, frequent sips

- **If membranes rupture/waters break:**[1]
  - check FHR immediately. If abnormal:
    - call for help
    - do VE (if skilled) to check for Cord prolapse, p. 396
  - note time + colour of fluid (liquor)
- **Offer pain relief as needed**[1] - a non-midwife must get an MO/NP/EM order for analgesia:
  - try natural approaches as long as possible - mobilisation, position changes, shower, massage, heat, music, relaxation/breathing techniques
  - if needed, offer nitrous oxide + O_2 (Entonox®)
  - if still no relief and birth not imminent offer:
    - morphine (single dose). See Acute pain, p. 32
    - **give lowest dose possible for adequate pain relief** - to minimise side effects (mother + baby when born)
    - ± antiemetic. See Nausea and vomiting, p. 40

Observations during labour[1]	
15–30 minutely	• **FHR** - listen towards end of contraction + 30–60 seconds after contraction finishes: – there should be no slowing of FHR after a contraction. If it slows, ask woman to change position and recheck. If still slow, consult MO/NP/midwife urgently
30 minutely	• **Contractions** - feel for 10 minutes. Expect 3–5 in 10 minutes, lasting for 60–90 seconds, with 60 seconds resting tone • **HR, RR**
Hourly	• **Vaginal loss**
2nd hourly	• Encourage to **empty bladder**. Monitor
4 hourly	• **BP, T** • **If ↑ urgently consult MO/NP/RSQ.** If: – T ≥ 38 will order broad spectrum antibiotics that includes an active agent against GBS + seek urgent advice from neonatologist/paediatrician[2] – BP ↑, see Preeclampsia, p. 370 • Offer **VE** if indicated and skilled - with informed consent[3]
As needed	• **Abdominal palpation**

S4	**Nitrous oxide + oxygen** (Entonox®)		**Extended authority** ATSIHP/IHW/IPAP/MID	
ATSIHP, IHW and IPAP must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Premix gas	Nitrous oxide 50% + oxygen 50%	Inhalation	Self administered as needed	As required
Offer CMI: Woman to hold mouthpiece or mask herself. Start at onset of contraction/30 seconds prior, continue until contraction eases. Takes effect in 20–30 seconds. May cause dizziness, nausea and brief disinhibition				
Note: Use with caution if opioid given. Use in well ventilated area to minimise non-patient exposure				
Management of associated emergency: Consult MO/NP/EM. Give oxygen if overdose [1,3]				

5. Follow up

- As per MO/NP/EM

6. Referral/consultation

- As above

HMP Imminent birth

Recommend

- Avoid birth during transport where possible

Background[1]

- This topic is intended for facilities that do not have planned births
- *Imminent Birth* education program for rural + remote non-midwives https://www.health.qld.gov.au/orrh/digital-education-and-training/maternity-and-neonatal

1. May present with[1]

- Urge to push/bear down/open bowels
- Bulging perineum/anal dilation
- Baby is visible

2. Immediate management[1]

- Stay with woman
- Send for help
- Get midwife/MO to assess woman whenever possible
- Stay calm
- Ensure woman is in a safe, comfortable place; reassure and respect her privacy
- Prepare equipment eg imminent birthing kit
- Use appropriate PPE
- **Ask assistant to:**
  - contact midwife/MO/RSQ
  - insert IVC x 2 eg 14–16 G
  - draw up IM oxytocin 10 units[1] - kept in fridge
  - **prepare to care for baby.** See Newborn resuscitation, p. 390:
    - turn on/prepare incubator if available + warm towels/blanket(s) + hat
    - prepare equipment ± warm room
    - will likely need resuscitation if preterm, especially if ‹ 35 weeks

3. Clinical assessment[1]

- Get rapid history as able ± check *Pregnancy health record*:
  - gestation - how many weeks pregnant; most accurate via dating scan:
    - term ≥ 37 weeks
    - preterm ‹ 37+0 weeks - manage birth the same as term
  - gravida/para - how many pregnancies + births
  - have membranes ruptured - when/colour/amount/odour
  - fetal movements - normal or changed
  - any pregnancy issues eg Group B Strep, p. 379 risk, syphilis, diabetes, ↑BP
  - allergies, medicines
  - any significant medical history

4. Management[1]

- Encourage woman to adopt a comfortable upright position. Avoid lying flat
- If analgesia required offer nitrous oxide + O_2 (Entonox®). See Labour 1st stage, p. 383
- Support woman to use her own pushing instincts - do not tell her when/how hard to push

Monitor

- **Mother:**
  - HR + RR 15 minutely
  - BP + T 4 hourly or as indicated
  - contractions - continually; frequency, strength, length
  - vaginal loss - continually
- **Baby** - fetal heart rate (FHR) - if skilled:
  - towards end of each contraction for at least 30–60 seconds, or at least 5 minutely once actively pushing[1-3]
  - normal FHR 110–160.[3] **If abnormal, baby may be distressed**
  - it is common for FHR to drop during a contraction, but it should pick up again quickly
  - check mother's pulse simultaneously to differentiate between the two[3]

The birth

- **If feet or bottom presenting** instead of head, see Breech birth, p. 406
- **Perineum will stretch** as the head/presenting part comes down with contractions:
  - encourage woman to breathe gently/pant baby's head out in a slow and controlled way
  - have 'hands on' OR 'hands poised' on head and perineum[4]
  - warm compresses applied to the perineum may ↑ comfort and ↓ perineal tears[1,4,5]
- **Once head born** (note time):
  - no need to check for cord around neck[1]
  - do not rush to birth the body
  - wait for next contraction - head will turn sideways
  - with the next contraction, shoulders should gently emerge:
    - usually the anterior shoulder slips out first (symphysis pubis side), followed by posterior
  - support baby and lift onto mother's abdomen
  - **note time of birth**
  - dry baby and remove wet towels
  - cover with dry warm blanket + encourage skin to skin contact with mother
- **If shoulders do not birth** place a hand on either side of baby's head and apply gentle axial traction in line with baby's spine. If still not releasing, see Shoulder dystocia, p. 403
- **Get assistant to check baby** within 15 seconds:
  - tone, breathing, HR. See Newborn resuscitation, p. 390

Immediately after birth

- Give **IM oxytocin** (with consent) to mother
- **Wait at least 1–3 minutes or for cord pulsation to cease - then clamp and cut the cord:** do not clamp ‹ 1 minute unless baby needs resuscitating away from mother:
  - clamp 10 cm from baby's abdomen. Then place 2nd clamp 5 cm from the 1st (on placenta side)
  - cut cord between the clamps
- **Deliver placenta** using **Controlled cord traction** if skilled. If not skilled get MO/RSQ advice

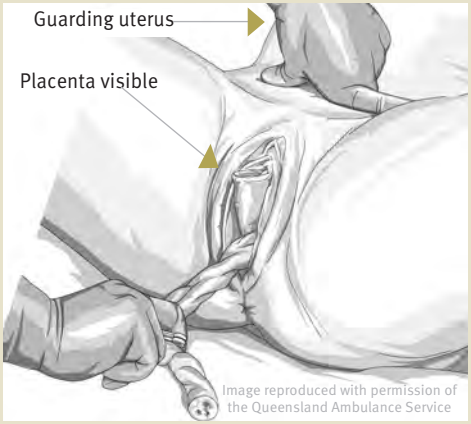
S4	Oxytocin			Extended authority ATSIHP/IHW/MID/RIPRN
ATSIHP and IHW must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	5 units/mL, 10 units/mL	IM	10 units	stat
Offer CMI: May cause nausea and vomiting				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,6]				

Controlled cord traction (CCT)[1]

- Check oxytocin has been given to mother
- Re-clamp cord closer to vaginal opening

WAIT for signs of separation before CCT

- Feel uterus rise in the abdomen + become firmer and globular (ballotable)
- Trickle or gush of blood from vagina
- Lengthening of the cord
- Cord does not retract with suprapubic pressure
- Woman may feel urge to bear down
- Placenta may be seen at vagina
- **Note:** avoid repeated palpation of uterus



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THEN

- Use 1 hand to guard uterus with gentle pressure just above the symphysis pubis (counter traction)
- Then, with other hand gently apply downwards traction of cord
- As placenta delivers, hold in both hands and gently turn to twist/tease out the membranes
- **If the placenta does not descend during 20–30 seconds** of CCT OR there is **resistance to CCT**:
  - stop pulling on cord - risk of tearing it or uterine inversion
  - hold cord loosely - without any pulling/traction, and wait
  - with next contraction, repeat CCT as above. **If still not coming › 30 minutes, consult MO/RSQ**

Post birth of placenta and membranes[1]

- Immediately check top of uterus/**fundus is firm and central**:
  - massage the uterus if needed to ensure it remains contracted - may be uncomfortable
- Note the time
- **Estimate blood loss:**[7]
  - if visual estimation › 300 mL, weigh pads/sheets for accurate assessment
  - if heavy or persistent or ≥ 500 mL at any time, see Primary PPH, p. 398
  - if ≥ 350 mL, consider misoprostol 800 microg to help prevent PPH if in low resource area. See Primary PPH, p. 398 for drug box
  - observe mother's vital signs for signs of haemorrhage eg ↑HR, ↓BP, ↑RR
- **Check placenta and membranes** if skilled:
  - if not skilled, send with woman when retrieved in pathology bucket
  - **if syphilis during pregnancy** - send placenta for histopathologic examination + syphilis PCR[8]
  - OR dispose as per mother's wishes (woman has right to take placenta home)

Placenta and membrane check[1]	
Placenta	• Complete or parts missing, general shape/appearance, any calcification, infarctions, evidence of abruption, succenturiate lobe
Membranes	• Complete or ragged, 1 amnion and 1 chorion, presence of vessels
Cord	• Insertion site; note if velamentous insertion (vessels in membranes) • 3 vessels - 2 arteries and 1 vein • Collect **cord blood** if: – mother is Rh D –ve/unknown, for group and direct antiglobulin test (DAT) (6 mL into EDTA tube + 5 mL into clotted blood tube) ± – preterm - FBC and blood cultures
Consult MO/NP/midwife if placenta looks incomplete, offensive odour (+ get culture swab), or any other abnormality noticed	

Post birth care[1]

- First **1–2 hours** post birth - do not leave the mother and baby alone:
  - continue skin to skin contact; encourage breastfeeding
  - avoid unnecessary mother-baby separation
- Ensure comfort and personal hygiene needs, offer food; encourage drinking and mobilisation

Post birth observations and care[1]	
15–30 minutely for 1st 2 hours	• Vital signs. If ↑T contact MO/NP promptly • Uterus (fundus) - should be firm and central (like a ball). If not, massage gently ± encourage to pass urine • Perineum + blood loss - be alert to a slow steady trickle
After 1st observations	• Offer to check for perineal/vaginal trauma/tears: – offer pain relief eg nitrous oxide + O_2 (Entonox®). See Labour 1st stage, p. 383 – using good lighting, gently examine the vaginal walls and perineum – control bleeding from any tears with direct pressure – do not attempt to repair unless experienced. Receiving hospital will attend
As needed	• Offer analgesia
Within 2 hours	• Empty bladder
Within 6 hours	• Do venous thromboembolism (VTE) risk assessment. See Qld Clinical Guidelines *VTE prophylaxis in pregnancy and the puerperium*
Rh D –ve blood group or unknown	• Take bloods for Kleihauer • Rh D immunoglobulin, p. 355 needed within 72 hours if baby's blood group positive/unknown (receiving hospital can do this)
Syphilis bloods if indicated	• Take bloods for **syphilis serology** if:[8] – not tested at 36 weeks – syphilis treated in this pregnancy (irrespective of treatment history) - also test baby at same time. Include on request form 'test in parallel with baby name' – preterm birth with most recent serology more than 4 weeks before birth – indicated following Identification of risk of syphilis, p. 352

5. Follow up

- As per MO/NP, who may consider retrieval after birth
- If not retrieved, observe woman for a minimum of 4 hours before discharge:
  - advise to return promptly if T elevated, increased bleeding, clots, pain or any other concerns

6. Referral/consultation

- As above

Newborn (neonatal) resuscitation

Recommend[1]

- **Ensure neonatal resuscitation equipment + medicines are checked/available for all births**
- At least 1 person should be responsible for the care of the baby only
- **Normothermia + ventilation are priorities in resuscitation**
- Ensure draft free area - 23–25⁰ (at least 26⁰ if ‹ 28 weeks). Pre-warm resuscitation cot/towels

Background[2]

- This topic is intended for facilities that do not have planned births
- Cyanosis is difficult to recognise in newborns. Colour is an unreliable indicator of oxygenation
- Also see Qld Clinical Guidelines *Neonatal resuscitation + Neonatal stabilisation for retrieval*

1. May present with

- Newborn immediately after birth

2. Immediate management[1-5]

- Call for help + contact MO/NP/RSQ (for neonatologist advice) urgently
- **Keep warm:**
  - **if ≤ 32 weeks, or very small/‹ 1500 g,** put in clear plastic bag, p. 391 up to neck **without drying:**
    - dry head + put on hat
    - put on resuscitation cot with overhead warmer if available. Place head towards clinician + **check** if needs resuscitation
    - if resuscitation not needed, put on mothers chest (in plastic bag) + cover with warm towel
  - **if › 32 weeks,** place baby **skin to skin on mothers chest**. Dry. Replace wet towel with warm dry towel. Cover head with hat/folded bedding

Check

- **Tone** - flexed/moving limbs, poor tone/floppy
- **Breathing/crying**
- **HR** - listen with stethoscope. If breathing, HR should be › 100 within 1–2 minutes after birth
- If tone + breathing effort good + HR › 100 - **resuscitation not needed**. Go to Care of newborn, p. 393
- If RR › 60, indrawing of chest, recession, retraction, grunting or nasal flaring - **may require ventilation support**. MO/NP/neonatologist will advise[4]

If weak/absent responses or not breathing

- Try stimulating by brisk + gently drying with warm towel (or via gentle touch through plastic bag)
- Gently ensure head and neck are supported in neutral position + airway open

If HR remains ‹ 100 and not breathing (or not adequate eg gasps)

- Place on back - head in neutral/sniffing position ± put 2 cm roll blanket/towel under shoulders to help positioning
- **Start bag-valve-mask ventilation within 1 minute of birth** 40–60 breaths/minute **(room air)**
- **Put pulse oximeter sensor on** baby's right hand or wrist (pre-ductal)

If ineffective ventilation ie HR ‹ 100, little/no chest movement, SpO_2 not increasing

- **Improve technique:**
  - check face mask fits well (over nose and open mouth), with minimal leak
  - check neck and jaw position
  - an oropharyngeal airway/LMA[6] may be useful if ≥ 34 weeks or › 2000 g
- **If adequate chest rise/fall, but SpO_2 not improving** - titrate O_2 to targeted SpO_2 (even if HR › 100)
- **If airway obviously blocked** by meconium, blood or secretions **OR little or no chest wall movement** despite strategies to improve technique, **briefly suction with care:**
  - 10–12 F suction catheter (measure from mouth to corner of jaw - insert no more than 5 cm from lips in term baby). Suction mouth then nostrils
  - few seconds only, no more than 100 mmHg

Effective ventilation will almost always be enough to resuscitate the baby
↑ HR is the primary measure of effective ventilation[5]

After 30 seconds of ADEQUATE ventilation, if HR ‹ 60 also start CHEST COMPRESSIONS[5,7]

- 3 compressions: 1 breath (90 compressions/minute). **Do continuously during IV access etc**
- O_2 100%
- IV access - via umbilical vein if skilled (preferred), otherwise Intraosseous, p. 55
- **If HR › 60 but ‹ 100:**
  - cease compressions. Continue ventilation 40–60 breaths/minute until spontaneously + effectively breathing
  - titrate O_2 to targeted SpO_2. See **Newborn life support flowchart**
- **If HR remains ‹ 60:**
  - MO/NP may order IV adrenaline (epinephrine) - repeated 3–5 minutely if HR remains ‹ 60
  - ± sodium chloride 0.9% (10 mL/kg) - IV push over several minutes

Preterm babies[8]

- **Keep warm. If ≤ 32 weeks (or ‹ 1500 g) resuscitate baby in clear polyethylene (plastic) bag**/sheet up to the neck eg zip lock bag, oven bag, NeoWrap® - **not over head**
  - keep in place until axilla T checked + other measures in place eg pre-warmed incubator
  - if no overhead warmer - try warm towel over plastic (replaced often), space blanket over plastic (cut to size), or 'skin to skin' in bag if stable (with any adult) + warm towel over top

- **Handle gently/skin care**
  - ↑ risk of damage to skin and internal organs
  - ensure good infection control eg handwashing
  - if umbilical catheterisation, use antiseptic sparingly. Apply to cord only (avoid skin)

3. Clinical assessment[9]

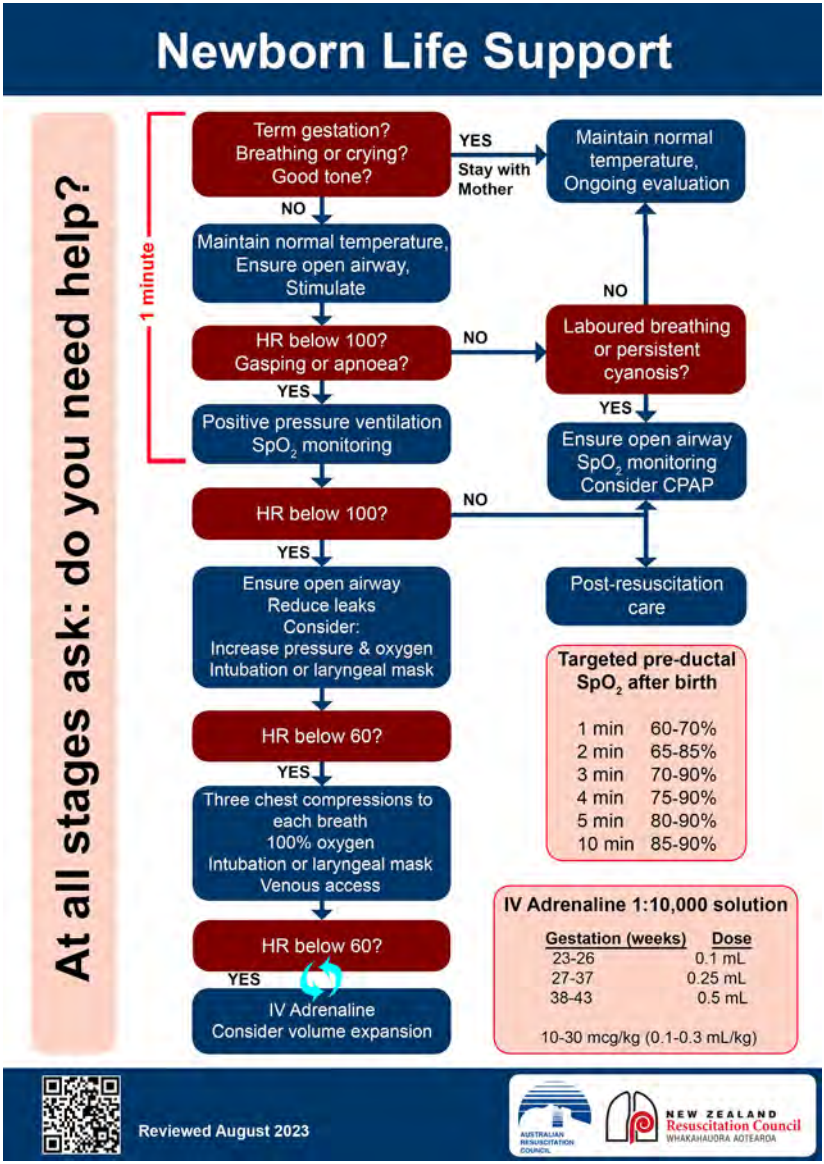
- Do Apgar score, p. 393 at 1 and 5 minutes after birth. Then 5 minutely until HR + breathing normal
- Check BGL - see Care of newborn, p. 393 for target BGL + further management
- MO/NP may consider:
  - FBC, blood cultures (from cord blood) + antibiotics, as resuscitation may be due to the onset of sepsis

4. Management[9]

- Prepare for retrieval in consultation with MO/NP/RSQ. Avoid leaving baby unattended

- **Post resuscitation:**[1]
  - **keep normothermic** - T 36.5–37.5
  - closely monitor SpO_2, HR, RR and respiratory effort, tone (use **neonatal** early warning tool):
    - **target SpO_2 after 10 minutes of age** - term 92–98%, preterm 90–95%
  - continue routine Care of newborn, p. 393 including vitamin K
- Offer support to the mother and family. Obtain consent for any treatment + keep informed - resuscitation of a baby will be distressing. Facilitate interaction with baby

Newborn life support flowchart[10]



5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Care of the newborn

Recommend[1]

- Skin to skin contact where possible for T, BGL + HR stability, and early breastfeeding

Background[2]

- It is normal to be cyanotic at birth - pink colouring begins soon after onset of breathing. Persistent blue discolouration in extremities is normal (acrocyanosis)
- Also see Qld Clinical Guidelines - neonatal. NEWT if available

1. May present with

- Newborn after birth

2. Immediate management

- **For immediate care of the newborn,** go to Newborn resuscitation, p. 390

3. Clinical assessment[2-4]

- **Keep with mother.** To keep warm, continue skin to skin contact:
  - put warm blanket over mother and baby (leave face uncovered)
  - if mother unwell, baby can be skin to skin on someone else's chest eg partner, family member
- Do **Apgar score** at 1 + 5 minutes if skilled[2]
- **15 minutely for 2 hours,** assess:
  - RR - normal 30–60/minute, positioning - for patent airway
  - colour - pink, pale, cyanotic, mottled
  - if any respiratory distress eg ↑WOB, ↑RR, nasal flaring, chest recession, expiratory grunt:[5]
    - may need respiratory support - **urgently consult MO/NP/RSQ/midwife**
- **Within 1 hour of birth, do:**[4,5]
  - HR - normal: preterm 120–160, term 110–160
  - T (axilla) - target 36.5–37.5
  - SpO_2 on right hand. Target › 10 minutes - see Newborn life support flowchart, p. 392

Apgar score - 5 minute score of 7–10 is normal[6,7]

	0	1	2
Heart rate	Absent	‹ 100	› 100
Respiratory effort	Absent	Irregular	Crying
Muscle tone	Limp	Some flexion	Active motion
Response to stimulation eg drying	Absent	Grimace	Grimace and cough
Colour	Blue, pale	Pink with blue extremities	Pink all over

- Be alert to **Symptoms of unwell baby**[2,8]
- Check if any **Risk factors for hypoglycaemia**
- Check for **problems that might impact baby** in antenatal record + alert MO/NP eg:[2,3]
  - risk factors for Group B Strep, p. 379. If present + antibiotics NOT given during labour or within 2 hours of birth **urgently consult MO/NP/RSQ - needs antibiotics within 60 minutes**
  - medications ± substance use
  - syphilis. If mother treated in this pregnancy (or limited/no antenatal care) suspect congenital syphilis. Do syphilis serology + IgM (do serology in mother at same time)[9]
  - HIV, hep B
  - Rh D –ve blood group
  - diabetes - including gestational

Risk factors for hypoglycaemia[8]	Symptoms of unwell baby[5,8]
Any of: • Preterm < 37 weeks • Weight < 2500 g or > 4500 g • T < 36.5 or unstable • Resuscitation at birth eg CPR or prolonged respiratory support • Inadequate feeding • Meconium stained liquor • Mother has diabetes (any type) • Mother taking medicines ie beta blockers (eg labetalol), beta agonists (eg terbutaline), betamethasone, oral hypoglycaemics • Family history of metabolic/endocrine disorders	**Any of:** • Unexpected need for resuscitation • Apnoea, cyanosis, bradycardia, hypothermia • Irregular/rapid breathing, respiratory distress • Poor tone/floppy • Poor feeding, lethargy, apathy • Sweating, pallor, irritability • Weak or high pitched cry • Jitteriness/persistent tremor • Seizures, altered LOC • Abdominal distension[2] • Non-specific eg baby not looking well
If any see Hypoglycaemia management	**If any do BGL + urgently consult MO/NP/RSQ** Could mean hypoglycaemia or infection

4. Management[2,3]

- Contact MO/NP/midwife early:
  - encourage breastfeeding within 30–60 minutes (or mother's feeding choice)[1]
  - do brief head to toe examination if skilled[3]
  - confirm baby's identification arm AND leg bands with the mother + put them on the baby
  - note first urine and meconium (black stool)
- **After at least 1 hour** skin to skin + 1st feed + if normal T:
  - bare weigh + length + head circumference
  - give with parental consent:[3]
    - vitamin K
    - RSV and hep B Immunisations, p. 542. **Note:** if mother is HBsAg +ve, baby must have HBIG **and** hep B vaccine on day of birth[10]
- **If unwell** - continuously monitor + document hourly until retrieved:[5]
  - HR, RR, SpO_2 (T + BP hourly)
  - colour, skin T + integrity eg bruises, rash
  - capillary refill time - on sternum or head (≤ 2 seconds)
  - alert/lethargic
  - tone - normal, hyper/hypotonic; movement - normal/abnormal
  - abdomen - soft, distended, masses, bowel sounds
- **If well** - after first 2 hours, check RR, respiratory distress, T, HR and colour **8 hourly/until retrieved**[4]

Unscheduled	**Phytomenadione** (Vitamin K, Konakion®)			
ATSIHP, IHW and IPAP must consult MO/NP				
MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	2 mg/0.2 mL	IM	**≥ 1.5 kg** 1 mg (0.1 mL) **‹ 1.5 kg** 0.5 mg (0.05 mL)	stat As soon as possible after birth
Offer CMI: Recommended for all newborns, including preterm, to prevent vitamin K deficiency bleeding				
Note: IM route preferred, however, ampoule can be given orally. Dose is different + needs repeating				
Management of associated emergency: Consult MO/NP/EM [11]				

Hypoglycaemia management

Well baby at risk of hypoglycaemia[8]

Heel prick sites

- Maintain T - skin to skin contact + keep baby with mother
- **Initiate feeding** within 30–60 minutes of birth, then **feed at least 3 hourly:**
  - if ‹ 35 weeks, discuss with MO/NP need for gavage feeds
- **At 1 hour of age** - consider prophylactic buccal glucose gel (have low threshold to give if › 1 risk factors)
- **Start BGL screening** via heel prick (use neonatal lancet):
  - 1st before 2nd feed (‹ 3 hours of age)
  - 2nd before 3rd feed (‹ 6 hours of age)
  - if **BGL ≥ 2.6** - continue BGL before every 2nd feed (at least 6 hourly)

Baby with hypoglycaemia - BGL ‹ 2.6 mmol

Check/validate BGL on i-STAT (do not delay treatment to do so) + urgently consult MO/NP/RSQ

BGL 1.5–2.5 and **otherwise well**

- If ‹ 35 weeks - MO/NP will advise
- If ≥ 35 weeks, give buccal glucose gel:
  - repeat BGL in 30 minutes
  - support ongoing feeds (breastfeeding preferred) + BGL before feeds

BGL ‹ 1.5 or unrecordable and/or **unwell or symptomatic**[5]

- If able give buccal glucose gel + feed while establishing other treatments
- MO/NP/RSQ may order:
  - IV access (umbilical vein if skilled, or intraosseous)
  - IV infusion glucose 10% 60 mL/kg/day
  - IV bolus glucose 10% 1–2 mL/kg
  - **if IV access difficult/delayed › 15 minutes:**
    - give IM/subcut glucagon 200 microg/kg
- Repeat BGL no later than 30 minutes after intervention
- Ongoing management as per MO/NP/RSQ

See Qld Clinical Guidelines *Hypoglycaemia - newborn*; Neonatal Medicines - NeoMedQ

Unscheduled	**Glucose gel** (Glutose 15®)			
ATSIHP, IHW and IPAP must consult MO/NP				
MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral gel	40%	Buccal	0.5 mL/kg	stat
Preparation: Draw up dose into enteral syringe. See NeoMedQ for dose/weight as needed				
Note: Only give if ≥ 35 weeks, able to feed orally, asymptomatic + otherwise well. Give before feed. Dry buccal mucosa with gauze swab. Apply with gloved finger and massage in. Can apply 1/2 dose to each side. **Feed immediately after administration - breast/EBM/formula** + assess effectiveness of feed [8]				

5. Follow up

- Newborn check by midwife/MO/NP within 48 hours

6. Referral/consultation

- If Aboriginal and Torres Strait Islander baby refer for BCG vaccine

Emergencies in labour and birth

Cord prolapse

Umbilical cord prolapse/presentation

Recommend[1,2]

- **Obstetric emergency**. The cord can be compressed, cutting off oxygen to the baby resulting in asphyxia or death

1. May present with[1,2]

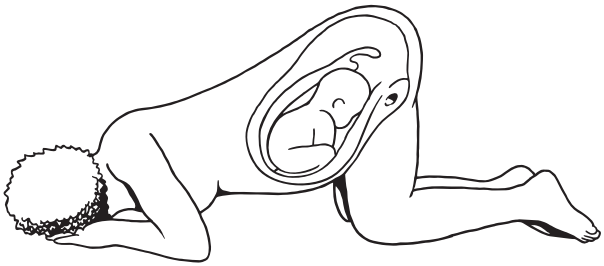
- **Cord prolapse:**
  - cord visible or palpable (smooth pulsating band) in or outside vagina
  - membranes have ruptured
- **Cord presentation:**
  - cord felt in front of presenting part of baby (on vaginal examination)
  - membranes usually intact - if membranes rupture, cord prolapse is inevitable
- ± fetal bradycardia or abnormal FHR - may be first indicator

2. Immediate management[1,2]

- Send for help + **contact MO/RSQ urgently.** Get midwife if available. **Stay calm**
- Note time
- Aim is to stop cord compression
- Listen to FHR (if skilled) - check mother's pulse simultaneously to differentiate between the two:
  - if FHR normal (110–160) cord is not compressed
  - keep mother in current position and get urgent advice
  - if mother is lying flat and FHR normal, put wedge under right hip to provide gentle lateral tilt and recheck FHR/mother's pulse following position change

Reducing cord compression

- Position in **knee-chest, face-down position** (see diagram) OR **exaggerated Sims position** - (left-lateral with pillow under right hip) ± lowering head of bed, so head lower than pelvis
- **If positioning does not stop compression, also put 2 gloved fingers into the vagina:**
  - gently push the presenting part of the baby upwards off the cord - **keep fingers there**
  - avoid putting pressure on cord
  - if the cord is outside of the vagina, attempt to gently replace into the vagina with a dry pad[1]
  - minimise handling as can cause vasospasm
- **Monitor FHR at all times if possible** - alter position of mother in accordance to FHR



- **MO/RSQ may advise bladder filling** to maintain elevation of the baby off the cord:[1]
  - insert IDC + empty bladder
  - run 500 mL of sodium chloride 0.9% into the bladder using an IV giving set
  - check that the giving set is a good fit with the catheter first, and that fluid can be squeezed into the bladder without leakage
  - clamp the catheter
  - the fingers holding the presenting part may possibly be withdrawn - confirm with MO/RSQ
  - discuss with MO/RSQ the timing to release clamp and amount of urine to drain
  - monitor fluid balance
- **Keep woman positioned** knee-chest face-down OR exaggerated Sims (more practical for transport)
- **If FHR not heard** - continue with above measures until an USS can be done

3. Clinical assessment

- Ask about:
  - this presentation, weeks pregnant, pregnancy problems
  - past obstetric/medical history
- Do:
  - vital signs
  - FHR - normal is 110–160
  - palpate contractions
  - assess liquor - clear, meconium stained, bloody

4. Management[1]

- Insert IVC eg 14–16 G
- Take bloods - FBC, group and hold
- Nil by mouth
- MO/NP/EM may order/advise:
  - tocolytics to suppress labour. See Preterm labour, p. 381
  - or, if birth imminent, continue labour and birth baby:
    - if birth, empty bladder first[1] + prepare for Newborn resuscitation, p. 390
- In isolated areas, if a woman presents with a cord prolapse, the baby may have already died. However, unless this is certain, it is best to act as above
- Provide emotional support for woman and partner/support person. Keep informed

5. Follow up[1]

- As per MO/RSQ

6. Referral/consultation

- As above

HMP Primary postpartum haemorrhage (PPH)

Recommend[1]

- Close monitoring + rapid response is critical. **Major blood loss can develop rapidly without warning in the absence of haemodynamic compromise**
- Visual estimation of blood loss often leads to underestimation. If visual estimation › 300 mL weigh pads/sheets for accurate assessment. Also consider nature + speed of blood loss + clinical findings

Background[1]

- **Common causes** - **T**issue - retained products/placenta/membranes, **T**one - uterus not contracting, **T**rauma eg of perineum/vagina or **T**hrombin - coagulation abnormalities **(4 T's)**
- Also see Qld Clinical Guidelines *Primary postpartum haemorrhage*

1. May present with[1]

- Excessive bleeding ≥ 500 mL immediately post birth or within the first 24 hours
- ± signs of shock:
  - pale, sweaty, restless, cool clammy skin
  - ↑ HR, ↓ BP, ↑ RR
  - capillary refill › 2 seconds
  - ↓ LOC

2. Immediate management[1]

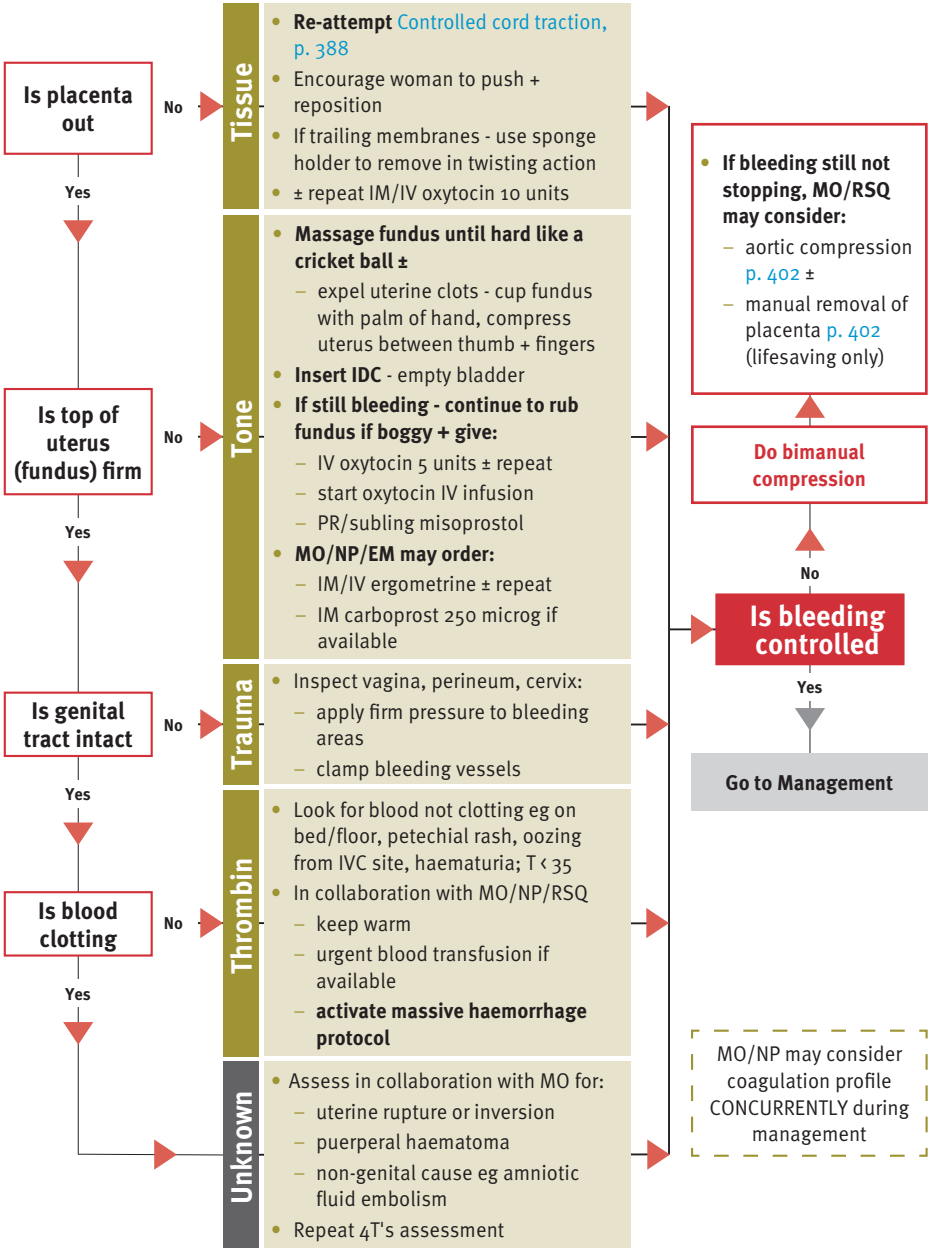
- **DRSABCD**
- Send for help + **contact MO/RSQ urgently.** Get midwife if available. **Stay calm**
- Assess rate + volume of bleeding
- Check oxytocin given after birth

Go to PPH flowchart (next page). **Think 4 T's and correct cause**

At same time - get assistant to

- **Lie woman flat**
- **O_2 10–15 L/minute**, regardless of SpO_2
- Keep warm
- **IVC x 2** eg 14–16 G or Intraosseous, p. 55
- **IV fluids - rapid** (warmed if possible) - Hartmann's or sodium chloride 0.9% 1–2 L
- **Insert IDC** - empty bladder
- **Vital signs** + SpO_2. Do BP 5 minutely
- **Monitor rate/volume of bleeding**
- **Urgent bloods**/i-STAT time permitting:
  - FBC, CHEM20, coagulation profile, blood gas, Ca + lactate, cross match
  - if available, use PoCT blood clotting analyser
- **IV tranexamic acid** (give as soon as possible, within 3 hours) - MO/NP/EM will order[1,2]

PPH flowchart[1]



3. Clinical assessment

- See **Immediate management**

4. Management[1]

- **Continue management + resuscitation in collaboration with MO/RSQ + monitor:**
  - vital signs - assess for shock
  - T 15 minutely (aim for T › 35)
  - fundal tone
  - blood loss. If practical weigh bloody linen, absorption pads eg blueys, pads
  - continuous cardiac monitoring
  - fluid balance - aim for urine output ≥ 30 mL/hour
- Offer analgesia. See Acute pain, p. 32
- Prepare for retrieval
- If placenta out, examine to see if intact
- **MO/NP/RSQ may activate massive haemorrhage protocol** as per local policy if actively bleeding and ANY of the following:
  - blood loss › 2500 mL
  - anticipated need for ≥ 5 units of blood in ‹ 4 hours OR haemodynamically unstable
  - evidence of coagulopathy

Bimanual compression[1,3]

- **With 1 hand:**
  - keeping fingers straight and thumb tucked in palmar side of index finger, insert hand into the vagina with palm facing woman's thigh
  - once fingers meet resistance roll the hand so palm is upward, and curl fingers into a fist
  - place fist in anterior fornix of the vagina and apply upwards pressure
- **With other hand:**
  - locate the top of the uterus (fundus)
  - deeply palpate to put the fingers behind the fundus
  - cupping the fundus, compress it firmly around the fist that is in the vagina
- **Keep compressed + evaluate effect. If effective, MO/RSQ may advise intrauterine balloon tamponade**

S4	Oxytocin			Extended authority ATSIHP/IHW/MID/RIPRN
ATSIHP and IHW must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	5 units/mL 10 units/mL	**IM**	10 units	stat
		IV	5 units	Inject over 1–2 minutes Repeat after 5 minutes if needed (max. 10 units)
			30 units	**Infusion** 83–167 mL/hour (5–10 units/hour)
Preparation: Infusion - dilute in 500 mL sodium chloride 0.9%				
Offer CMI: May cause nausea and vomiting				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,4,5]				

S4	Ergometrine			Extended authority ATSIHP/IHW/MID
ATSIHP and IHW must consult MO/NP - **may not give IV**				
RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	500 microg/mL	IM IV	250 microg	stat Repeat once after 2–3 minutes if needed
Preparation: IV - dilute to 5 mL with sodium chloride 0.9%. Inject slowly over at least 1 minute				
Offer CMI: May cause nausea and vomiting, consider antiemetic				
Contraindication: Retained placenta, preeclampsia, eclampsia, severe/persistent sepsis, hepatic or cardiac disease				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,6,7]				

S4	Misoprostol			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP. **IPAP may only give PR**. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 microg	PR/Subling	800–1,000 microg	stat
Offer CMI: May cause nausea, vomiting, fever, shivering, diarrhoea or transient BP changes				
Note: Use with caution if asthma, COPD - may cause bronchospasm				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,8]				

S4	Tranexamic acid			Extended authority ATSIHP/IHW/MID
ATSIHP and IHW must consult MO/NP. RIPRN and RN must consult MO/NP/EM				
MID may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1,000 g/10 mL	IV	1,000 mg (1 g)	stat Inject over 10 minutes If still bleeding after 30 minutes a 2nd dose is recommended
Preparation: Give undiluted. Use infusion device/pump. Rapid administration may cause hypotension, dizziness				
Contraindication: Active intravascular clotting. Use with caution if predisposition to thrombosis				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [1,9]				

Manual removal of the placenta - **life-saving measure only on MO/RSQ advice**[1,10]

- MO/NP/EM may order:
  - opioid analgesia + nitrous oxide + O_2 (Entonox®)
  - a single dose of antibiotics - ampicillin or first-generation cephalosporin
- IDC to empty bladder
- Use 1 hand to follow the umbilical cord through the vagina, cervix and lower uterine segment to find the maternal-placental interface
- Keep the uterine fundus in position with the other hand - through the mother's abdomen
- Gently separate the placenta from the uterus with your hand using a side-to-side motion until the placenta has completely separated
- If the opening of the cervix is too small to fit the clinicians hand, MO may order a relaxant eg GTN
- If there is a small area where the placenta is very adherent to the uterus, use your fingers to slowly and persistently attempt to remove
- When placenta removed massage fundus to promote uterine contraction

Uterine inversion[1]

- **Contact MO/RSQ urgently** who may advise:
  - stop oxytocin infusion, as replacement requires relaxed uterus ±
  - subling GTN 400 microg/spray, IV/subcut terbutaline 250 microg, or IV magnesium sulfate 4 g infused over 5 minutes

Aortic compression[10] (if MO/RSQ advises)

- Aim is to conserve blood by cutting off supply to pelvis via compression:
  - place left fist just above and to the left side of the woman's umbilicus
  - before exerting pressure, feel femoral artery for a pulse using right hand
  - slowly lean over woman to increase pressure over aorta
  - check femoral pulse is now non-palpable - adjust position of fist as needed
  - keep monitoring femoral pulse while aorta is being compressed

5. Follow up

- **Once stable** support skin to skin contact with mother and baby + help with breastfeeding
- Offer debriefing to family + staff as needed

6. Referral/consultation

- As above

Shoulder dystocia

Recommend[1,2]

- **Obstetric emergency**
- **Do NOT:**
  - use downward or excessive pulling of the baby's head - can cause injury to baby
  - do an episiotomy unless your hand is unable to enter the vagina for internal manoeuvres. It will not relieve the bony obstruction
  - apply pressure to the top of the uterus - can cause uterine rupture

1. May present with[1,2]

- Shoulder does not birth with normal gentle axial traction of baby
- Difficulty with birth of face and chin
- When head born, it stays tight against vulva, or retracts - turtle-neck sign
- Baby's head fails to restitute (turn)

2. Immediate management[2,3]

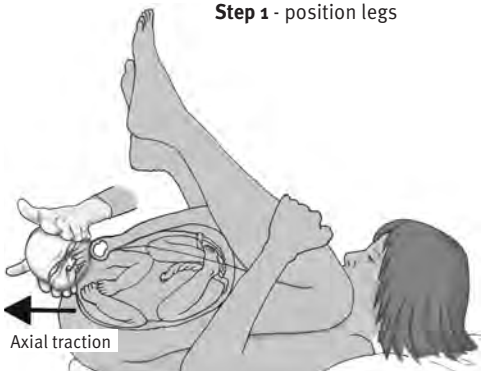
- Send for help + **contact MO/RSQ urgently.** Get midwife if available. **Stay calm**
- Note **time head born**
- Aim for birth within 5 minutes - if possible
- Ask mother to **stop pushing** - can increase impaction
- Try changing mother's position to help release shoulder
- Go to **STEP 1**

STEP 1 Position legs *McRoberts*[2,3]

- Lie flat, remove pillows, move buttocks to edge of bed
- Bring **knees to chest.** Hyper-flex as far as they can go, so **buttocks lift off the bed**
- Hold legs in place (assistant to do)
- Apply gentle routine axial traction (in line with baby's spine) - same as during a normal birth
- Ask mother to push with next contraction[3]

If top shoulder NOT released go to STEP 2

Step 1 - position legs



If you are by yourself, go to step 3 - all fours

STEP 2 Apply suprapubic pressure[2]

- Keep **knees to chest** as above
- Get assistant to:
  - stand on the side of the baby's back
  - **put hand just above the mother's symphysis pubis**, from side of baby's back (NOT top of uterus)
  - if unsure where back is, choose most likely side (can try other side if not working)
  - **apply pressure in a downward and lateral direction** - continuous or rocking 'CPR-like' motion, compressing baby's shoulder to rotate towards the baby's chest
- **At the same time:**
  - apply **gentle** axial traction to baby's head + ask mother to push with next contraction

If top shoulder NOT released go to STEP 3

Step 2 - suprapubic pressure

STEP 3 Roll onto all fours[2]

- Position on all fours, with hips and knees flexed (like a reverse McRoberts)
- Apply **gentle** axial traction to baby's head to deliver the top (posterior) shoulder
- Ask mother to push with next contraction[3]

If top shoulder NOT released go to STEP 4

Step 3 - all fours

Images for step 1–3 adapted from Remote Primary Health Care Manuals. Women's Business Manual (7th ed); 2022. Images 1.42, 1.43 & 1.44 www.remotephcmanuals.com.au CC-BY-NC 4.0

STEP 4 Try internal manoeuvres[2] (if woman consents)

- Keep in all fours position **OR** lie in knees to chest position (McRoberts)
- **Insert whole hand into vagina - in sacral hollow (buttocks side):**
  - scrunch up hand like trying to fit it into a tin of Pringles® or putting on a tight bracelet (fingers compressed and thumb tucked into palm)
  - will be a tight fit

next page

Step 4 - internal manoeuvres - with hand in vagina (**note:** diagrams below are if woman on back)

Deliver posterior arm[2]

AND/OR

Internal rotation[2]

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- Feel across baby's chest for its arm
- **If arm FLEXED:**
  - grasp baby's forearm (with fingers and thumb) and sweep it across the baby's face to deliver the arm
  - use action like putting your hand up in class
- Once arm delivered, apply gentle traction to deliver the rest of the body

---

- **If arm NOT FLEXED** (ie straight), **flex first** by:
  - locating the elbow, then
  - use your thumb to apply pressure to the antecubital fossa - to flex elbow in front of the baby's body
  - then proceed as 'if arm is FLEXED' above

- Place fingers **behind** baby's posterior shoulder (mothers buttocks side):
  - push to rotate 20–30° in the direction of baby's chest
- **If not working try:**
  - pressing on the other side **in front** of posterior shoulder, to move in the opposite direction
  - changing the hand you are using
  - getting assistant to apply suprapubic pressure to help rotation - in the same direction as you

If birth NOT achieved go back to STEP 1

- Continue rotating through each step while seeking expert help
- Be guided by MO/RSQ

3. Clinical assessment

- See **Immediate management**

4. Management[3]

- After baby born:
  - be prepared for Primary PPH, p. 398 - common after shoulder dystocia
  - baby will require resuscitation. See Newborn resuscitation, p. 390
  - continue to manage woman as per Imminent birth, p. 386
  - note which area/shoulder was trapped to assess for damage
- MO/RSQ will arrange for retrieval to neonatal unit
- Keep mother informed of what is happening
- If outcome of shoulder dystocia results in neonatal injury or death, provide emotional support to mother and partner/family

5. Follow up

- As per MO/RSQ

6. Referral/consultation

- As above

Breech birth

Recommend

- Manage a preterm breech the same as if at term[1]
- Avoid traction/pulling on the baby's trunk. Can cause arms to go around back of neck and complicate the birth[2]

Background[2]

- Once buttocks have passed the perineum, significant cord compression is common
- The Burns-Marshall technique (grasping the feet of the baby who has delivered to the nape of the neck and sweeping up in a wide arc to deliver the head) is **not advised.** Can cause overextension

1. May present with[2]

- Baby's buttocks/feet are coming first during birth

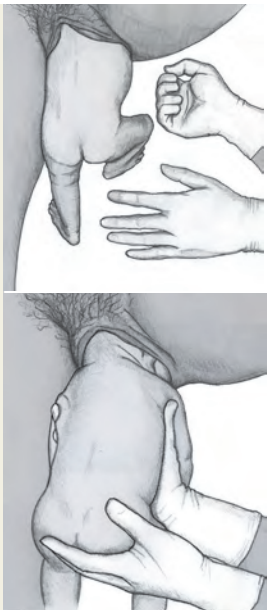
2. Immediate management[2]

- Send for help + **contact MO/RSQ urgently.** Get midwife if available. **Stay calm**
- During birth:
  - **semi-recumbent or all fours position** (consider semi-recumbent position if assistance needed)
  - **ensure baby's back stays opposite to mothers back:**
    - if baby's trunk looks like it is rotating to the sacro-posterior position (baby's back to mother's back) controlled rotation may be needed
  - **only handle baby over bony prominences** (only as needed)
  - keep mothers bladder empty where possible

- In most cases the baby will birth spontaneously/without help

  Keep HANDS OFF as much as possible

- **When buttocks seen at vagina:**
  - note time
  - encourage mother to push during contractions
  - allow baby to birth by itself
  - keep hands off - do not pull baby
  - if NOT descending **urgently consult MO/RSQ**
- **When umbilicus visible:**
  - note time
  - avoid handling cord, can cause vasospasm
  - If legs still extended/in vagina:
    - release by applying gentle pressure on the posterior knee towards the baby's abdomen (flex knee) and then laterally (lateral rotation of hip)
- **Gently support the body as the head is born**



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Signs assistance needed[2]

- Poor baby condition eg poor colour, tone
- No forward movement of the baby with a uterine contraction and maternal effort (pushing)
- Delay eg due to extended arms/neck:
  - **› 3 minutes** from birth of umbilicus to head
  - **5 minutes** between the birth of the buttocks to head

Assistance

- **If arms do not birth spontaneously**
  - use Løvsett's manoeuvre (below):
    - **aim is to** bring the posterior shoulder of the baby into the curve of the mothers sacrum, then rotate this posterior shoulder in the direction of the baby's back to anterior and inferior of the mothers symphysis pubis, allowing the release of the arm across the baby's face
    - repeat process on the other shoulder and arm of the baby

Løvsett's manoeuvre to release arms[2]

- **Gently hold baby around the thighs** - place thumbs on buttocks and first finger on symphysis pubis (encircling the hips) - **Image 1**
- **Rotate baby** keeping the back anterior, until a shoulder is under the mother's symphysis pubis
- **Sweep the arm** (nearest to symphysis pubis) down across the chest (toward the umbilical cord) and out - **Image 2**
- **Following release of the 1st arm:**
  - rotate baby 180º keeping back anterior
  - the 2nd arm becomes upper most
  - release this arm as per the 1st
- **After both arms released:**[1]
  - support baby until nape of neck becomes visible
  - use the weight of the baby to encourage flexion of the head
  - gently support baby as head is birthed

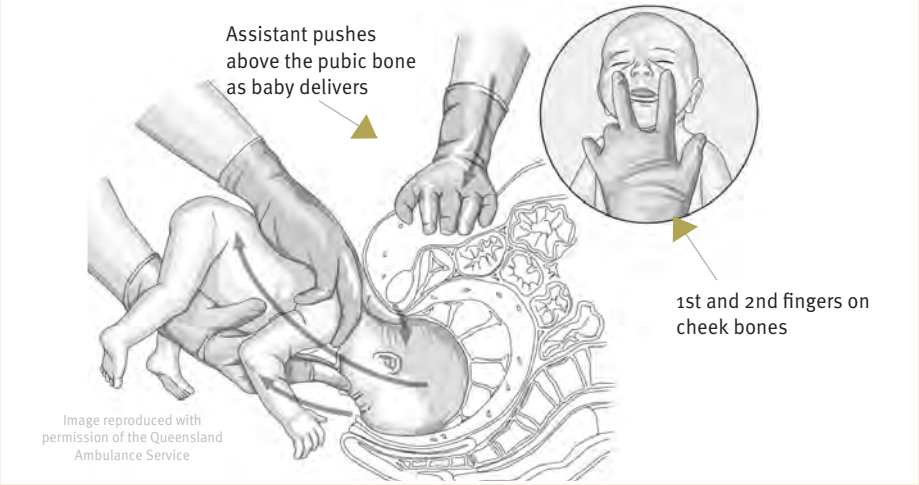
Image 1

Image 2

- **If head does not birth spontaneously**[2]
  - get assistant to apply suprapubic pressure to the mother to assist flexion of the head
  - if head still not birthing, use **Mauriceau-Smellie-Veit manoeuvre** (next page)
  - **do not allow the head to get de-flexed** eg do not pull baby

Mauriceau-Smellie-Veit manoeuvre[2]

- Support baby's body on the under surface of your dominant forearm:
  - place 1st and 2nd fingers of your hand on the cheekbones of the baby (no fingers in mouth)
- With your other hand:
  - apply pressure to the occiput (back of baby's head) with the middle finger
  - place the other fingers on the baby's shoulders to promote flexion of the head (keep the chin on the chest)
- Deliver baby in an arc towards the mother's abdomen
- Ask assistant to apply suprapubic pressure to the mother to aid flexion



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3. Clinical assessment

- See **Immediate management**

4. Management

- Baby may require resuscitation. See Newborn resuscitation, p. 390
- Once birthed, continue to manage woman as per Imminent birth, p. 386

5. Follow up

- As per MO/RSQ

6. Referral/consultation

- As above

HMP Secondary postpartum haemorrhage (PPH)

Background[1-3]

- **Includes mild increase in lochia to life-threatening bleeding.** Causes include eg infection, retained products, uterus not involuting, trauma

1. May present with[2,3]

- Abnormal or excessive bleeding 24 hours–12 weeks after birth (could be prolonged slow trickling with clots) ±
  - signs of infection eg fever, pelvic pain, offensive vaginal discharge
  - signs of shock eg:
    - ↓ LOC, restlessness
    - cool, clammy skin, sweating
    - mottled or ashen appearance

2. Immediate management[4]

ALERT if substantial ongoing bleeding **or shock** treat immediately - same as Primary PPH, p. 398

- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment[2-6]

- If haemodynamically stable, continue as below
- Get midwife/MO to assess woman whenever possible
- **Ask about:**[5]
  - **blood loss** - previous + ongoing - clots, amount, colour; has bleeding stopped at all since birth
    - **note:** bleeding that soaks through at least 1 pad/hour ± blood clots ≥ egg size = excessive bleeding
  - **signs of infection** - eg offensive vaginal discharge, feeling unwell, fever, rigors, nausea, vomiting, low abdominal/pelvic pain, scar pain from caesarean or perineal wound
- **Get obstetric history, including:**
  - parity, labour + birth details/date (± check birth details/discharge summary):
    - vaginal birth/caesarean
    - were placenta + membranes complete, any tears/sutures
    - any interventions needed for bleeding (PPH) eg misoprostol, blood transfusion
    - complications eg manual removal of placenta, prolonged ROM/labour, fever in labour
- **Do physical examination, including:**
  - palpate abdomen - uterus size + tenderness
  - urinalysis + MSU for MCS if signs of infection
  - if › 6 weeks post birth, pregnancy test. If +ve consider Ectopic pregnancy, p. 357
  - bloods/i-STAT - FBC, clotting profile, FBC, EU, CRP, lactate
  - if T ≥ 38, blood cultures
  - take swabs:[1]
    - high + low vaginal (+ episiotomy/tear sites/caesarean wound) for MCS
    - gonorrhoea, chlamydia + trichomonas PCR. See STI/BBV tests, p. 433

4. Management[1-4,7]

- Monitor closely - vital signs + amount/rate of blood loss
- **Consult MO/NP/EM promptly (urgently if unwell) who may order/advise:**[6]
  - antibiotics ± uterotonics eg misoprostol, or tranexamic acid
  - ± retrieval/hospitalisation for USS/surgery. Where possible keep mother + baby together
  - sterile speculum vaginal examination - **if skilled + woman consents:**
    - look for bleeding source + infected tears on vulva/perineum
    - cervix - any discharge, os open/closed. If tissue protruding, use sponge forceps to remove

5. Follow up

- If not retrieved/hospitalised, advise to:
  - be reviewed next day or sooner if bleeding restarts/gets heavier/fever/unwell or concerned
  - see MO/NP/midwife at next clinic
- Follow up test results

6. Referral/consultation

- As above

HMP Mastitis or breast abscess

1. May present with

Mastitis[1]	• Red, swollen, painful segment of breast, may feel hot to touch • 'Flu-like' systemic symptoms eg fever, chills, tachycardia + general malaise
Breast abscess[2]	• Severely swollen, painful lump, oedema in overlying skin • **Note:** initial systemic symptoms + fever may have resolved or resolve + recur

2. Immediate management

- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment

- **Ask about:**[1,2]
  - systemic symptoms
  - breast pain, redness, swelling, hardening of specific area - when did it start, is it getting worse/spreading. **Note:** worsening redness + hardening of specific area ± spreading - may indicate bacterial mastitis
  - other symptoms eg nausea, vomiting, fatigue
  - age of baby
- **Ask about feeding:**[2,3]
  - breastfeeding ± other eg formula/bottle feeding
  - how often - usual 8–12 times/day, skipping feeds/cutting feeds short
  - able to feed from affected breast
  - if expressing - how often, pump or hand
  - use of nipple shield
  - any nipple damage or pain during feeds

- **Offer to examine breasts.** Look for:
  - redness/swelling
  - signs of abscess
- **Check baby while breastfeeding:**
  - correct positioning + attachment (if skilled):
    - mouth is opened wide against breast, with nipple + surrounding breast in mouth
    - deep jaw movements, cheeks are not sucked in
    - milk transfer is evident ie consistent swallowing seen/heard
- **Check baby is getting enough milk:**
  - alert, mostly happy
  - ≥ 6 wet nappies/24 hours
  - gaining weight:
    - weigh baby bare - check against previous weight, should ↑
    - plot on growth chart
  - see Qld Clinical Guidelines *Establishing breastfeeding*, Appendix C as a guide as needed

4. Management[1,2]

- Offer cold pack + ibuprofen. See Acute pain, p. 32
- **If suspected abscess** consult MO/NP - needs incision + drainage ± retrieval
- **Mastitis:**
  - get advice from lactation consultant, midwife or child health nurse if possible
  - advise **Management strategies** to ↓ inflammation + keep milk moving - start today
  - be supportive, encourage woman to continue breastfeeding + reassure it is safe for baby to continue to breastfeed/have breast milk, even if taking antibiotics
- If suspected bacterial mastitis **OR** symptoms are not improving in 12–24 hours with **Management strategies**, give antibiotics:[2,4]
  - flucloxacillin **OR**
  - cefalexin if hypersensitivity to penicillins eg rash **OR**
  - clindamycin if anaphylaxis or immediate reaction to penicillins

Management strategies[1,3]

- Maintain unrestricted breastfeeding (feeding in response to baby's cues) or maintain regular pumping routine if baby is not feeding at the breast
- Hold baby skin to skin
- Cool packs
- Ibuprofen + paracetamol if needed
- Ensure attachment correct to help milk flow
- **Avoid:**
  - **increased milk removal** eg expressing/pumping
  - nipple shields where possible
  - deep massage/massaging out lumps
- Advise rest, fluids + nutrition
- Wear a well fitting/supportive bra
- Gentle warmth to breast just before a feed (not at other times), light touch/gentle stroking of breast can help with milk flow

S4	Flucloxacillin			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	500 mg qid	5–10 days Stop at 5 days if resolved
Offer CMI: Take on an empty stomach ½ hour before or 2 hours after food. May cause diarrhoea, nausea or thrush. Safe in breastfeeding. May cause loose bowel actions in baby. Can cause cholestatic hepatitis				
Contraindication: History of cholestatic hepatitis with dicloxacillin or flucloxacillin. Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [4,5]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	500 mg qid	5–10 days Stop at 5 days if resolved
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush. Safe in breastfeeding. May cause loose bowel actions in baby				
Note: If renal impairment seek MO/NP/EM advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [4,6]				

S4	Clindamycin			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN
ATSIHP, IHW and IPAP must consult MO/NP. RN must consult MO/NP/EM				
MID and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	150 mg	Oral	450 mg tds	5–10 days Stop at 5 days if resolved
Offer CMI: May cause rash, diarrhoea, nausea, vomiting or abdominal pain. Take with a full glass of water. Can cause severe diarrhoea (colitis) due to *C. difficile*. Safe in breastfeeding. May cause loose bowel actions in baby				
Contraindication: Allergy to lincomycin				
Management of associated emergency: Consult MO/NP/EM. See Anaphylaxis, p. 80 [4,7]				

5. Follow up

- Advise to be reviewed daily, or sooner if concerned, check/monitor:
  - baby is feeding adequately, number of wet/dirty nappies + gaining weight
  - signs of abscess - contact MO/NP
  - if no improvement in 12–24 hours give antibiotics[4]
- If antibiotics given + no improvement after 48 hours - consult MO/NP/EM, who may consider milk culture/MCS[2]

6. Referral/consultation

- Offer referral to lactation consultant, midwife, child health nurse if available
- Australian Breastfeeding Association Helpline 1800 686 268 https://www.breastfeeding.asn.au/LiveChat (limited hours)

Postnatal check

Recommend

- Offer evenly spread postnatal checks around day 3, days 7–14 + 6 weeks, aim for 4 checks[1,2]
- For baby - use *1 to 6 weeks Health check* form + give Immunisations, p. 542 from 6 weeks. See *Chronic Conditions Manual* + *Health check* form

1. May present with

- Mother and baby after birth

2. Immediate management

Not applicable

3. Clinical assessment[1]

- At each check, ask about mother's general health/any concerns + give her the opportunity to talk about her birth experience
- **Check pregnancy health record + birth details:**
  - get discharge summary from hospital
  - vaginal or caesarean birth, gestation, estimated blood loss
  - mental health/emotional wellbeing - current/previous conditions[3]
  - **Antenatal issues** eg hypertension, preeclampsia, gestational diabetes, RHD, anaemia
  - pathology results:
    - rubella - if non-immune check MMR vaccine was given after birth
    - STIs needing follow up for mother + baby eg syphilis[4]
- **Ask about:**[1-3]
  - breastfeeding/formula, any concerns, breast pain
  - baby sleeping + settling, where are they sleeping
  - passing urine, any incontinence, UTI symptoms
  - bowels, any incontinence/constipation
  - vaginal bleeding/discharge - colour, amount, any odour
  - healing of any perineal/caesarean wound, pain + hygiene
  - other eg headache, fatigue, back pain, uterine tenderness
  - substance use
  - emotional wellbeing - offer/do screening between 6–12 weeks + repeat anytime as indicated eg EPDS or Kimberley Mum's Mood Scale https://kahpf.org.au/kmms
  - Domestic and family violence, p. 232 - repeat antenatal screening as indicated
- **Do vital signs +**
  - look for signs of anaemia - pallor, fatigue, SOB - check Hb if concerned
  - legs/signs of DVT, p. 119
  - urinalysis if UTI symptoms
  - offer to check perineal/caesarean wound if concerns
  - CST if due, can be self-collected around 6 weeks
  - **note:** abdominal palpation to assess fundus is not needed, unless there are concerns

4. Management

- Consult MO/NP/EM if:
  - abnormal vaginal discharge/blood loss eg:[5]
    - soaking › 1 pad/1–2 hours
    - amount suddenly ↑ or large clots
    - suddenly changes to bright red
    - smells
  - unwell eg abdominal pain, fever, dizzy, weak, sweaty, SOB, new cough[6]
  - perineal/caesarean wound looks infected
  - Hb ≤ 110 g/L
- Follow up **Antenatal issues** + offer **Postnatal support/advice** as appropriate. See Qld Clinical Guidelines as needed

Antenatal issues	Follow up
Hypertension or preeclampsia[7]	• Advise to have MO/NP review at 6 weeks. May also need yearly BP check, serum lipids + BGL
Syphilis treated in pregnancy (regardless of adequacy of treatment)[4]	• In collaboration with QSSS: – do syphilis serology at 3, 6 and 12 months. Test baby at 3 + 6 months – if syphilis (any stage) diagnosed ‹ 3 months postpartum, assess baby for congenital syphilis – at each opportunity, review baby for signs of syphilis eg rash, hepatomegaly, rhinitis, lymphadenopathy
Gestational diabetes[8]	• OGTT at 6–12 weeks to screen for persistent diabetes + lifelong screening at least 3 yearly. If contemplating another pregnancy do yearly OGTT/HbA1c
RHD[6]	• Check if taking anticoagulation medication • Confirm next dose of secondary prophylaxis (if needed) • Advise MO/NP review at 6 weeks + check cardiac review arranged • Discuss importance of long acting contraception, planning pregnancies ideally 2 years apart

Postnatal support/advice	
Safer infant sleep[9]	• **For every sleep remember - easier to breathe, safer to sleep:** – place baby on their back + keep head/face uncovered – keep sleep space clear + in same room as parents/carer for first 6–12 months • Smoke free after birth
Infant feeding[10]	• Breastfeeding is recommended. Encourage unrestricted breastfeeding in response to baby's early feeding cues. If formula feeding - safe use/preparation/sterilisation
General care[1,2]	• Support available eg parent groups • Contraception options, p. 416 + resuming sex as guided by woman's desire/comfort • After pains, fatigue, sleeping, perineal care, pelvic floor exercises • Substance use, no alcohol if breastfeeding, nutrition, physical activity • If constipation - advise diet, ↑ fluid intake ± gentle laxative • Immunisations for baby from 6 weeks

5. Follow up

- As per individual needs

6. Referral/consultation

- As required - offer referral to midwife, child health nurse, mental health clinician, social worker

7

Sexual and reproductive health

Contraception

Contraception options

Recommend

- **Only condoms protect against STIs** - encourage use and easy access
- If a person requests contraception urgently, clarify if they need emergency contraception after unprotected sex

Key resources[1]

- **True Relationships and Reproductive Health** (Qld) https://www.true.org.au/
  - contraceptive choices, fact sheets
  - education and training for health professionals
- **Family Planning Alliance Australia** https://www.familyplanningallianceaustralia.org.au/
  - contraceptive choices, fact sheets, handouts eg *How effective is my contraceptive method*
- **The UK Facility of Sexual & Reproductive Healthcare (FSRH)** https://www.fsrh.org/home/
  - Quick Start - starting contraception immediately regardless of timing
  - specific population advice eg › 40 years, young people
  - switching methods of contraception safely
  - UK Medical Eligibility Criteria for Contraceptive Use (UK MEC)

Contraception options in order of effectiveness (%)[2]

Offer fact sheet

› 99% **Set and forget**	**Contraceptive implant** eg Implanon®	• Lasts 3 years	• Long-acting reversible contraception (LARC) • Can be removed at any time; immediately reversible • Insertion and removal by trained clinician
	Hormonal IUD eg Mirena®, Kyleena®	• Lasts 5 years	
	Copper IUD	• Lasts 5–10 years	
	Vasectomy, tubal ligation	• Permanent	
93–99% **Works well if used 'perfectly' every time**	**Contraceptive injection** Medroxyprogesterone eg Depo Provera®		• 12 weekly injections
	Vaginal ring eg NuvaRing®. Check PBS eligibility		• 3–4 weekly insertion/ removal by woman
	The pill - combined oral contraceptive pill (COCP)		• Daily pill
	The mini pill - progestogen-only pill (POP)		
76–99% **Less effective methods**	**Condoms** external/ internal	**Fertility awareness** **Pulling out**	**Diaphragm**

- **Lactational amenorrhoea** is a contraception option if breastfeeding. It is 98% effective if ALL of the following are met: **1.** Fully breastfeeding (no other food/milk supplements) **2.** ‹ 6 months since birth **3.** Periods have not returned since birth[3]

HMP Medroxyprogesterone
Depo-Provera®, Depo-Ralovera®

1. May present with

- Request for 'Depo injection' for contraception

2. Immediate management Not applicable

3. Clinical assessment[1]

- Initial assessment and annual review must be done by MO/NP
- **If returned for 12 weekly injection** ask about:
  - bleeding pattern changes, side effects
  - changes in health eg angina, heart attack, stroke/TIA, breast cancer, liver disease
- Offer STI/BBV check, p. 430 + check if CST due (offer as appropriate)

4. Management[1]

If 1st dose MO/NP order needed	• Give as per order. MO/NP will advise when effective and if need for pre ± follow up pregnancy test. May consider Quick Start (off label)[2]
If 12 weekly injection due	• Can be given 14 days early or late and still be effective • **Administer UNLESS:** – › 12 months since MO/NP review OR changes in health as above - MO/NP review needed. Consider phone consult with MO/NP as an interim so contraception can continue • **Refer to next MO/NP clinic if reports:** – unwanted side effects **OR** frequent and prolonged bleeding (+ do pregnancy + STI/BBV tests, p. 433). Can still have injection if they choose – if they choose not to have the injection today, advise to use condoms until reviewed
If › 14 weeks since last injection - no longer effective	• If unprotected sex in the last 5 days offer Emergency contraception, p. 424 • Do pregnancy test. **Note:** an early pregnancy may not show up. If –ve (or inconclusive) **consult MO/NP for new order** • If given, advise it takes 7 days to become effective. Use condoms or do not have sex during this time. Do pregnancy test again in 4 weeks - use recall system

S4	Medroxyprogesterone eg Depo-Provera®, Depo-Ralovera®			Extended authority ATSIHP/IHW/RIPRN/SRH
ATSIHP, IHW and RN must consult MO/NP or give on current (‹ 12 months) written order				
RIPRN and SRH may proceed if ‹ 12 months since MO/NP initial prescription				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	150 mg/mL	deep **IM** (shake first)	150 mg	Once every 12 weeks ± 14 days
Offer CMI: May cause irregular periods, spotting or amenorrhoea, weight gain, headaches, mood changes, breast tenderness, ↓ libido or acne. **Note:** gluteal site preferred. Can give in deltoid if deep adipose tissue in gluteal area. Do not rub injection site				
Contraindication: Breast cancer. **Get specialist advice if** IHD, stroke/TIA, liver disease, multiple risk factors for CVD eg smoking, diabetes, hypertension, obesity, dyslipidaemia				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

- Offer fact sheet on medroxyprogesterone acetate (DMPA) eg https://www.true.org.au/fact-sheets. **Note:** may have delayed return to fertility after stopping[1]

5. Follow up

- Advise/recall for 12 weeks or for next MO/NP clinic if annual review due

6. Referral/consultation

- As above

HMP Progestogen-only implant

1. May present with[1]

- Request for new/replacement contraceptive implant eg Implanon®

2. Immediate management Not applicable

3. Clinical assessment[1]

- Discuss the advantages and disadvantages of having an implant[1-3]
- If no clinician trained in insertion/removal, refer as appropriate

Advantages	• Extremely effective (99.95%) • Long acting - effective for 3 years • Cost effective, no pills, no injections • No effect on bone mineral density - can use any age from menarche to menopause • Safe to use immediately after birth, during breastfeeding and at time of ToP • Periods may stop (22%). May improve painful periods • Ovulation occurs within weeks of removal
Disadvantages	• Altered bleeding patterns eg irregular, prolonged or periods stopping • Needs procedure for insertion + removal. Deep insertion can result in implant migration • Scarring at insertion site. If removal difficult there may be extra scarring • Benign ovarian cysts • Other adverse effects eg headaches, mood changes, weight gain, breast tenderness, loss of libido, new onset acne
Offer fact sheet eg https://www.true.org.au/clinic/health-information/contraception/contraceptive-implant--implanon-nxt-- **Note:** does not protect against STIs	

- **Assess for precautions** - if any, consult MO/NP/EM:[1]
  - unexplained vaginal bleeding, past breast cancer, ischaemic heart disease, stroke or TIA developing during use, or liver condition eg cirrhosis, tumour
  - for full list of precautions see https://www.fsrh.org/Public/Standards-and-Guidance/uk-medical-eligibility-criteria-for-contraceptive-use-ukmec.aspx
- **Note:** if ulipristal emergency contraception (EC) given, wait for 5 days before inserting implant (EC won't be effective otherwise). Advise to use condoms/abstain from sex for 7 days after insertion[4,5]
- Do pregnancy test (**note:** an early pregnancy may not show up. If pregnancy cannot be excluded, advise to have a follow up test 4 weeks after insertion or 3 weeks if no unprotected sex in the 1st week of use)[1]
- Offer STI/BBV check, p. 430 + check if CST due (offer as appropriate)
- Check if taking any medicines that can ↓ the effectiveness or hormonal contraceptives:[4]
  - if any, advise alternative contraception (**note:** hormonal or copper IUD and medroxyprogesterone are still effective)

Enzyme-inducing medicines that ↓ effectiveness of hormonal contraceptives[6]

- **Antiepileptics** - carbamazepine, oxcarbazepine, perampanel (› 8 mg daily), phenobarbital (phenobarbitone), phenytoin, primidone, rufinamide and topiramate (at any dose)
- **Antibiotics** - rifampicin and rifabutin
- Some **complementary medicines** eg St John's Wort
- Some medicines used for **HIV, viral hepatitis or COVID-19** see https://www.druginteractions.org/
- **Other medicines** eg aprepitant, modafinil, bosentan

4. Management[1,3]

- Can be inserted at any stage of the menstrual cycle
- **Immediately effective if:**
  - inserted:
    - on day 1–5 of cycle
    - ‹ 21 days postpartum
    - within 5 days of an abortion/ToP
  - replacing an implant within 3 years
  - switching from medroxyprogesterone injections, or
  - switching from copper IUD during days 1–5 of menstrual cycle
- **Takes 7 days to become effective if inserted at all other times** (+ if current method of contraception is not effective at time of switching eg late doses, injection or replacement)
- If switching from COCP or vaginal ring, continue active hormone pills or ring for a further 7 days after insertion to prevent pregnancy

S4	Etonogestrel eg Implanon NXT®			Extended authority MID/RIPRN/SRH
MID, RIPRN and SRH may proceed if completed contraceptive implant insertion + removal training and assessment and approved by their employer				
Form	**Strength**	**Route**	**Dose**	**Duration**
Implant	68 mg	Subdermal See Acute wounds for local anaesthetic, p. 163	68 mg	Replace every 3 years
Offer CMI: May get redness, bruising or pain around site following insertion or removal. Allow 4 months for bleeding pattern to adjust. Effectiveness may ↓ by some medicines - check with pharmacist before taking. If you cannot feel the implant, use additional contraception and see MO/NP/clinician trained in insertion/removal. Replace within 3 years[6-8]				
Contraindication: Breast cancer				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

5. Follow up[1,3]

- Repeat pregnancy test 4 weeks later if pregnancy not excluded at time of insertion (eg early pregnancy, uncertain LNMP)
- If patient concerned eg cannot palpate implant, unhappy with bleeding pattern
- Place reminder in recall system, as appropriate, for reinsertion in 3 years

6. Referral/consultation

- As above

HMP Combined oral contraceptive pill (COCP)

1. May present with

- Request for supply of the pill (COCP)

2. Immediate management Not applicable

3. Clinical assessment[1]

- Initial assessment and annual review must be done by MO/NP
- **If requesting repeat supply** ask about:
  - bleeding pattern changes, side effects
  - changes in health eg angina, heart attack, stroke/TIA, breast cancer, liver disease, DVT/PE, migraine with aura, new headaches
  - new medications
  - check BP ± weight
- Offer STI/BBV check, p. 430 + check if CST due (offer as appropriate)

4. Management[1]

If starting COCP MO/NP order needed	• Start on day 1–5 of period - immediately effective • MO/NP may consider Quick Start ie starting at any time in cycle (off label use). Effective after 7 days. Do pregnancy test first (**note:** an early pregnancy may not show up). Do pregnancy test again in 4 weeks, regardless if bleeding occurs[2]
If requesting supply of COCP	• **Supply pill UNLESS:** – › 12 months since MO/NP review **OR** changes in health as above **OR** has not been taking continuously - MO/NP review needed. If this is likely to delay supply, consider phone consult with MO/NP as an interim so contraception can continue

- **Note:** the drug box below contains only one of the many COCP available. **It is not intended to infer that this is the only or preferred COCP**, but rather a reflection of what is usually available in Qld Health rural and remote facilities

S4	**Levonorgestrel + ethinylestradiol** eg Levlen ED®, Evelyn 150/30 ED®, Eleanor 150/30 ED®			**Extended authority** ATSIHP/IHW/SRH
ATSIHP, IHW, RIPRN, RN and SRH may supply as per written order if ‹ 12 months since prescribed. Also see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	150/30 microg	Oral	1 tablet daily	Max. supply not to exceed 4 months **OR** current prescription
Offer CMI: If vomits within 2 hours of taking an 'active' pill, take another active pill as soon as possible. May cause breakthrough bleeding, amenorrhoea, nausea, vomiting, breast enlargement and tenderness, headache, changes in mood or libido, ↑ BP, fluid retention, chloasma, acne or thrush. **Effectiveness may** ↓ by some medicines and over-the-counter products eg St John's Wort; vomiting or severe diarrhoea. **Report immediately if** severe and sudden pain in chest, severe headache, sudden blurred vision or loss of sight, unexplained tenderness/pain or swelling in 1 leg				
Contraindication: Past or current history or risk factors for DVT, stroke/TIA, migraine with aura, ischaemic heart disease, breast cancer, severe liver disease. See UK MEC https://www.fsrh.org/				
Management of associated emergency: Consult MO/NP [1,3]				

Advice for missed COCP[1]

Is the pill › 24 hours late
ie › 48 hours since the last pill was taken

yes

- Take the pill most recently missed straight away
- This may mean taking 2 pills in one day
- Discard any other missed pills
- Use condoms as well for the next 7 days
- Continue active pills as usual; if you are within 7 days of the next hormone-free break, skip the inactive pills and continue active pills

- In addition to continuing your usual pill, consider levonorgestrel* Emergency contraception, p. 424 if:
  - you have taken fewer than 7 active pills since the last hormone-free break, AND
  - you have had unprotected sex in the past 5 days

no

- Take the pill straight away
- This may mean 2 pills in 1 day
- The pill will continue to work

This advice not applicable if:
- › 4 pills (days) missed OR
- Taking quadriphasic pill eg Qlaira®
- Consult MO/NP for advice

*Ulipristal usually not suitable in this scenario

- Offer fact sheet on COCP eg https://www.true.org.au/fact-sheets

5. Follow up

- Check/advise when annual check by MO/NP due

6. Referral/consultation

- As above

HMP Progestogen-only pill (POP)

1. May present with

- Request for pill postnatally ± supply of POP

2. Immediate management Not applicable

3. Clinical assessment[1]

- Midwives may initiate 8 weeks supply postnatally, otherwise initial assessment and annual review must be done by MO/NP
- **If requesting repeat supply** ask about:
  - bleeding pattern changes, side effects
  - changes in health eg breast cancer, ischaemic heart disease, stroke, liver disease, new medications
- Offer STI/BBV check, p. 430 + check if CST due (offer as appropriate)

4. Management[1]

If starting POP MO/NP order needed (unless midwife)	• **Postpartum:** – ‹ 21 days postpartum, start at any time - immediately effective – › 21 days and has no period yet - do pregnancy test first. Effective in 48 hours – › 21 days and period returned, start on day 1–5 of period • **Other times:** – start on day 1–5 of period - immediately effective – MO/NP may consider Quick Start ie starting at any time in cycle (off label use). Effective after 48 hours (3 consecutive tablets). Do pregnancy test first (**note:** an early pregnancy may not show up). Do pregnancy test again in 4 weeks, regardless if bleeding occurs[2]
If requesting supply of POP	• **Supply pill UNLESS:** – › 12 months since MO/NP review **OR** changes in health as above **OR** has not been taking continuously - MO/NP review needed. If this is likely to delay supply, consider phone consult with MO/NP as an interim so contraception can continue

S4	**Progestogen-only pills**		**Extended authority** ATSIHP/IHW/MID/SRH	
ATSIHP, IHW, MID, RIPRN, RN and SRH may supply as per written order if ‹ 12 months since prescribed. Also see RN supplying, p. 11				
MID may initiate supply of levonorgestrel (max. 8 weeks)				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	Levonorgestrel 30 microg	Oral	1 tablet daily Taken at the same time each day	Max. supply not to exceed 4 months **OR** current prescription
	Norethisterone 350 microg			
Note: Drospirenone eg Slinda® is a new POP that acts like a COCP but without oestrogen. Check PBS eligibility/local availability				
Offer CMI: Must be taken ± 3 hours at the same time each day or effect may ↓. If vomits within 2 hours of taking, take another pill as soon as possible. May cause amenorrhoea, spotting, irregular/prolonged periods, breast tenderness, depression or acne. All pills are active ie no sugar pills. **Effectiveness may** ↓ by some medicines + over-the-counter products eg St John's Wort; vomiting or severe diarrhoea				
Contraindication: Breast cancer, advanced liver disease				
Management of associated emergency: Consult MO/NP [1,3,4]				

Advice for missed POP[1]

Progestogen-only pill › 3 hours late
ie it has been › 27 hours since the last pill was taken

1 pill missed

- Take the pill as soon as remembered

› 1 pill missed

- Take the most recent missed pill as soon as remembered
- Any other missed pills can be discarded

Take the next pill at the usual time. This may mean taking 2 pills on 1 day
Continue taking daily at the usual time

- Use condoms until 3 consecutive pills have been taken
- Consider levonorgestrel* Emergency contraception, p. 424 if you have had unprotected sex in the time since the 1st pill was missed until 3 consecutive pills have been taken

*Ulipristal usually not suitable in this scenario

- Offer fact sheet on POP eg https://www.true.org.au/fact-sheets

5. Follow up

- Check/advise when annual check by MO/NP due

6. Referral/consultation

- As above

HMP Emergency contraception

1. May present with

- Recent unprotected sex ± request for 'morning after pill'

2. Immediate management Not applicable

3. Clinical assessment[1]

- Ask about:
  - time since unprotected sex occurred, last period
  - allergies, medicines
- Do pregnancy test. **Note:** if unprotected sex was ‹ 21 days ago test may be falsely –ve
- Offer STI/BBV check, p. 430 + give condoms
- If concerns around non-consensual sex or report of rape/Sexual assault, p. 234
- Consider HIV Post-Exposure Prophylaxis, p. 461 if applicable

4. Management[1-3]

- Advise of emergency contraceptive (EC) options, noting that none are 100% effective
- **Note:** BMI › 25 may ↓ effectiveness of oral EC. Copper IUD preferred (if possible), otherwise ulipristal is more effective than levonorgestrel.[4] Get MO/NP advice as needed

Emergency contraception options[1,3,4]		
Option	**Take after unprotected sex**	**Considerations**
Levonorgestrel	**≤ 72–96 hours (3–4 days)** If taken ≤ 24 hours, pregnancy risk is 2.3%	• Significantly less likely to become pregnant if taken ≤ 72 hours; can buy over-the-counter • Can restart hormonal contraception immediately
Ulipristal	**≤ 120 hours (5 days)** If taken ≤ 24 hours, pregnancy risk is 0.9%	• Is less effective if hormonal contraception used in the previous 7 days[2] • Can buy over-the-counter • Cannot restart hormonal contraception for 5 days
		Note: take levonorgestrel **OR** ulipristal (not both)[4]
Copper IUD	**≤ 120 hours (5 days)** Most effective EC	• Provides ongoing contraception • Need skilled clinician to insert

S3	**Levonorgestrel**			**Extended authority** ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
MID, RIPRN, RN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	1.5 mg	Oral	1.5 mg	stat Take as **soon as possible** after unprotected sex, up to 96 hours (4 days), but preferably 72 hours (3 days)
Offer CMI: If vomits within 2 hours, repeat dose. May cause nausea, vomiting, breast tenderness, vaginal bleeding or headache				
Note: Enzyme-inducing medicines currently or within prior 4 weeks can reduce effect eg rifampicin, St John's Wort - consult MO/NP (copper IUD preferred, or ↑ dose to 3 mg, but evidence of efficacy lacking). **Use › 72 hours is off label, but still effective**[1]				
Contraindication: Severe liver disease				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2]				

S3	Ulipristal			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
MID, RIPRN, RN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	30 mg	Oral	30 mg	stat Take **as soon as possible**, up to 120 hours (5 days) after unprotected sex
Offer CMI: If vomits within 3 hours, repeat dose. May cause nausea, abdominal pain, period pain, breast tenderness, headache, dizziness. **Avoid levonorgestrel for EC in same menstrual cycle**				
Note: Enzyme-inducing medicines currently or within prior 4 weeks can reduce effect eg rifampicin, St John's Wort - consult MO/NP (copper IUD preferred). **If a progestogen/hormonal contraception was taken in prior 7 days, use levonorgestrel instead**				
Breastfeeding: Risk to infant is low; no need to interrupt breastfeeding. To avoid the highest infant exposure, breast milk can be expressed and discarded for 24 hours after taking[1]				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 3				

- **Advise:**
  - if oral EC given, next period can occur a few days earlier or later than expected[4]
  - oral EC does not provide ongoing contraception - use condoms
  - about ongoing Contraception options, p. 416. Get MO/NP advice as needed. **Note:**
    - **if levonorgestrel given**, MO/NP may consider Quick Start (off label) hormonal contraception
    - **if ulipristal given**, do not restart hormonal contraception for 5 days (or EC wont be effective):
      - then, if COCP, start on active tablet (even if spotting)
      - continue to use condoms for - a further 7 days after starting COCP (9 days if Qlaira®); 7 days if vaginal ring or progestogen-only implant/injectable; or 2 days if POP

5. Follow up[1]

- Advise to have pregnancy test in 4 weeks if:
  - next period is › 7 days late or lighter than usual
  - 3 weeks after last unprotected sex if oral EC has been used more than once in a menstrual cycle
  - 4 weeks after Quick Start hormonal contraception or 3 weeks if no further unprotected sex in first week of use

6. Referral/consultation

- Advise to see MO/NP/women's health nurse/midwife for continuing contraception

Termination of pregnancy

HMP Termination of pregnancy (ToP)

Recommend[1]

- Facilitate women/pregnant people in rural and remote areas to access ToP services, as with any other healthcare. Ensure access to patient travel subsidy scheme (PTSS) (Qld) if referral/transfer, including option for an escort
- **If you have a conscientious objection** to ToP you must disclose this to the woman and promptly transfer (avoiding delay) to the nearest/most convenient clinician or service that offers ToP
- **In Qld see:**
  - Qld Clinical Guideline *Termination of pregnancy* including *Decision aid for no scan MToP*
  - iLearn course available - MToP using MS-2 Step for nurses and midwives
- **If outside of Qld refer to State/Territory laws, guidelines and pathways**

1. May present with

- Requesting an abortion/ToP

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Ensure a confidential, compassionate, non-coercive and non-judgemental approach

Consider heightened need for privacy and confidentiality to prevent inadvertent disclosure to community members. Person may seek ToP outside of community or via telehealth if appropriate

- Do urine pregnancy test to confirm +
  - vital signs
  - ask about usual menstrual cycle - regular/irregular, date of last menstrual period (LMP)
  - calculate gestation - count weeks and days from 1st day of LMP *eg 5 weeks + 3 days*
  - offer STI/BBV tests, p. 433 + CST (if due). Do not delay access to ToP to do these
  - arrange USS to confirm intrauterine pregnancy (IUP) and gestation (may be available locally):
    - **note:** if considering 'no-scan' medical ToP (MToP) see ***Decision aid for no scan MToP*** + consult MO/NP/EM

4. Management[1]

- **If patient considering a ToP or unsure:**
  - **time sensitive decision** - depending on gestation + where person lives, may need quick referral
  - options include MToP if ≤ 9 weeks gestation (≤ 63 days) (later in specific circumstances), and/or surgical ToP (SToP)
  - provide accurate, unbiased, easy to understand information. **For advice/help with decision making, consider:**
    - Children by Choice https://www.childrenbychoice.org.au/ ✆ 1800 177 725 (Qld). Also list public/private providers of ToP + costs
    - MSI Australia https://www.msiaustralia.org.au/abortion-services/ ✆ 1300 003 707
    - Qld Gov https://www.qld.gov.au/health/children/pregnancy/termination-of-pregnancy
    - assistance to find a provider 13 HEALTH ✆ 1343 2584 (Qld)
    - First Nations 'safe person' (if available in community) for culturally safe support
- **If patient chooses to proceed with ToP:**
  - assist to access ToP services as early as possible
  - **check local procedures and policies** on who to contact to coordinate this eg dedicated women's or sexual health RN/NP/EM/clinician who has completed early MToP training

  - if patient is to travel away from their community ensure they are supported to do so
- Consider domestic and family violence, sexual violence and reproductive coercion. Use local screening tools. If suspicion of child abuse, see Child protection, p. 539

MToP (MS-2 Step) in community (Qld) - must be ≤ 63 days (9 weeks) gestation[1-4]

- If patient's preference and clinically appropriate

Use *MS-2-Step clinical pathway for intrauterine pregnancies ≤ 63 days or 9/40* (***MS-2-Step pathway***)
https://clinicalexcellence.qld.gov.au/resources/clinical-pathways/termination-pregnancy
+ Qld Clinical Guideline *Termination of pregnancy* (includes ***Decision aid for no scan MToP***)

- **Discuss:**
  - how MS-2 Step works (what each tablet does), what to expect, potential risks and complications (and management), side effects, importance of completing the course once started (and why)
  - + offer written information eg Qld Clinical Guideline ToP *Consumer information*
- **Use *MS-2-Step pathway* to do pre MToP assessment** (pathway gives additional details):
  - confirm pregnancy (urine) and gestation
  - do ectopic pregnancy risk assessment
  - confirm intrauterine pregnancy (IUP):
    - **if USS not possible, consult MO/NP/EM** who may consider no-scan MToP
  - assess if any:
    - precautions, relative contraindications or absolute contraindications
  - ask about:
    - medical history, allergies
    - current medications, including IUD (IUD must be removed prior to MToP)
    - social and emotional well-being (do screening)
- **Check person:**
  - is able to access 24 hour emergency care for 14 days after they start MS-2 Step (to facility able to manage haemorrhage)
  - has a support person
  - is aware of importance of follow up in 14–21 days (in person or via telehealth) to confirm ToP and monitor for complications
- **Refer to MO/NP/EM if indicated on *MS-2-Step pathway***
- **Obtain written consent.** If Qld Health, use *Termination of Pregnancy - MS-2 Step (Mifepristone and Misoprostol) consent* form https://www.health.qld.gov.au/consent/consent-forms-and-patient-information-sheets
- **Once all above completed, as appropriate give:**
  - MS-2 Step (mifepristone and misoprostol) **+ advise:**
    - how + when to take
    - what to do if no bleeding within 24 hours of misoprostol
    - to reduce infection risk, do not insert anything into vagina until 7 days post ToP
  - antiemetic eg ondansetron - take before each dose + as needed
  - analgesia (ibuprofen + paracetamol) - take 1/2 hour prior to misoprostol + as needed. See Acute pain, p. 32. Also offer an oral opioid to take if needed
- **Advise:**[4]
  - how/who to contact if emergency care needed + confirm follow up arrangements
  - Contraception options, p. 416 (can get pregnant ‹ 2 weeks post ToP). Most contraception can be started immediately or once bleeding has begun (IUD once ToP confirmed)

S4	Mifepristone and misoprostol MS-2 Step®			Extended authority MID/RIPRN/SRH
RN must consult MO/NP/EM, unless practising under conditions of RN EPA, part A				
MID, RIPRN and SRH may proceed if completed early MToP training + approved by employer				
Form	**Strength**	**Route**	**Dose**	**Duration**
Step 1 - Mifepristone				
Tablet	200 mg	Oral	200 mg (1 tablet)	Single dose
Step 2 - Misoprostol				
Tablet	200 microg	Buccal	800 microg (4 tablets)	Single dose. 36–48 hours after mifepristone
Offer CMI: Take each medicine 2 hours before or 2 hours after a meal. **Step 1:** take mifepristone. If vomits within 1 hour of taking, repeat dose. Bleeding sometimes occurs after taking. **Step 2:** Hold tablets in mouth between cheek and gum for 30 minutes then swallow any fragments with water. Vaginal bleeding + moderate to severe cramping starts within 4 hours. Significant cramping usually ↓ within 24 hours. Use heat packs, massage, rest + analgesia as needed. Bleeding lasts 10–16 days (heavier than average period for 2–3 days)				
Note: Consult MO/NP/EM if IUP not confirmed, any precautions, relative contraindications, medical conditions, allergies or taking medicines as per the ***MS-2-Step pathway***				
Contraindication: Chronic adrenal failure, gestational trophoblastic disease, suspected or confirmed ectopic pregnancy, no certainty of gestational age, not pregnant, haemorrhagic disease				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80. If heavy bleeding/ shock, start fluid resuscitation + manage as for Miscarriage, p. 358 [1,2,4,5]				

S4	Paracetamol + codeine			Extended authority MID/RIPRN/SRH
RN must consult MO/NP/EM				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg + 30 mg	Oral	**Adult** 1–2 tablets	Take 4–6 hourly as needed for moderate to severe pain (max. 8 tablets in 24 hours). Max. 48 hours supply
Offer CMI: May cause nausea, vomiting, itch, drowsiness, dizziness, headache, constipation, low BP when moving to standing, indigestion, or dry mouth. **Too much paracetamol can cause liver damage** - do not take more than 4 g of paracetamol containing medicines in 24 hours				
Note: Beware for potential for overuse, leading to codeine dependence and ↑ risk of paracetamol toxicity. If asthma, hepatic impairment, acute alcoholism, endocrine disorders, epilepsy, or risk factors for paracetamol toxicity, p. 36 seek MO/NP advice				
Contraindication: Renal impairment, breastfeeding (**infant death has occurred**)				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [6]				

S4	Ondansetron			Extended authority MID/RIPRN/SRH
RN must consult MO/NP/EM				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet/orally disintegrating tablet	4 mg 8 mg	Oral	4–8 mg	8–12 hourly as needed (max. 24 mg in 24 hours). Max. 48 hours supply
Offer CMI: Put disintegrating tablet on top of tongue to dissolve, then swallow. May cause dizziness or headache				
Note: Seek MO/NP advice if hepatic impairment, phenylketonuria, prolonged QT interval or risk factors for prolonged QT interval. Off label use - see www.catag.org.au for documentation				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [7]				

5. Follow up

- **If still deciding ToP options** offer further support in decision making or as appropriate to individual circumstances
- Check pathology results (if taken) and treat as appropriate

If MS-2 Step given - advise[1,2]

- **Return immediately + urgently consult MO/NP/EM** if:
  - prolonged/heavy vaginal bleeding - eg 2 pads/hour over 2 hours, (or 1 pad/hour for 3 hours), or large clots (fist size), or
  - signs of infection eg fever, rigors, malaise, offensive discharge (+ screen for Sepsis, p. 62), or
  - excessive or unmanageable cramping/pain (not controlled by analgesia)
- **Consider telephone contact in 3–5 days**
- **Review on day 14–21 as per the *MS-2-Step pathway*:**
  - **check for:**
    - signs of ongoing pregnancy or RPOC eg pregnancy symptoms, still bleeding at 21 days, inadequate bleeding at time of MToP
    - signs of infection eg ongoing pain, malodourous or purulent discharge, malaise, fever. If any screen for Sepsis, p. 62
  - **do pregnancy test:**
    - urine - low sensitivity test at 14 days or standard test at 21 days. If +ve consult MO/NP/EM + follow up with quantitative ß-hCG to ensure down-trending
    - if no-scan MToP do serum ß-hCG
  - **discuss** Contraception options, p. 416 (all options suitable) + start as per person's wishes
  - offer psychological support as needed
- Consult MO/NP/EM if ongoing bleeding, signs of infection or any other concerns

6. Referral/consultation

- Offer social and emotional well being referral as needed eg social worker/mental health clinician

Sexually transmitted infections (STI)

STI and BBV assessment

Recommend[1]

- Opportunistically offer STI and blood borne virus (BBV) tests
- Ensure condoms and lubricant are readily available 24 hours/day
- Confidentiality must be maintained - important in rural and remote areas where clinic staff may be family members/friends of the patient/contacts

Background[1]

- **STI/BBVs often have no symptoms until complications occur**. If untreated can cause - pelvic inflammatory disease (PID), infertility, miscarriage, epididymo-orchitis, ↑ risk of HIV acquisition, liver damage or death eg congenital syphilis in babies
- **In remote Aboriginal and Torres Strait Islander** communities, due to complex social factors, there is/are:
  - an ongoing outbreak of syphilis in some regions
  - high rates of chlamydia, gonorrhoea, trichomonas and hep B
- **Syphilis is increasing in the general population**, including women of reproductive age
- **Resources**:
  - ASHM *STI management guidelines for primary care* https://ashm.org.au/resources/
  - Aboriginal and Torres Strait Islander - *Young, deadly, free* https://youngdeadlyfree.org.au
  - True relationships and reproductive health https://www.true.org.au/
  - Qld Health, including *Guide to offering STI testing for people aged less than 16 years attending clinical services (Qld)* https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/sex-health/guidelines

Important principles of treating STI/BBVs[1]

- In rural and remote areas treat people with STI symptoms at first presentation (presumptive treatment), without waiting for pathology results[1]
- If +ve STI/BBV, do contact tracing + test sexual contacts (+ treat if needed). Consider treating ongoing sexual contacts presumptively at same time to ↓ risk of reinfection eg if present with patient
- If +ve for an STI/BBV, offer testing for other STI/BBVs if not already done
- Consider PID, p. 446 in sexually active women/person with a uterus with new onset abdominal pain (can be mild), particularly if < 30 years of age

1. May present with[1]

- Sexually active + for screening/opportunistic check-up
- **STI symptoms** eg:
  - vaginal or penile discharge
  - pain or burning passing urine
  - genital sores, rash, itching in genital/perianal area
  - low abdominal pain (female/person with uterus), testicular pain, or pain with sex
  - abnormal vaginal/rectal bleeding
- Sexual contact of person with an STI/symptoms
- **BBV symptoms** eg jaundice/abnormal LFTs (hepatitis), or as per HIV, p. 460

2. Immediate management Not applicable

3. Clinical assessment[1]

- If STI symptoms or a sexual contact, get history and do examination as appropriate
- Otherwise, offer **Asymptomatic check-up** as part of usual health check. May vary depending on prevalence of STIs - check local guidelines

Standard asymptomatic check-up - rural and remote areas[1]

Who	When to offer	What to offer
• Requests STI testing • Is at ↑ risk of STIs (see below) • A sexual contact of person at ↑ risk	This presentation	• **Chlamydia** • **Gonorrhoea** • **Trichomonas** (all females; Aboriginal and Torres Strait Islander males) • **Syphilis** • **HIV** **If indicated** • **Hep C** - if at risk, p. 432 • **Hep B** - test once to establish hep B virus (HBV) status#
• 15–35 years old‡	At least annually	
Aboriginal and Torres Strait Islander people[1,2]		
• 15–35 years old‡	6 monthly	
• ≥ 1 new sexual contact(s) in last 12 months, ≥ 1 STI in the last 12 months, substance use	3–6 monthly	
• › 35 years old and a new sexual contact	1–2 yearly + as needed	
Special populations & situations		
• Pregnant	Increased testing eg syphilis. See Antenatal care, p. 350	
• Men who have sex with men (MSM)[3] Also see https://sti.guidelines.org.au/populations-and-situations/men-who-have-sex-with-men/	3 monthly, or at least annually if in monogamous relationship	• Chlamydia, gonorrhoea, syphilis, HIV
	Annually	• Hep C if at risk, p. 432
	Once	• Hep A & B - to establish hep A virus (HAV) and HBV status#Δ
• Refugees and migrants to Australia • People living with HIV • People in custodial settings • Sister-girls, brother-boys, trans + gender diverse • Sex workers • People who use drugs	• Increased screening may be recommended depending on individual risk factors. See – *Australian STI management guidelines* http://sti.guidelines.org.au/ – or contact your local sexual health team for advice	
• Adult sexual assault	• Advice varies depending on how recently the assault occurred. See https://sti.guidelines.org.au/populations-and-situations/adult-sexual-assault/	

Note: Female (or person with vagina); male (or person with penis)
‡ Or from age of first sexual contact + not in stable long-term monogamous relationship[2]
# Vaccinate for hep B if no history or no documentation of full vaccination course. **Note:** not required if person has ever had a hep B sAB result › 10 IU/mL (ever documented)
Δ Vaccinate for hep A if not immune/vaccinated

People who may be at ↑ risk of STIs[1]

- New sexual contact
- Known exposure to an STI or had an STI in previous 12 months
- Sex without condom/condom broken
- Substance use[2]
- Aboriginal and Torres Strait Islander person
- MSM
- Special populations (above)
- Travelled to area with high rates of STIs (rural/remote areas, overseas) and had sex
- Experienced violence from a partner
- Have been sexually assaulted or had sex they did not want to have
- Sleeping rough/homeless

Get history - as appropriate. Not needed if asymptomatic check-up[2]

History[1]	
Sexual history	• Gender identification and pronouns the patient identifies with • Last STI check - when, results • Previous STI diagnosed, or thought may have had an STI; when • Last time had sex - for incubation and window periods • Regular/casual/new sexual contacts • Sex without condom/condom broken; when • Sex with people with a penis, a vagina, or both • Nature of sex - oral, vaginal, anal. Can get STIs in throat, anus or genitals • Pregnant/could be pregnant, reproductive history, contraception
Assess hep C risk[1]	• History of injecting drug use, current HIV pre-exposure prophylaxis (PrEP) use, anal sex with a person with hep C virus (HCV) infection, incarceration, non-professional tattoos or body piercings, or receipt of organs or blood products before 1990
Ask about symptoms[1]	• Dysuria • Penile/vaginal discharge - colour/odour/amount eg purulent • Itch • Lumps, sores or skin splits on genitals - may have gone away • Tender/swollen testes • Pain with sex • Low abdominal pain in female/person with a uterus • Bleeding/spotting after sex or between periods • Enlarged lymph nodes in groin • Rash/sore on another part of body eg hands/feet • Patchy hair loss eg part of eyebrow • Anorectal symptoms - discharge, irritation, painful bowel motions, disturbed bowel function

Do examination - as appropriate + do STI/BBV tests

- If has symptoms but does not want examination, **still do STI/BBV tests** eg self-collected

Physical examination[1]	
Use history to guide examination	**Not needed if asymptomatic check-up** • Do vital signs • If dysuria, get first catch urine (FCU) + do urinalysis • If nitrites or leucocytes on urinalysis, get MSU for MCS • Rash, lymph nodes - swelling/tenderness • Genitalia/perianal area - rashes, lumps, ulcers/skin splits - take swab if present • **If person has vagina/uterus:** – pregnancy test. If +ve **and** vaginal bleeding/spotting or low abdominal pain, assume Ectopic pregnancy, p. 357 until proven otherwise – palpate abdomen for tenderness – offer Cervical Screening Test (CST) if due eg self-collected – offer speculum examination **if skilled + patient consents** - check for: – **cervicitis** (cervix easily bleeds ± yellow discharge at os), sores – bi-manual examination for tenderness and masses – take swabs at same time + CST if due • **If anorectal symptoms:** – if possible, examine for ulcers and discharge (+ take swabs concurrently). If STI likely, treat today, but also refer to next MO/NP clinic - other causes need to be investigated

STI/BBV tests[1]

- See **How to take swabs/FCU** (next page)
- Ensure consent ie type of test, reason for test, potential implications of not being tested
- Encourage patient to self-collect swabs
- Do tests appropriate to type of sexual contact ie oral, anal, vaginal (except if M. genitalium - do not do throat swabs as pharyngeal infection uncommon)
- Consider PoCT if available and appropriate

No symptoms

eg asymptomatic check-up, contact of person with STI

1 first catch urine (FCU)

- **Chlamydia & gonorrhoea PCR***
- **Trichomonas PCR** (females; Aboriginal and Torres Strait Islander males)

OR

2 self-collected vaginal swabs (use dry swabs)

- 1 for **chlamydia & gonorrhoea PCR**
- 1 for **trichomonas PCR**

+

Bloods - 2 serum gel tubes

- **Syphilis serology**
- **HIV** - HIV Ag/Ab

If indicated:

- **hep C** - HCV Ab if at risk, p. 432 + no prior history of hep C
- **hep B** - HBsAg, Anti-HBs, Anti-HBc if has not had status determined

Symptoms of an STI

eg discharge, dysuria, pelvic pain, cervicitis, genital sore

Self-collected vaginal/penile swabs

- **Dry swabs**
  - 1 for **chlamydia & gonorrhoea PCR***
  - 1 for **trichomonas PCR** (females; Aboriginal and Torres Strait Islander males)
  - 1 for **M. genitalium PCR** (males)Δ
- **Charcoal swab + slide**
  - 1 for **MCS**#

OR

1 first catch urine (FCU)

If no penile discharge **or** prefers not to do swabs

- **Chlamydia & gonorrhoea PCR***
- **Trichomonas PCR** (females; Aboriginal and Torres Strait Islander males)
- **M. genitalium PCR** (males)Δ

+

Bloods

- Same as above

AND

If genital sore

- 1 dry swab - **herpes + syphilis PCR**
- Also advise Qld Syphilis Surveillance Service ✆ 1800 032 238 or syphilis register if outside Qld

Δ If cervicitis seen on speculum examination or clinical PID, also test for M. genitalium in females

***If MSM** - also get **anal + throat swab** for chlamydia and gonorrhoea PCR + MCS

- **Note:**
  - female (or person with vagina); male (or person with penis)
  - #MCS is for surveillance of antimicrobial resistance of gonorrhoea
  - 'first catch urine' is also called 'first pass urine'
  - PCR is a NAAT test

How to take swabs/FCU

How to self-collect swabs/urine[4]			
	FCU	PCR	• Do any time of day. Pass first part of the urine stream into jar. Need about 20 mL or 1/3 standard urine jar. Then pass rest of urine into toilet
Swabs	Penis		• Milk penis to express discharge + collect on swab. **Note:** if no discharge do FCU instead
	Vagina		• Insert swab into vagina like a tampon, twirl, then remove
	Throat		• Gently wipe swab over tonsils and uvula (punching bag)
	Rectum		• Insert swab into anal canal 2–4 cm, twirl, then remove
	Genital sore		• Clean sore with water or sodium chloride 0.9%. Roll swab firmly around the edge + across the sore. Ideally clinician to examine
	Charcoal swab + slide	MCS	• Take swab as described above, roll onto glass slide, then insert swab into charcoal tube. Send both to pathology
Also see handout *Chlamydia and gonorrhoea testing* '**self-collection**' https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/sex-health/guidelines **Store specimens in fridge + transport cold**			

Serum gel tube

Urine jar/tube for FCU

Dry swab for PCR

Charcoal swab + slide for MCS

4. Management[1]

- See **STI/BBV management** flowchart (next page) to guide management +
  - **if STI symptoms** OR **confirmed STI** (on pathology), OR a **sexual contact** of person with STI symptoms/+ve pathology:
    - do STI/BBV tests, p. 433 if not already done +
    - start Contact tracing, p. 436 if:
      - +ve STI on pathology **OR**
      - symptoms suggest syphilis
      - **note:** see specific STI topics for how far back to trace
  - if unsure, contact MO/NP/sexual health clinician
- Offer **Patient advice**

Patient advice[1]

- Offer condoms + how to use
- Safe sex practices/risk minimisation, regular check-ups
- Transmission, symptoms, complications of untreated STIs/BBVs
- Reiterate that only condoms or abstaining from sex protect against STIs
- HIV prevention (PrEP) if at risk. See HIV, p. 460 for risk factors
- Contraception options, p. 416

STI/BBV management[1]

Asymptomatic check-up

- Discuss when and how person will get their results
- Ensure you follow up results + advise patient

STI symptoms

- Vaginal or penile discharge/dysuria
- Anorectal discharge/discomfort suggestive of STI

→ **Treat now.** See Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437

- Symptoms suggestive of syphilis* → **Treat now.** See Syphilis, p. 452
- Pain/swelling in testes → Epididymo-orchitis, p. 444
- Low abdominal pain in person with uterus → **Treat now.** See PID, p. 446
- Anogenital sore(s)/lump(s) → Anogenital ulcers/lumps, p. 449

+ve pathology test

OR

sexual contact of person **+ve for an STI/BBV**

- See:
  - Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437
  - Syphilis, p. 452
  - Herpes, p. 456
  - HIV, p. 460
- If hepatitis A, B or C# consult MO/NP
- **Note:** if –ve to HIV, syphilis, or hep C and suspected exposure, repeat test after window period (ie syphilis, HIV - 12 weeks; hep C - 6 months)[1,5]

Asymptomatic sexual contact of a **person with STI symptoms**

ie not yet confirmed by pathology test

STI symptoms (that person has been in contact with):

- Vaginal or penile discharge/dysuria
- Anorectal discharge/discomfort suggestive of an STI

→
- Do STI tests
- Wait for results before treating **OR** treat now if sexual contact within prior 2 weeks or follow up unlikely. See Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437

- Symptoms suggestive of syphilis* → **Treat now.** See Syphilis, p. 452
- Symptoms suggestive of PID → **Treat now.** See PID, p. 446
- Anogenital sore(s)/lump(s) → Anogenital ulcers/lumps, p. 449

***Syphilis symptoms** - genital ulcer or sore (or on anal skin, cervix or mouth) ± multiple warty growths in genital area ± rash on trunk or just hands and feet/patchy hair loss.[1] See Syphilis, p. 452

#Hepatitis

- **hep A** - transmitted via faecal/oral route. Offer vaccination if at risk[6]
- **hep B** - see *Chronic Conditions Manual* for interpretation of tests and management
- **hep C** - HCV Ab indicates HCV infection, but not if it is acute, chronic or resolved. Do further HCV RNA test to determine. Hep C is curable.[5] See https://www.hepcguidelines.org.au/

Also see *Decision making tools* for hep B and hep C https://www.ashm.org.au/resources/

Contact tracing/sexual contact notification[1,7]

1. Advise reasons for contact tracing

- Essential to avoid reinfection (from untreated sexual contacts + to interrupt transmission of STI/BBVs
- Sexual contacts may be unaware of infection and be at risk of serious complications if not tested + treated

2. Identify who needs to be notified + discuss that contact tracing can be done anonymously

- Refer to relevant STI topic to determine how far back to trace ie likely duration of infection
- Ask about sexual contacts during that time:
  - record in patient with STI/BBV (index) medical record that *contacts obtained* - do not record contact names
  - write in the contact's medical records that they have been identified as a contact and need testing for STI/BBVs (do not record patient's name in contact's medical record)
  - if a clinic register/similar is used, ensure the index case is NOT connected to the contact's and vice versa

3. Contact sexual contacts + advise need testing ± treatment

- Patient may choose to tell their contacts themselves, or clinician can support a patient to perform their own contact tracing, or perform it on the patient's behalf
- 3 attempts by telephone or home visits should be made and documented, UNLESS syphilis or HIV where further attempts at contact tracing needed - seek specialist advice as needed
- If a contact is outside your health centre's area, notify the appropriate contact tracing support officer so they can follow up

Resources:

- Anonymous notification aids:
  - *Better to know* https://www.bettertoknow.org.au/
  - *Let them know* https://letthemknow.org.au/
  - *The drama down under* https://www.thedramadownunder.info/
- **Complex contact tracing situations** eg outbreaks, relationships with power imbalance or family violence, child safety, language or cultural issues. See https://sti.guidelines.org.au/contact-tracing/
- *Australasian contact tracing guidelines* https://contacttracing.ashm.org.au/
- Qld support https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/sex-health/contact-tracing. If outside Qld, contact your local sexual health/contact tracing service

See specific STI topics for how far back to trace

5. Follow up[1]

- Ensure you follow up results and advise patient, treat + start contact tracing as needed
- If –ve result, check window period for the relevant STI (syphilis, HIV, hep C)
- If treated for an STI, ensure **Follow up** as per specific STI topic
- Activate reminders for testing as needed

6. Referral/consultation

- As appropriate eg for contraception advice, CST, other health checks

HMP Chlamydia, gonorrhoea, trichomonas, M. genitalium - adult
Vaginal discharge, penile discharge

Background[1]

- Often there are no symptoms
- The most likely cause of penile discharge/dysuria is an STI
- Vaginal discharge - cause can be difficult to diagnose on clinical examination alone. Most common cause is normal physiological discharge (white/clear, non-offensive)
- Trichomonas - if untreated, may persist in a vagina for years and in a penis for up to 4 months
- If partner presents with patient, consider opportunistically treating. Discuss with patient if partner should be informed ± treated today

1. May present with[1]

- +ve pathology test or sexual contact of person with +ve test
- If symptoms, may include:
  - vaginal/penile discharge, dysuria
  - pain with sex, bleeding/spotting after sex or between periods
  - vulval itch/soreness
  - anorectal symptoms - discharge, irritation, painful defecation, disturbed bowel function
- Occasionally a person with gonorrhoea may present acutely ill with single or multiple painful/inflamed joints (disseminated gonococcal infection)

2. Immediate management
Not applicable

3. Clinical assessment[1]

- Get history and offer examination as per STI/BBV assessment, p. 430
- If symptoms consider differential diagnoses eg low abdominal pain, PID, p. 446; thick, white, non-offensive discharge, Vaginal thrush, p. 442; sore/swollen testes, Epididymo-orchitis, p. 444

4. Management[1]

- **If symptoms:**
  - do STI/BBV tests, p. 433 and treat presumptively with antibiotics today[1]
- **If +ve pathology test:**
  - treat with antibiotics now + do full STI/BBV tests, p. 433 if not done already
  - start **Contact tracing**
- **If sexual contact of a person with +ve pathology test:**
  - do STI/BBV tests, p. 433 and wait for results before treating
  - **OR** treat now for the infection(s) they have been in contact with without waiting for results (**except** M. genitalium - wait for results) if:
    - trichomonas[2] **OR**
    - had sexual contact in the past 2 weeks **OR**
    - follow up unlikely eg in rural or remote area

Contact tracing - how far to trace back, test ± treat[2]	
Chlamydia	• 6 months
Gonorrhoea	• Minimum of 2 months (or 2 months prior to onset of symptoms if present)
Trichomonas	• Current sexual contacts only
M. genitalium	• Ongoing sexual contacts only
See Contact tracing, p. 436 for how to do	

In all cases

- Advise no sexual contact:[1]
  - until pathology results available
  - for 7 days after treatment started OR until both course completed + symptoms resolved (whichever is later)[2]
  - if M. genitalium until 'tested for cure' (14–21 days after treatment)
  - with sexual contacts from prior **6 months** (chlamydia) or **2 months** (gonorrhoea) until contacts tested ± treated if needed; or if M. genitalium, with any untested previous contacts[1]
- Use condoms
- Will need **Follow up** checks - advise when and why
- Offer Patient advice about STIs (QR code), p. 434

Antibiotics if not allergic. Ideally, watch person take single dose medicines

Treatment based on symptoms - pathology results not back[1]

Symptoms[1]	Treat for	Treat with - single dose unless stated otherwise
Vaginal discharge, penile discharge/ dysuria	Gonorrhoea + chlamydia + trichomonas	• Ceftriaxone 500 mg* **AND** • Azithromycin 1 g **AND** • Metronidazole 2 g
Anorectal discharge/pain suggestive of STI	Gonorrhoea + chlamydia + herpes	• Ceftriaxone 500 mg* **AND** • Doxycycline 100 mg bd for 21 days **AND** • Valaciclovir 500 mg bd for 5–10 days. See Genital herpes, p. 456 + consider possible Syphilis, p. 452 Also refer to next MO/NP clinic for further investigation

Treatment based on pathology results[1]

Result +ve for	Treat with - single dose unless stated otherwise
Gonorrhoea	• Ceftriaxone 500 mg* **AND** • Azithromycin 1 g (or if pharyngeal infection, 2g Δ)
Chlamydia	• Doxycycline 100 mg bd for 7 days (preferred) **OR** azithromycin 1 g if adherence concerns or pregnant • **If anorectal infection**: – doxycycline 100 mg bd for 7 days (no symptoms) or 21 days (symptoms) **OR** azithromycin 1 g + repeat dose in 12–24 hours
Trichomonas	• Metronidazole 2 g
Mycoplasma genitalium#	• Doxycycline 100 mg bd for 7 days **followed by** • Azithromycin 1 g on day 8, then 500 mg daily for 3 days

* If area has high penicillin susceptibility to gonorrhoea (as advised by local sexual health specialist or AMS program), **replace ceftriaxone with oral amoxicillin 3 g + probenecid 1 g**

Δ If treated for gonorrhoea presumptively, then pathology is +ve for pharyngeal infection, 1 g azithromycin (as given) is sufficient - test of cure should still be done

Treatment for M. genitalium can be complex. Doxycycline is ineffective in 2/3 of infections, but will lower bacterial load in most cases. Azithromycin is recommended after doxycycline course completed, though resistance to azithromycin is very common and this regime may not be effective. Get advice from local sexual health service if treatment does not work

S4	Ceftriaxone			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	IM	500 mg (2 mL)	stat Give by deep injection into gluteal muscle
Preparation: Reconstitute with lidocaine 1% 3.5 mL to make 1 g/4 mL				
Offer CMI: May cause rash, diarrhoea, nausea, dizziness, headache and pain at injection site				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporins or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	1 g (2 g if pharyngeal gonorrhoea)	stat
			M. genitalium	
			1 g	stat on day 8
			500 mg daily	For 3 days after day 8 stat dose
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]				

S4	Doxycycline			Extended authority ATSIHP/IHW/IPAP/MID/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	50 mg 100 mg	Oral	100 mg bd	**Chlamydia** OR **M. genitalium** 7 days
				Anorectal chlamydia no symptoms - 7 days; symptoms - 21 days
Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity				
Pregnancy: Safe in the first 18 weeks				
Contraindication: Serious allergy to tetracyclines. Taking oral retinoids. After 18 weeks of pregnancy				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,5]				

S4	Metronidazole	Extended authority ATSIHP/IHW/IPAP/MID/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP		
MID, RIPRN and SRH may proceed		

Form	Strength	Route	Dose	Duration
Tablet	200 mg, 400 mg	Oral	2 g	stat

Offer CMI: Avoid alcohol for 24 hours after taking. Take with food to reduce stomach upset. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]

S4	Amoxicillin	Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP		
RIPRN may proceed		

Form	Strength	Route	Dose	Duration
Tablet, capsule	1 g, 500 mg	Oral	3 g	stat

Provide CMI: May cause rash, diarrhoea, nausea or thrush

Note: Given for gonorrhoea **only if area has high penicillin susceptibility** (as advised by local sexual health specialist or AMS program)

Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,7]

S4	Probenecid	Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP		
RIPRN may proceed		

Form	Strength	Route	Dose	Duration
Tablet	500 mg	Oral	1 g	stat

Provide CMI: May cause rash, nausea or vomiting. May be taken with food to reduce upset stomach

Pregnancy: Seek MO/NP advice

Contraindication: Blood dyscrasias, history of uric acid kidney stones

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,8]

5. Follow up[1]

- **If pathology taken** follow up results, advise patient + treat if needed and not already done. If:
  - **results –ve:**
    - antibiotics for that STI can be discontinued
    - if still has symptoms, consult MO/NP. If has penis + urethritis, offer asymptomatic STI tests to sexual contacts from prior **4 weeks**
  - **+ve for M. genitalium**, check if pathology states resistant to macrolides. If resistant, consult MO/NP for order for moxifloxacin (400 mg daily for 7 days) to replace azithromycin[1]
- **If antibiotics given today, advise review in:**
  - **1 week** - check taking tablets, symptoms subsiding ± sexual contacts names obtained
  - **2–4 weeks** - for **Test of cure** if needed. See table next page
  - **3 months** - retest for STIs to detect reinfection (common). **Note:** not needed for trichomonas:
    - if +ve, re-treat, discuss contact tracing further + identify risks for reinfection
- **If still +ve for gonorrhoea** on **Test of cure** or **3 month** retesting, get advice from MO/NP[1]

Test of cure[1] ie repeat STI tests	
Chlamydia	• Only needed if pregnant or anorectal infection: – no earlier than **4 weeks after treatment completed**
Gonorrhoea	• If pharyngeal, anal or cervical infection (from each site of infection): – 2 weeks after treatment completed
Trichomonas	• Not needed unless symptoms persist
M. Genitalium	• **14–21 days after treatment completed**

6. Referral/consultation[2]

- Chlamydia and gonorrhoea are notifiable (laboratory will notify) ◑
- Trichomonas is notifiable in the NT

HMP Bacterial vaginosis - adult

Background[1]

- Bacterial vaginosis (BV) is caused by an overgrowth of vaginal bacteria. Often asymptomatic
- Not considered an STI, however is associated with sexual activity

1. May present with[1]

- Pathology has organisms consistent with BV eg *Gardnerella vaginalis* or clue cells present
- If symptoms - thin grey/white vaginal discharge (offensive 'fishy' smelling)

2. Immediate management Not applicable

3. Clinical assessment[1]

- BV may be diagnosed clinically if **3 of the following criteria** are present:
  - thin white/grey discharge
  - vaginal pH › 4.5 - take a swab and test using pH paper
  - unpleasant vaginal odour
  - vaginal swab results +ve for clue cells
- If discharge, do STI/BBV tests, p. 433 + self-collected vaginal charcoal swab for microscopy (with slide)[2]

4. Management[1,2]

- **If no symptoms** - treatment is not usually needed (unless woman requests treatment)
- **If symptoms** - treat with oral metronidazole or PV clindamycin:
  - **note:** 7 day course is preferred to help prevent recurrence
- Advise:
  - avoid douching (cleaning inside vagina) eg with soaps, bubble bath, female hygiene products
  - if treated, avoid vaginal penetrative sexual practices or use condoms during treatment[1]
  - recurrence is common
  - treatment of sexual contacts is not usually needed. If female contact, assessment recommended[1,2]

S4	Metronidazole			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg 400 mg	Oral	400 mg bd	7 days
			OR	
			2 g	stat
Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take with food to reduce stomach upset. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Pregnancy: Safe to use. Give in divided doses if possible				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

S4	Clindamycin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Vaginal cream	2%	PV	1 applicatorful nocte	7 nights
Offer CMI: Cream may damage latex contraceptive devices and for up to 72 hours after last dose. May cause local irritation or thrush				
Pregnancy: Safe to use				
Contraindication: Allergy to lincomycin				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

5. Follow up[1]

- Not required if symptoms resolve

6. Referral/consultation[1]

- Consult MO/NP if recurrent or symptoms persist

HMP Vaginal thrush (candidiasis) - adult

1. May present with[1]

- Thick, white, clumping vaginal discharge, vulval itch/discomfort, dysuria
- ± severe symptoms - excoriation, redness, fissures, swelling

2. Immediate management Not applicable

3. Clinical assessment[1]

- Get history and offer relevant examination. See STI/BBV assessment, p. 430 + consider other diagnoses
- Get self-collected high vaginal swab for microscopy[2]

4. Management[1]

- Consult MO/NP if severe symptoms or recurrent (≥ 4 acute episodes/year)[2]

- **If no symptoms** - treatment not needed
- **If symptoms** - treat with PV clotrimazole or oral fluconazole[1,2]
  - advise:
    - thrush can occur spontaneously, or due to disturbance of vaginal flora eg antibiotics
    - avoid local irritants eg soaps, bubble baths, vaginal lubricants/hygiene products
    - if needed, addition of hydrocortisone ointment 1% to external area may provide relief of itch
    - some male sexual contacts can develop a post sex itch on penis. **Note:** not considered an STI

S3	Clotrimazole			Extended authority ATSIHP/IHW/IPAP/SRH
ATSIHP, IHW and IPAP must consult MO/NP				
RN may administer; for supply see RN supplying, p. 11				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Pessary	100 mg, 500 mg	PV	1 pessary at bed time	**500 mg** single dose **100 mg** 6 nights
OR				
Vaginal cream	1%	PV	1 applicatorful at bed time	6 nights
Offer CMI: Complete course even if symptoms gone. Can damage latex contraceptive devices - do not use during treatment				
Pregnancy: Use 6 night course				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

S3	Fluconazole			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN, RN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	50 mg, 100 mg, 150 mg	Oral	150 mg	Single dose
Offer CMI: May cause rash, headache, dizziness, nausea, abdominal pain, diarrhoea				
Pregnancy: Do not use. Safe in breastfeeding				
Contraindication: Use with medicines that prolong QT interval. Allergy to an azole antifungal				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

5. Follow up

- If swab taken, follow up results. Consult MO/NP if *Nakaseomyces/Candida glabrata* for alternative treatment[2]
- Advise to return if symptoms persist after treatment - consult MO/NP
- Consider diabetes, HIV infection or other causes of immunosuppression if poorly controlled[1]

6. Referral/consultation

- As above

HMP Epididymo-orchitis - adult

Background[1,2]

- Inflammation of the epididymis and occasionally the testes. Most common cause if sexually active is chlamydia or gonorrhoea

1. May present with[1]

- Pain and swelling in the testes/scrotum - usually only one side

2. Immediate management[1,2]

ALERT sudden onset or severe pain is Testicular torsion, p. 211 until proven otherwise
Testicular torsion must be excluded in anyone with testicular pain. Medical emergency

- Get rapid history, including:
  - onset - gradual/sudden
  - severity
  - location/radiation of pain eg to abdomen, suprapubic area
  - other symptoms eg fever, penile discharge, dysuria, nausea, vomiting, viral illness
  - sexual history - see STI/BBV assessment, p. 430
- Do vital signs +
  - **assess + examine testes as per table in** Testicular/scrotal pain, p. 211
  - urinalysis and MSU for MCS
  - STI/BBV tests, p. 433 as per person with symptoms
- **Contact MO/NP urgently in all cases of testicular pain**

3. Clinical assessment[1,2]

- As per **Immediate management**

4. Management[1,2]

- Offer analgesia. See Acute pain, p. 32
- **If not sexually active** - is usually caused by an organism from the urinary tract:
  - MO/NP may order oral antibiotics eg trimethoprim 300 mg daily for 2 weeks
- **If sexually active** - treat now for chlamydia + gonorrhoea. **Do not wait for pathology results:**
  - IM ceftriaxone* stat **PLUS**
  - doxycycline for 14 days **OR** azithromycin stat + repeat in 1 week (if adherence concerns)

* If area has high penicillin susceptibility to gonorrhoea (as advised by local sexual health specialist or AMS program), **replace ceftriaxone with oral amoxicillin 3 g + probenecid 1 g.** See Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437 for drug boxes

- **Advise:**
  - bed rest, regular analgesia eg paracetamol, cool compresses and scrotal support as needed
  - should see improvement in 4–5 days. Swelling can take several weeks to go away completely
  - **if likely STI related:**
    - **no sexual** contact for **7 days** after treatment started, or until course completed + symptoms resolve (whichever is later)
    - no sex with sexual contacts from last **6 months** until they have been tested + treated if needed
    - start Contact tracing, p. 436 of sexual contacts from last **6 months**
    - use condoms
- Offer Patient advice about STIs (QR code), p. 434

S4	Ceftriaxone			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	IM	500 mg (2 mL)	stat - deep injection into gluteal muscle
Preparation: Reconstitute with lidocaine 1% 3.5 mL to make 1 g/4 mL				
Offer CMI: May cause rash, diarrhoea, nausea, dizziness, headache and pain at injection site				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporins or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

S4	Doxycycline			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	50 mg, 100 mg	Oral	100 mg bd	14 days
Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity				
Contraindication: Serious allergy to tetracyclines. Taking oral retinoids				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	1 g	stat and repeat in 1 week
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or candidal infections				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,5]				

5. Follow up[1,2]

- Advise review:
  - **next day**, or sooner if concerned or increased pain/swelling. If not improving, consult MO/NP. May need referral for USS
  - **in 4–5 days:**
    - check response to treatment, review pathology results and reassess treatment as needed
    - if pain and swelling have not substantially reduced, consult MO/NP. Antibiotics may need continuing for up to 3 weeks
    - ensure contact tracing underway if treated for STI
  - **3 months** retest for STIs for reinfection. **Note:** Test of cure not needed

6. Referral/consultation[1]

- In severe cases, treatment may need to be continued for up to 3 weeks. Seek specialist advice

HMP Low abdominal pain in female/person with uterus - adult

Probable pelvic inflammatory disease (PID)

Recommend[1]

- PID must be considered in all sexually active people with a uterus with recent onset pelvic pain
- **Promptly treat based on symptoms** (without waiting for pathology results) to avoid long-term problems eg infertility. **Response to treatment confirms diagnosis**

Background[1]

- PID comprises inflammatory disorders of the upper genital tract eg any combination of endometritis, salpingitis, tubo-ovarian abscess and pelvic peritonitis
- Cause can be polymicrobial, STIs, vaginal bacteria, or unknown (up to 70% of cases)

1. May present with[1]

- Low pelvic pain - like period pain:
  - typically bilateral - may worsen with movement ± localised to 1 side
  - may refer to upper right quadrant
- May have:
  - purulent or blood stained vaginal discharge
  - painful deep sex, bleeding (spotting) eg between periods/after sex or heavy/long periods
  - fever, nausea, vomiting - indicates **Severe infection**
- **Note:** varies in severity/symptoms eg can be mild pain alone

2. Immediate management[1,2]

- Do vital signs + pregnancy test

ALERT if pregnancy test +ve assume Ectopic pregnancy, p. 357 until proven otherwise

- Screen for Sepsis, p. 62
- **If severe pain:**
  - offer analgesia. See Acute pain, p. 32
  - do rapid history and assessment. See Abdominal pain, p. 198
  - insert IVC
  - nil by mouth
  - urgently consult MO/NP, who will advise further management/arrange retrieval

3. Clinical assessment[1-3]

- Get history of pain. Also ask about:
  - dysuria/frequency of urine
  - fever, nausea, vomiting, any other symptoms
  - date of last menstrual period
  - sexual history. See STI/BBV assessment, p. 430
  - prior PID
- Do examination as per Abdominal pain, p. 198 +
  - urinalysis
  - STI/BBV tests, p. 433 as per person with symptoms (+ for M. genitalium)[4]
- If skilled, offer speculum/bimanual examination:
  - **note: not essential for presumptive diagnosis + treatment of PID**
  - PID likely if cervical motion tenderness, uterine/adnexal tenderness ± cervical discharge
  - do endocervical swabs - chlamydia, gonorrhoea, trichomonas and M. genitalium + CST if due

Consider differential diagnoses[1,3]

Possible causes (may be multiple)	Clues to diagnosis
Pregnancy test +ve	• Ectopic pregnancy, p. 357 until proven otherwise. **Medical emergency**
Pregnancy test –ve • Consider: – PID – UTI – appendicitis – ovarian cyst or tumour/abscess – endometriosis – pelvic adhesions – uterine fibroids – diverticulitis • Also see Abdominal pain causes, p. 201	• **PID likely if any of:**[1] – recent onset of pelvic pain in sexually active person, especially if ‹ 30 years (highly predictive of PID) – living in area where gonorrhoea, chlamydia and M. genitalium are common eg rural/remote – recent sexual contact change, contact with STI or symptoms of an STI, recent uterine instrumentation eg ToP, IUD insertion, fertility/IVF
	• UTI, p. 283 likely if presence of nitrites, blood or leucocytes **PLUS** prominent symptoms of dysuria and frequency[1]
	• **Appendicitis** - nausea, vomiting, anorexia, typically pain moves from umbilicus to right lower quadrant ± rebound tenderness, fever[3]
	• **Ruptured ovarian cyst** - sudden intensification of pain[3]
	• **Endometriosis** - cyclic pain (PID is not cyclic)[3]
	• **Uterine fibroids/diverticulitis** - uncommon if ‹ 40 years
	• **Ovarian tumour** - bloating, feeling full quickly, frequent or urgent urination. More common › 50 years

4. Management[1,2]

- Offer analgesia. See Acute pain, p. 32
- Consult MO/NP if:
  - pregnant
  - abnormal vaginal bleeding, recent intrauterine instrumentation
  - PID unlikely, or surgical emergency cannot be excluded
  - **severe PID suspected** - ie severe pain or systemically unwell eg nausea, vomiting, fever:
    - may advise IV antibiotics + retrieval/hospitalisation
- **If mild–moderate PID suspected:**
  - start antibiotics immediately - **do not wait for pathology results:**
    - pain responds quickly to antibiotics - this helps confirm the diagnosis
  - advise patient:
    - pain should resolve within 3 days. Take analgesia + rest as needed
    - current sexual contacts need to be tested and treated for chlamydia (and gonorrhoea if likely) as soon as possible, irrespective of pathology results[4]
    - no sex for **1 week following treatment +** symptoms gone **+** current sexual contacts treated
    - when and how they will get pathology results
    - about PID/complications if untreated. Offer fact sheet eg https://www.staystifree.org.au/get-the-facts/pelvic-inflammatory-disease

Antibiotics for mild–moderate PID - covers chlamydia, gonorrhoea, polymicrobial vaginal flora[4]

- IM ceftriaxone* stat **PLUS** oral metronidazole for 14 days **PLUS:**
  - oral doxycycline for 14 days **OR** azithromycin stat + repeat in 1 week (if adherence concerns or pregnant/breastfeeding)

*If area has high penicillin susceptibility to gonorrhoea (as advised by local sexual health specialist or AMS program), **replace ceftriaxone with oral amoxicillin 3 g + probenecid 1 g.** See Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437 for drug boxes

S4	Ceftriaxone			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1 g	IM	500 mg (2 mL)	stat - deep injection into gluteal muscle
Preparation: Reconstitute with lidocaine 1% 3.5 mL to make 1 g/4 mL				
Offer CMI: May cause rash, diarrhoea, nausea, dizziness, headache and pain at injection site				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporins or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,5]				

S4	Metronidazole			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg, 400 mg	Oral	400 mg bd	14 days
Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take with food to reduce stomach upset. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,6]				

S4	Doxycycline			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	50 mg, 100 mg	Oral	100 mg bd	14 days
Offer CMI: Take with food or milk to reduce stomach upset + with large glass of water. Do not lie down for an hour after taking. Do not take iron, calcium, zinc or antacids within 2 hours. Avoid sun exposure. May cause nausea, vomiting, diarrhoea, epigastric burning, tooth discolouration or photosensitivity				
Pregnancy: Safe in the first 18 weeks				
Contraindication: Serious allergy to tetracyclines. Taking oral retinoids. After 18 weeks of pregnancy				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,7]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	1 g	stat and repeat in 1 week
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,8]				

5. Follow up[1]

- **Advise review in:**
  - **48–72 hours** or sooner if pain/symptoms worsen or concerned:[1,2]
    - check taking tablets correctly. Ask if pain subsiding + ensure sexual contacts treated
    - if not improved consult MO/NP for further evaluation ± hospitalisation and IV antibiotics
  - **1–2 weeks:**
    - check taking tablets correctly + ask if pain resolved (consult MO/NP if not)
    - repeat pregnancy test if indicated
    - ensure pathology results given
- **Follow up pathology results. If +ve for an STI(s):**[4]
  - start **contact tracing** + advise **test of cure** and **retesting**. See Chlamydia, gonorrhoea, trichomonas, M. genitalium, p. 437 for guidance[1]
  - if M. genitalium:
    - if still has pain - switch to moxifloxacin 400 mg daily for 14 days. Requires MO/NP order from pharmacy[1]
    - if responding to current treatment - continue and do test of cure in 1 month to check M. genitalium resolved

6. Referral/consultation

- If pain recurs, reassess for PID and consult MO/NP for further evaluation

HMP Anogenital ulcers/lumps - adult

Recommend[1]

- **Syphilis must be considered for any genital sore,** particularly in Aboriginal and Torres Strait Islander people, men who have sex with men (MSM), female sexual contacts of MSM and people who use drugs

Background[1]

- For other anorectal syndromes, see https://sti.guidelines.org.au/syndromes/anorectal-syndromes/
- There is an increase in syphilis in the general population, including women of reproductive age[1]
- **Ulcers** can be caused from herpes, syphilis, rarely donovanosis or lymphogranuloma venereum
- **Lumps** (papules/nodules/vesicles) can be caused from HPV (warts), herpes or syphilis

1. May present with

- Lumps, sores or ulcers in the genital/anogenital area

2. Immediate management Not applicable

3. Clinical assessment[1]

- Get history as per STI/BBV assessment, p. 430. Also ask about:
  - onset date (if known) of sore/symptoms
  - location/duration
  - characteristics of ulcers/lumps eg itching, painful, tingling
  - any:
    - fever, headache, muscle aches and pains, rashes
    - previous episodes of genital sores, when/how (if) treated
    - prior syphilis (check medical records) or herpes
    - recent overseas travel; where, did they have sex while overseas
  - do current sexual contacts have symptoms/signs of an STI

- Do vital signs
- Do physical examination, including:
  - skin for rash - also check palms of hands and soles of feet
  - genital and anal area - lumps, sores/ulcers, vesicles, discharge
  - mouth - ulcers/mucous patches
  - enlarged ± tender lymph nodes - groin, armpits and neck
  - any patchy hair/eyebrow loss
- See ATLAS website for images of STIs
- Do:
  - STI/BBV tests, p. 433 as per person with symptoms
  - + swab of ulcer/sore for syphilis and herpes PCR (from base of lesion or deroofed vesicle)
  - pregnancy test if reproductive age

Images - ATLAS

Common causes of anogenital lumps and ulcers (infections can co-exist)[1]

	Herpes	Syphilis	Warts
Typical lumps/ulcers	• Single or multiple skin splits/or cluster of blisters • Break down to form small shallow ulcers • Surrounding skin may be inflamed • Initial episodes may be severe with extensive ulceration and systemic features	• **Primary** - (chancre) usually 1 ulcer or sore with well defined edges and hard/firm base. Does not bleed - feels like a hard button on the skin:[1] – multiple ulcers can occur – can also occur on anal skin, cervix or in mouth/lips • **Secondary** - (condylomata lata) multiple warty (large, raised, whitish or grey, flat-topped) growths in anogenital/warm/moist areas:[1] – may also have rash on trunk or just palms and soles + patchy hair loss	• Warty growths in and around genital skin • Solid lumps • May be seen on cervix in female • Less common since HPV vaccine started
Painful	• Itchy/tingling • Generally painful	• Usually painless • Can be painful if infected	• Little discomfort, sometimes itchy • Can be painful, on moist areas, anus/labia
Enlarged lymph nodes	• Inguinal nodes often tender	• Inguinal nodes usually enlarged, rubbery and non-tender	• No
Heals without treatment	• Yes, within 1–2 weeks • May recur	• Primary ulcers go away within a few weeks. Secondary lesions may come and go over 12–24 months	• Yes/no • May resolve after 1–2 years[2]

Other causes to consider[1]

- Scabies/impetigo, folliculitis, normal anatomical variations, immunological conditions, trauma, cancer, Crohn's disease, shingles, Mpox, other non-infectious causes
- ***Molluscum contagiosum* virus** - multiple pearl like, smooth papules, with small depression, usually in groin and inner thigh in adults. Common in children[3]
- **Donovanosis** (rare) - shallow ulcers, bleed on contact or raised 'beefy' lesions or combination. Usually painless, no enlarged lymph nodes. Does not heal without treatment - gets larger over time
- **Lymphogranuloma venereum (LGV)** (rare) - small ulcer/nodule on penis/vulva/anus (may go unnoticed), proctitis. More likely in MSM

4. Management[1]

There is a high prevalence of syphilis in MSM + in remote Aboriginal and Torres Strait Islander communities. Consider potential syphilis in all genital ulcers in these populations[1]

- Offer analgesia. See Acute pain, p. 32
- **If syphilis suspected or unsure - treat presumptively as syphilis now:**
  - give IM benzathine benzylpenicillin (Bicillin L-A®) (stat dose) as per drug box in Syphilis, p. 452
  - **do not wait for pathology results**
  - notify Qld Syphilis Surveillance Service (QSSS) ✆ 1800 032 238 or North-Qld-Syphilis-Surveillance-Centre@health.qld.gov.au or QLD-Syphilis-Surveillance-Service@health.qld.gov.au. If outside Qld, your local Public Health Unit/syphilis register
- **If warts suspected** consider condylomata lata (syphilis) as differential diagnosis:
  - dry swab the lesion (request syphilis PCR) and presumptively treat as syphilis if in an area of high prevalence. If syphilis result –ve, then treat as warts, p. 458
- **If typical of herpes:**
  - treat as per Genital herpes, p. 456
  - do not wait for pathology results

5. Follow up[1]

- Follow up pathology results:
  - if clinical suspicion of primary syphilis, but blood test –ve, ensure a PCR swab done and repeat syphilis serology after 2 weeks following presumptive treatment (in collaboration with QSSS)
- Advise to be reviewed in **1 week**, or sooner if concerned:
  - check lesion(s), advise patient of pathology results
- Consult MO/NP if sores/ulcers do not respond to treatment, who may consider differential diagnoses/biopsy for histology

6. Referral/consultation[1]

- Suspected and confirmed syphilis is notifiable ✆. Contact QSSS ✆ 1800 032 238. If outside Qld, contact your local Public Health Unit/syphilis register

HMP **Syphilis** - adult

Recommend[1]

- Regular asymptomatic testing of sexually active people at risk of STIs + prompt treatment
- **In Qld,** manage all syphilis in collaboration with the Qld Syphilis Surveillance Service (QSSS):
  - ✆ 1800 032 238 North Qld North-Qld-Syphilis-Surveillance-Centre@health.qld.gov.au; South Qld QLD-Syphilis-Surveillance-Service@health.qld.gov.au.
  - **if outside Qld,** contact your local Public Health Unit/syphilis register

Background

- There is a high prevalence of syphilis in MSM + in remote Aboriginal and Torres Strait Islander communities[1]
- Syphilis is increasing in the general population, including women of reproductive age[1]
- There have been several deaths from congenital syphilis in Qld (baby acquires syphilis during pregnancy). This is preventable with adequate testing and management[2]
- Resource - *Decision making in syphilis* https://www.ashm.org.au/resources

1. May present with[1]

- Symptoms suggesting syphilis (see table below)
- +ve pathology results
- Sexual contact of person with symptoms or confirmed by pathology

		Symptoms of syphilis - can vary, often no symptoms[1]
Infectious syphilis	**Primary syphilis** 10–90 days after infection	• **Genital, anal or oral ulcer (chancre)** - occurs at site of entry: – relatively painless (not always) – well-defined margin + hard/firm base – can be a single ulcer or multiple • Inguinal lymph nodes usually enlarged, rubbery and non-tender[1] • Ulcer may go unnoticed - goes away by itself within a few weeks
	Secondary syphilis › 6 weeks (approx.) after infection	• Systemic signs and symptoms eg: – fever, malaise, headache, enlarged lymph nodes – **rash** - on trunk; may just affect palms and soles. Can be dry/scaly – **patchy hair loss** eg part of eyebrow – **condylomata lata** - warty growths in anogenital region. Large, raised, whitish or grey, flat-topped – **mucous patches** - oral/genitals. Painful or painless • Symptoms slowly go away after 3–12 weeks, but may recur • **Early neurosyphilis** eg visual changes, tinnitus, deafness, cranial nerve palsies, meningitis (if any, requires sexual health/ID specialist input)
	Early latent syphilis	• Infectious syphilis of ‹ 2 years duration • +ve syphilis serology with no clinical signs or symptoms
Late latent syphilis		• Syphilis › 2 years duration. Can be asymptomatic for many years • No longer infectious to sexual contacts, but CAN be transmitted to fetus during pregnancy
Tertiary syphilis		• Occurs in about 1/3 of untreated people • Skin lesions (gummas), cardiovascular or neurological disease

2. Immediate management Not applicable

3. Clinical assessment[1]

- Do STI/BBV assessment, p. 430 + ask about:
  - symptoms of syphilis - what, onset, duration + ask if any symptoms in last 2 years
  - sexual history + do current sexual contacts have any symptoms of syphilis
  - prior diagnoses of syphilis - year of diagnosis, dates of treatment, where done
- Do physical examination, including:
  - vital signs
  - look for any signs of syphilis
  - pregnancy test if reproductive age
  - STI/BBV tests, p. 433 if not done already

4. Management[1,2]

ALERT primary, secondary and early latent syphilis is highly infectious to sexual contacts, and if pregnant, to the unborn baby (can cause fetal death)

- **Treat now as 'infectious syphilis'** (do not wait for pathology results) **if:**
  - symptoms suggest syphilis OR
  - a sexual contact of person with symptoms OR +ve pathology for syphilis (primary, secondary, early latent)
- **Pathology results:**
  - **PCR swab** of sore/ulcer - if *T. pallidum* present 'infectious syphilis' is confirmed[1] - treat now
  - **syphilis serology** - can be hard to interpret:
    - reactive does not always mean current infection or treatment needed. QSSS will advise
    - get prior syphilis serology results (check medical record/QSSS) to assess against

Syphilis serology[3]

Antibody^ CMIA/EIA, TPPA/TPHA	**RPR**#	**Likely interpretation**	**Action**
Non reactive	**Non reactive**	• No syphilis OR • Incubating syphilis	• No action • OR, if you still suspect syphilis eg symptoms:[1] – treat today as 'infectious syphilis' – ensure PCR swab of sore/ulcer done – repeat serology 2 weeks after treatment
If any of below contact QSSS 1800 032 238 QSSS will help interpret results, work out stage of syphilis + advise treatment			
Reactive	**Reactive**	• Could be current OR prior infection	• Check RPR titre against prior RPR titre(s)# • Assume new infection if ≥ 2 titre (4 fold) ↑ compared to last titre (regardless of what the titre is) eg 1:4 is now 1:16 or more • Ask about history of symptoms of syphilis
Reactive *May be false +ve if only 1 reactive*	**Non reactive**	• Primary or latent syphilis OR prior treated syphilis	• Ask about history of symptoms of syphilis • Retest after 2–4 weeks if suspect false +ve

^If prior treated syphilis, **EIA and TPPA** are usually +ve for life. Reinfection is assessed based on symptoms ± a significant rise in RPR titre. #**RPR** is a marker to detect reinfection or treatment success.[1] A reactive RPR may be reported as a 'titre' eg: 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64, 1:128 etc. The titre rises in early infection and falls over 2 years, regardless of treatment

Syphilis in pregnancy[2]

- If syphilis suspected or confirmed in a pregnant person OR their sexual contacts:
  - treat both URGENTLY in consultation with specialist MO + QSSS
  - diagnosis and treatment is the same as for a non-pregnant person, with more frequent follow up
  - discuss risk of reinfection, prevention, symptoms of syphilis + importance of follow up and contact tracing
  - monitor effect of maternal treatment. First repeat serology at 8 weeks after treatment (or birth, which ever occurs first). Ongoing as per Qld Clinical Guideline *Syphilis and pregnancy*

Treatment[1]

- Always advise QSSS that you are treating + why eg symptoms/contact/swab result
- **Give benzathine benzylpenicillin (Bicillin L-A®)** as per stage of syphilis/QSSS advice
- **Take syphilis serology on 1st day of treatment** - assists with syphilis staging + to use as a baseline to monitor response to treatment (do serology again if recently done)
- **Note:** if person requires treatment for neurosyphilis (including ocular) or tertiary syphilis, discuss with Sexual Health or ID specialist

S4	**Benzathine benzylpenicillin** (Bicillin L-A®)			**Extended authority** ATSIHP/IHW/IPAP/MID/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
MID, RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Prefilled syringe	1.2 million units/2.3 mL (900 mg)	IM	2.4 million units (1.8 g) **2 prefilled syringes**	**Infectious syphilis** stat
				Late latent syphilis or of unknown duration Once a week for 3 weeks
Offer CMI: May cause diarrhoea, nausea and pain at injection site **Jarisch-Herxheimer reaction** to treatment can occur in primary or secondary syphilis. Starts after 6–12 hours, with fever, chills, headache, malaise, joint pains, preterm labour (but this should not prevent/ delay treatment as consequences of untreated syphilis are significantly worse). Lasts for 12–24 hours. Manage with analgesia + rest				
Note: Give in 2 separate sites. Ventrogluteal, p. 552 or outer mid-thigh preferred. Do not give in deltoid. See Managing injection pain, p. 551				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems. **If allergic to penicillin contact QSSS**				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-4]				

Contact tracing[1]

- Do contact tracing if symptoms of syphilis or as per **Stage of infection** (QSSS will advise)
- Contacts must be followed up **promptly, URGENTLY if pregnant**. For each contact:
  - do STI/BBV tests, p. 433 including syphilis serology
  - ask about/check for symptoms of syphilis - prior or current
  - treat immediately with benzathine benzylpenicillin (Bicillin L-A®) stat dose regardless of syphilis serology results
  - advise QSSS. Contact QSSS if you are having any problems with contact tracing

Stage of infection	How far to trace back, test + treat
Primary syphilis	• 3 months + duration of symptoms or last –ve test
Secondary syphilis	• 6 months + duration of symptoms or last –ve test
Early latent syphilis or unknown origin	• 12 months or most recent –ve test
Late latent/tertiary syphilis	• Current sexual contacts. If any doubt as to whether the patient has early late or late latent syphilis, contact trace as for early latent syphilis
See Contact tracing, p. 436 **for how to do**	

In all cases

- **If treated for infectious syphilis advise no sexual contact:**
  - with sexual contacts from last **3 months** (primary syphilis), **6 months** (secondary syphilis) or **12 months** (early latent) until contacts tested + treated[1]
  - + for **7 days** after treatment of patient and sexual contacts
- Offer fact sheet eg https://youngdeadlyfree.org.au/resources/factsheets/
- Continue having regular STI/BBV checks + use condoms

5. Follow up[1]

- Follow up pathology results. **Note:** all reactive results automatically get sent to QSSS
- Advise to return in **1–2 weeks** to check:
  - response to treatment (if symptoms)
  - any other contacts they have thought of
  - give pathology results
- **If 3 dose treatment** - ensure patient is followed up for each dose:
  - notify QSSS when doses given
  - if a weekly dose is missed consult QSSS for advice
- **Follow up at 3, 6 and 12 months for infectious syphilis** to monitor response to treatment + for reinfection:
  - do repeat syphilis serology + STI/BBV tests, p. 433 each time
  - a 2 titre or 4 fold drop in RPR by 6 months indicates adequate response eg 1:32 is now 1:8, or 1:128 is now 1:32
  - do in collaboration with QSSS

6. Referral/consultation

- Suspected and confirmed syphilis is notifiable ✆:
  - contact QSSS ✆ 1800 032 238 North-Qld-Syphilis-Surveillance-Centre@health.qld.gov.au (North Qld) or QLD-Syphilis-Surveillance-Service@health.qld.gov.au (South Qld)
  - if outside Qld, your local Public Health Unit/syphilis register

HMP Genital herpes simplex virus (HSV) - adult

Background[1]

- HSV is common and is often acquired without symptoms. Over 50% of initial genital episodes are now caused by HSV type 1. Is highly stigmatised and poorly understood in the community

1. May present with[1,2]

- Recurrent skin splits, ulcers or blisters in anogenital area
- Redness with itching/tingling, may be painful
- Initial episodes may be severe with extensive ulceration + systemic symptoms eg fever, headache

2. Immediate management

Not applicable

3. Clinical assessment[1,2]

- Get history + do examination as per STI/BBV assessment, p. 430
- Do vital signs
- Ask if prior herpes/cold sores
- If no prior history of herpes, or not typical (for patient) of recurrent herpes infections, do:
  - STI/BBV tests, p. 433 as per person with symptoms
  - swab of ulcer/sore for syphilis and herpes PCR (from base of lesion or deroofed vesicle)[2]
- Consider differential diagnoses as per Anogenital ulcers/lumps, p. 449
- Do pregnancy test if reproductive age

4. Management[1,2]

- **If clinically suggestive of herpes:**
  - treat with valaciclovir now (do not wait for pathology results) - can shorten episode if started within 72 hours of symptom onset[2]
  - **if pregnant** consult MO/NP for treatment
- **If herpes likely, but uncertain:**
  - treat as above AND also treat presumptively as Syphilis, p. 452 + notify Qld Syphilis Surveillance Service ✆ 1800 032 238. If outside Qld, your local Public Health Unit/syphilis register
- **For recurrent episodes:**[1]
  - treat now + offer supply of valaciclovir or famciclovir for patient to keep with them for prompt initial treatment at the onset of symptoms eg itching/tingling
  - suppressive therapy (continuous or interrupted) may be prescribed by MO/NP if frequent episodes. Can reduce recurrences by 70–80% and halve the rate of transmission[2]
- Contact tracing not needed[1]
- Offer **Patient advice**

Patient advice[1]

- Offer psychological support + information. Reassure there are many strategies to avoid transmission to future sexual contacts eg see https://www.herpes.org.nz/
- Antiviral treatment does not cure herpes, but can lesson severity/symptoms
- **For relief of pain/symptoms:**
  - take paracetamol. See Acute pain, p. 32
  - lidocaine gel or similar may be tried
  - sodium chloride 0.9%/salt water bathing
  - urinate while in bath or shower to relieve dysuria

S4	Valaciclovir			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	500 mg bd	**First episode** 10 days. If responds quickly, stop after 5 days **Recurrent episodes** 3 days
Offer CMI: Drink plenty of fluids - at least 1.5 L/day. May cause nausea, vomiting, diarrhoea, headache				
Note: If renal impairment seek MO/NP advice				
Pregnancy: Aciclovir preferred. May be used from 36 weeks gestation				
Contraindication: Allergy to aciclovir				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

S4	Famciclovir			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	250 mg	Oral	1 g bd	**Recurrent episodes** 1 day
Offer CMI: May cause headache, vomiting or diarrhoea				
Note: If renal impairment seek MO/NP advice				
Pregnancy: Aciclovir preferred. If breastfeeding, aciclovir or valaciclovir preferred				
Contraindication: Allergy to penciclovir				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4]				

5. Follow up[1]

- Follow up pathology results
- Advise to be reviewed in 1 week:
  - give pathology results, check response to treatment
  - do STI/BBV tests, p. 433 if unable to do at initial visit
- If symptoms not resolving, consult MO/NP - consider other causes

6. Referral/consultation

- Refer to sexual health clinician as needed. Genital herpes is not notifiable

HMP Anogenital warts - adult
Human papilloma virus (HPV)

Recommend[1]
- Encourage HPV vaccination

1. May present with[2]
- Warty growths in and around anogenital skin
- Little discomfort, sometimes itchy

2. Immediate management
Not applicable

3. Clinical assessment[2]
- Get history + do examination as per STI/BBV assessment, p. 430
- Do vital signs
- Do STI/BBV tests, p. 433 including syphilis serology
- **Note:** there is no specific diagnostic test for HPV - usually diagnosed by visual appearance
- Consider differential diagnoses as per Anogenital ulcers/lumps, p. 449

4. Management[2,3]

ALERT as warts are less common since HPV vaccination, **syphilis may be more likely**
Condylomata lata, a symptom of syphilis, also presents as warty like growths

- **If condylomata lata possible:**
  - treat presumptively now as Syphilis, p. 452 + notify Qld Syphilis Surveillance Service (QSSS) ✆ 1800 032 238, or if outside Qld, your local Public Health Unit/syphilis register
  - if syphilis result is –ve, then consider genital warts
- **Advise to see MO/NP at next clinic if:**
  - pregnant
  - atypical lesion eg variable pigmentation, raised plaque-like, cervical warts, or if new lesion in elderly person[2]
  - in anus or in urethral opening - may need cryotherapy or surgical management
  - HIV infection
- **Treatment options for uncomplicated warts:**
  - podophyllotoxin paint - patient applied, or imiquimod cream 5%
  - weekly cryotherapy by skilled clinician
- Contact tracing not needed
- Offer **Patient advice**

Patient advice[2]
- Treatment is cosmetic rather than curative. Warts may reappear after treatment. In most people the virus clears by itself in 1–2 years
- If warts are in the pubic region avoid shaving or waxing - may facilitate local spreading
- Condoms can help protect against warts, but they don't cover all areas of your genital skin
- Offer fact sheet eg https://www.staystifree.org.au/get-the-facts/genital-warts-hpv

S4	Podophyllotoxin			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Paint	0.5%	Topical	Apply to wart(s) bd	For 3 days, then 4 days off Repeat weekly for up to 4–6 cycles
Offer CMI: Before applying, wash affected area with mild soap and water and allow to dry. Wash hands before and after use. **Apply to wart only - do not use on broken skin**. Avoid contact with eyes. Avoid bathing or showering after application. If you have sex, apply treatment afterwards or wash it off if already applied. May cause burning, inflammation, pain, erosion or itch				
Note: If possible, clinician to apply the 1st treatment and instruct the patient how to use				
Pregnancy: Contraindicated. Avoid if breastfeeding				
Management of associated emergency: Consult MO/NP [2-4]				

5. Follow up[2]

- Follow up pathology results and advise patient
- Advise to see MO/NP/sexual health clinician if warts are difficult for patient to see, symptoms do not resolve or if feeling anxious

6. Referral/consultation[2]

- Genital warts are not notifiable

Human immunodeficiency virus (HIV) - adult

Recommend

- Normalise HIV testing as much as possible[1]
- If at risk of HIV, encourage Pre-Exposure Prophylaxis (PrEP) to prevent infection[2]
- If exposed to HIV, offer Post-Exposure Prophylaxis (PEP) within 72 hours[3]
- If HIV +ve **start antiretroviral therapy (ART) as soon as possible** after diagnosis[4]

Background[1,4]

- HIV infection is treated with life long ART (free in Qld):
  - highly effective - people can expect to live a normal/near normal life expectancy
  - ART reduces viral load of HIV. **Undetectable viral load = Untransmissible**
- Failure to diagnose HIV can result in serious illness and onward transmission to others[1]
- Self test kits are now approved for use in Australia[1] eg https://www.atomohivtest.com/home.php
- **Resources**
  - HIV information/fact sheets eg https://www.afao.org.au/
  - Aboriginal and Torres Strait Islander resources https://www.talktesttreat.com.au/
  - ASHM resources, including *Decision making in HIV* https://www.ashm.org.au/resources

1. May present with[1,4]

- +ve HIV test
- **At increased risk of HIV** eg men who have sex with men (MSM), sexual contacts of HIV infected people (unless HIV +ve person has undetectable viral load), people from and people who visit countries with high HIV prevalence, people who inject drugs
- Potential exposure to HIV
- Possible HIV infection:
  - acute infection - fever, rash, lymphadenopathy, sore throat, muscle aches, diarrhoea[1]
  - unexplained immunosuppression eg oral thrush, diarrhoea, weight loss, skin infections, herpes zoster, pneumonia, Kaposi sarcoma[4]

2. Immediate management

Not applicable

3. Clinical assessment

- **Testing for HIV:**[1]
  - get informed consent as with any other pathology test, including type of test, reasons for testing and potential implications of not being tested
  - a detailed history is not necessary
  - ensure confidentiality and anonymous testing if possible
  - advise when and how patient will get results
  - **note:** the clinician who ordered the test is responsible for following up results

HIV blood tests[2]	
HIV Ag/Ab	**Reactive:** may be +ve for HIV, but **needs confirmation** 'true positive'[1] **Non-reactive:** –ve for HIV. If exposed to HIV, retest after 12 weeks (window period)
Western blot	Confirmatory test
HIV p24 antigen	High during HIV primary illness
CD4 lymphocyte	Marker of immune function, usually › 500
HIV RNA (viral load)	Marker of HIV level in serum, should be undetectable if on treatment

4. Management[1,4]

+ve HIV test

- Get advice from local Sexual Health Service/HIV Public Health team **before** advising patient:[1]
  - if HIV 'self-test' or 'rapid test' done and is reactive, do HIV serology to confirm
  - **lab will advise clinician if initial test +ve**, answer any questions, and advise if repeat test is needed[5]
  - **give results in person (if possible)** by a **clinician experienced in HIV, who will/may**:
    - concurrently offer HIV support/counselling
    - offer/start immediate treatment (ART) - to be prescribed by s100 MO/NP
    - order:[6]
      - bloods - CD_4, HIV viral load, CHEM20, glucose, lipids, hep A
      - urinalysis, pregnancy test
      - other STI/BBV tests, p. 433 ± hep B, hep C, TB
    - arrange follow up within a few days to see how patient is coping
    - refer for HIV specialist care[1]
    - advise/assist contact tracing and management of contacts
- Also see *HIV monitoring tool (new patient + ongoing patient review)* https://www.ashm.org.au/resources

Pre-Exposure Prophylaxis (PrEP)[2]

- Recommended for people **At increased risk of HIV** transmission **to prevent infection:**
  - advise to discuss with MO/NP for prescription - can take regularly or 'on-demand'
  - need HIV testing 3 monthly while taking
- For more information see PrEP guidelines https://prepguidelines.com.au/

Post-Exposure Prophylaxis (PEP)[3]

- To reduce risk of HIV after exposure to blood/bodily fluids
- For more information see PEP guidelines http://www.pep.guidelines.org.au/

- **PEP may be recommended if:**[3]
  - anal or vaginal sex without condom **OR** shared injecting equipment with person who/is:
    - HIV +ve (not if sexual contact has undetected viral load)
    - at higher risk of HIV eg MSM, MSM who inject drugs
    - from high HIV prevalent country. See https://aidsinfo.unaids.org/
    - injects drugs **and** is from a high risk country eg central Asia and Eastern Europe
  - sexual assault - penile-anal assault **or** with any of above people **or victim requests**
  - **work related exposure** with HIV +ve person eg needle stick injury, blood/body fluids
- If HIV status of source unknown, attempt to get urgent HIV test - this should not delay PEP

- **Immediately after exposure advise:**[3]
  - if intact skin exposed, wash with soap + water; if eyes/mucous membranes, irrigate with water/sodium chloride 0.9% (remove contact lenses); if small skin wound, clean with antiseptic/alcohol hand rub; do not douche vagina/rectum after sexual exposure; if oral cavity, spit out and rinse mouth well with water

- **If PEP indicated OR you are unsure:**
  - promptly consult MO/NP with expertise in HIV eg sexual health/infectious disease/public health, who may **risk assess** ± order PEP
- **If PEP ordered, start as soon as possible after exposure** (within 72 hours):
  - 3 day starter pack should be in clinic. Give 28 day course at initial presentation if available[3]
  - advise pregnancy test + order baseline bloods - HIV Ab/Ag, LFT, EUC + STI/BBV tests, p. 433
  - order follow up bloods
  - **if work related exposure** - source is usually able to be identified and tested for HIV. PEP may be prescribed immediately if definite exposure or if source is at high risk of being HIV +ve and unable to be tested immediately[3]

5. Follow up[4]

- If HIV diagnosis, will require:
  - close follow up - within a few days to check wellbeing + as needed
  - long-term regular reviews by MO/NP experienced in HIV, in collaboration with usual MO/NP
  - support to adhere to long-term ART medications as needed

6. Referral/consultation[4]

- HIV is notifiable (laboratory will notify) ⓘ
- As needed, refer to social worker/psychologist for ongoing counselling
- For further information:
  - *Australian standards for psychological support for adults with HIV* https://www.ashm.org.au/resources
  - *Qld Positive People (QPP)* https://www.qpp.org.au/
  - *HIV Public Health team (Qld)* https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/sex-health/hiv-aids#team

8

Paediatrics

Paediatric presentation

History and physical examination - child

Recommend

- Parent/carer concerns should be considered valid and taken seriously[1]
- Always think **could it be** Sepsis, p. 62 if signs of infection or history/evidence of fever or hypothermia[1,2]
- **Be** Button battery, p. 78 **aware** - a button battery stuck in the oesophagus can burn a hole through the oesophagus into the aorta and cause fatal haemorrhage/death. Some newer button batteries release blue dye on contact with moisture[3,4]
- Consult MO/NP if ‹ 3 months - small children, especially young babies, get sick very quickly
- Document baseline weight for all children, and document trends in weight on growth chart eg WHO percentile chart
- Always consider Child protection, p. 539 + Domestic and family violence, p. 232
- Offer parent/carer fact sheets https://www.childrens.health.qld.gov.au/health-a-to-z

Red flags for serious illness[1]

- Re-presentation/carer concern
- Unexplained pain/restlessness
- Drowsiness/ ↓ activity
- Not waking easily
- Not responding normally to social cues
- Cool extremities
- Pale/mottled/ashen/blue skin, lips or tongue
- Weak, high pitched or continuous cry
- Poor feeding in infants
- Dry mucous membranes
- ↓ skin turgor
- ↓ urine output/no urine ≥ 12 hours
- › 5 watery diarrhoea in 24 hours
- Bulging fontanelle if ‹ 18 months old
- Marked tachycardia/persistent tachycardia once afebrile after fever[5]

Vital signs - child approximate normal values[6]

Age (years)	‹ 1	1–2	2–5	5–12	≥ 12
Respiratory rate **RR**	30–40	25–35	25–30	20–25	15–20
Heart rate **HR**	110–160	100–150	95–140	80–120	60–100
Systolic blood pressure[7] **sBP** **Note:** see APSGN, p. 494 for BP tips + parameters for hypertension	70–90	80–95	80–100	90–100	100–120
Temperature[1] **T**	36–37.9				
O_2 saturation **SpO_2**	≥ 94%				
Conscious level - **A**lert, **V**oice, **P**ain, **U**nresponsive	Alert				
Capillary refill time **CRT**	‹ 2 seconds				
Blood glucose level **BGL**	3–8				

Note: do a full set of vital signs including BP, capillary refill, respiratory effort + conscious state:[8,9]

- All presentations - as soon after arrival as possible/practical
- Whenever there are signs of deterioration OR clinician/parent/carer is concerned
- Frequently if CEWT score ≥ 4
- Rural and remote CEWT https://qheps.health.qld.gov.au/psu/rrad/rrad-ewars-forms (Qld Health intranet only)

Step 1: Obtain history of the presenting concern/problem[10]

- Get history in conjunction with observing/examining the child
- Pay particular attention to history from parent/carer
- In a sick child do a full assessment of all systems
- The history is the most powerful tool for identifying the diagnosis in most cases

History of presenting concern/problem[10,11]	
Presenting concern/ problem	• Ask the parent/carer what the problem is • Listen to the carer: – particularly regarding changes in usual behaviour[1] – children can sometimes pep up on presentation • Use open ended questioning
For each symptom ask about (as relevant) Use SOCRATES mnemonic	• **Site** - where is the pain/symptom • **Onset:** – gradual/sudden – continuous/intermittent – what were they doing when it started • **Character** eg sharp, dull or burning • **Radiation** of pain or discomfort • **Alleviating factors** - what makes it better eg sitting up, medicines • **Timing** - when did it first begin, how long did it last, have they had it before, is it interrupting sleep • **Exacerbating factors** - does anything make it worse eg movement • **Severity** - mild, moderate or severe pain: – see Acute pain, p. 32 for pain assessment tools
Associated/other symptoms	• Eg nausea, vomiting (+ colour eg coffee ground/blood/bile [green], yellow), photophobia, headache • Ask specifically about **fever, pain, SOB/rapid breathing, diarrhoea, weight loss, rash** • Be aware of vomiting without diarrhoea
Behaviour and activity during this illness	• Active/alert, sleepy or irritable, easy/difficult to wake • Muscle tone normal or are they floppy
Appetite and fluid intake/output during this illness	• How much do they normally drink eg 180 mL x 6 bottles/day • Intake now - try to be as precise as possible with quantities. How: – many drinks/breastfeeds – alert during feeds – long between intake and vomit/diarrhoea – many wet nappies/times passed urine in last 24 hours • Amount/type of bowel movements • Any blood in stool or change in bowel habits
Treatment ± medicine given by carer during this illness	• What, how much, when, how often, effectiveness • Any ibuprofen or paracetamol containing medicines given

- Ask if there are any other concerns
- Consider possible differential diagnosis
- Subsequently use closed ended questions to confirm or refute your differential diagnoses

Step 2: Ask about past history[10-12]

- Review + update past history in medical record each visit. As appropriate, check *My Health Record* https://www.myhealthrecord.gov.au/
- Consider relevant past history that may assist with differential diagnosis this visit
- Always ask about allergies, medicines and immunisations

Past history[10-13]	
Past medical and surgical history	• If < 2 years - ask if birth was normal, term/preterm, any neonatal problems • Any problems with growth and development • As appropriate - mother's alcohol, smoking, drug use during pregnancy • Significant illnesses • **Ask about** - diabetes, asthma/eczema/hay fever, epilepsy, acute rheumatic fever (ARF) or rheumatic heart disease (RHD) • Hospital admissions, operations, injuries - where, when, why • Is child immunocompromised eg: – diabetes, malnutrition, no spleen, Down syndrome, corticosteroids, chemotherapy[14]
Family and social history	• Health problems in the biological family - especially siblings + parents • Who looks after the child, what is the social situation, any mental health problems in carer(s), living conditions • Access to phone (that works/with credit) and car/transport + distance to clinic • Record name of person presenting with child + relationship to child • Household smokers • Recent contacts or trips away • If medicines are given, will there be any problems to take them
Medications Also see Best possible medication history, p. 548	• Regular and prn medicines - prescribed, complementary, alternative, bush medicines, over-the-counter, vitamins, probiotics: – generic name – dose, route, frequency, taken correctly – recently changed/course completed • May need to ask about other medicines in the home the child may have taken
Allergies **Adverse medication reactions**	• Allergies/reactions + type of reaction (anaphylaxis, skin reaction, other) to: – medicines – other eg honey bee stings, sticking plaster, food – has adrenaline (epinephrine) autoinjector eg EpiPen® been used • Check: – for medical alert jewellery/accessories eg shoe tag, anklet, watch[15] – medical records + document allergies/adverse reactions[16]
Immunisations[17]	• Check if up-to-date (documented evidence) • Offer opportunistic Immunisations, p. 542 as appropriate
Opportunistic health checks	• Check if due for routine health check - offer or refer as appropriate • For age appropriate checks and screening tools, see *Chronic Conditions Manual*

Step 3: Do physical examination[10]

In a sick child[18]

- A thorough and complete examination is required
- Clothing may need to be removed to complete examination as clinically indicated

In a child who is not sick

- Examine the relevant system first + proceed to further examination as guided by the history + your findings
- This is particularly important when examining children who often present with generalised signs and symptoms

Tips for examining children

- Use distraction/play
- May be done with the child in parent/carer arms or lap
- If the child is irritable, opportunistically examine ie do what you can when you can
- Leave the most disruptive parts until last eg ears + throat
- Ensure adequate analgesia is given prior to examination, as indicated

Physical examination - child[10-13,18,19]	
General appearance	• Watch before you examine • Observe interaction between carer + child • **Appearance:** – do they look well or sick – alert or drowsy – **T**one - moving around and active **OR** floppy/limp and listless – **I**nteractiveness - reaching for toys/interacting, or disinterested in interacting/playing – **C**onsolability - can child be comforted by the carer – **L**ook/gaze - does the child fix their gaze on a face or is there a glassy eyed stare – **S**peech/cry - strong + vigorous, weak, hoarse, high pitched • **Work of breathing (WOB):** – look - retractions, nasal flaring, gasping, ↑RR – listen - audible wheeze, snoring, grunting, stridor • **Circulation:** – look at lips, tongue and fingers - are they blue – compare lips and tongue colour to parents if unsure – skin colour - pink/pallor, mottling, cyanosis • **Any neck stiffness** - feel gently. Ask the older child to put their chin on their chest - if they can, they do not have neck stiffness • Do they look well nourished
Vital signs (all children who present)	• RR, HR, BP, T, SpO_2 • Conscious state - GCS/AVPU, p. 550 • Capillary refill time (< 2 seconds) • BGL + lactate if indicated eg altered LOC, seriously ill • **Document on age appropriate CEWT (Qld) or local EWARS + calculate score:** – **act on score if indicated + consider screening for Sepsis, p. 62**

Physical examination - child (continued)	
Weight[13] Every presentation to clinic	• **Weigh all children** - bare weight if ‹ 2 years: – compare against most recent weights – plot on growth charts appropriate for age + gender • If appropriate, also measure: – length if ‹ 2 years or height if › 2 years + able to stand – head circumference if ‹ 2 years, or if indicated in older child
Hydration	• Any weight loss • Eyes - normal or sunken. Tears absent or present • Mouth and tongue - wet or dry • Skin turgor - pinch a loose piece of skin. Does it return to normal immediately or stay saggy • Fontanelle in infant - normal or depressed: – depressed may indicate dehydration – bulging arises from raised intracranial pressure + usually indicates a serious illness • Also see Hydration assessment, p. 522
Skin	• Always check the whole body, particularly in a sick child • Inspect for: – Rash, p. 286 eg non-blanching, petechiae, purpura – colour - unusually pale, mottled or cyanotic – bruising, unexplained or unusual marks – signs of infection - redness, swelling or tenderness • Skin lesions or sores: – colour, shape, size, location, distribution on body – exudate eg clear, pus, bloody – any family members/close contact with similar lesions • Any palpable/tender lymph nodes in the neck, axilla and groin • Consider non-accidental injury eg bruises, burns, scalds, patterns you may recognise. As relevant see Child protection, p. 539
Cardiovascular system	• Inspect skin colour: – pink, white, grey, mottling. Compare the trunk with the limbs – any oedema - check hands, feet, shins, lower legs, face • Palpate/feel: – skin temperature - hot, warm, cool, cold, sweating. Compare trunk with limbs – peripheral pulses - weak or strong – peripheral perfusion - blanch the skin on a finger or toe for 5 seconds. Time how long it takes for the colour to return in seconds – central perfusion - as per peripheral perfusion, but blanch the skin over the sternum with your thumb • If skilled listen to heart sounds

Physical examination - child (continued)	
Respiratory system	• Most information is gained through inspection • Inspect anterior/posterior chest for: – equal chest movement – ↑WOB - use of accessory muscles, rib retraction/recession; nasal flaring; head bobbing • If age appropriate, can child talk continuously, only in words/sentences/unable to talk at all • Measure RR over 1 minute - rhythm, depth and effort of breathing • Listen for extra noises - cough ± sputum, wheeze, stridor, grunt, snore, hoarse speech/cry • Auscultate air entry in both lung fields: – equal, adequate, decreased or absent – wheeze or crackles - on inspiration or expiration – **note:** transmitted sounds from the upper respiratory tract are very common in children and may mask other signs • Will the child lie flat • **Note:** ↑RR + crackles in chest could be signs of carditis, see ARF, p. 498
Gastrointestinal/ reproductive systems	• Inspect for: – scars, abdominal distension, hernias, bruising or other discolouration, prominent veins, obvious masses • Auscultate bowel sounds - present or absent • Palpate abdomen - if pain, palpate with extra care: – soft or firm – obvious masses – tender to touch - identify which abdominal quadrant and exact area – guarding/rigidity - even when the child is relaxed – rebound tenderness - press down and take your hand away very quickly - is the pain greater when you do this • Percuss and feel for bladder • Check the testes in boys - are they both in the scrotum: – any redness, swelling or tenderness • See Abdominal pain, p. 198 as needed
Nervous system	• A brief assessment is all that is needed • Assess orientation to time, place and person if appropriate for age. Ask: – name, age, location, time, date, year • Pupils - size, symmetry, reaction to light • Assess for asymmetry of tone and power - compare each side of the face and limbs • If indicated, test touch sensation using cotton wool • Test finger nose coordination. If possible, observe child walking, looking around and using hands
Musculoskeletal system	• Any pain in limbs, joints or muscles • Check for range of motion in limbs, joints and muscles - active and passive • Any redness, pain, swelling, heat or laceration over or near a joint(s) • Observe gait • Consider ARF, p. 498 and Swollen/painful joint, p. 537

Physical examination - child (continued)	
Ears, nose and throat	**Ears** - see Ear assessment, p. 505 for detailed assessment • Inspect: – pinna - any redness, swelling – ear canal - any obvious swelling or redness to outer canal. If any, looking with an otoscope will be painful • Use otoscope to inspect: – canal - any redness, swelling, discharge – eardrum - normal, redness, dullness, bulging or retraction, fluid, bubbles, perforation, foreign bodies (insects/objects) • Check behind the ear (mastoid) for redness, swelling, pain **Nose** • Feel for facial swelling, pain • Any discharge or obvious foreign body **Throat** • Inspect: – lips, buccal mucosa, gums, palate, tongue, throat – tonsils - redness, enlargement, pus – teeth and gums - condition
Eyes	• Check Visual acuity, p. 265 of each eye as indicated (use age appropriate Snellen chart) • Inspect: – eyes and surrounding structures - any redness, discharge or swelling – pupils - equal in size, regular in shape, reaction to light – eye movements - ask the child to follow the movement of your finger/toy/interesting object • See Eye assessment, p. 263 for detailed assessment
Urine	• Do urinalysis if: – sick or febrile – abdominal pain or urinary symptoms – unexplained symptoms or signs – vomiting of unknown cause • Check the colour - is it normal, dark, blood stained (consider APSGN, p. 494) • Pregnancy test ± STI screen as appropriate to presentation

Step 4: Consider differential diagnosis

- See **Differential diagnosis** flowcharts (next page) to aid in decision making
- If unsure, collaborate with MO/NP

Step 5: Select *Health Management Protocol* (HMP) or *Clinical Care Guideline* (CCG)

- To guide further assessment and management
- Document the page number of the HMP/CCG referred to in the medical record

Step 6: Order/collect pathology if indicated

- If child is unwell enough to require a blood test beyond BGL + Hb **always consult an MO/NP** first to save unnecessary testing ± additional bloods if required

- **RIPRN:**[20]
  - may order pathology as per the PCCM
  - name + signature of the MO, NP or RIPRN must be on pathology form or follow local protocol for electronic ordering
  - if RIPRN orders pathology, they are responsible for following up the result
  - consult MO/NP if abnormal/concerned about results
- Other clinical staff may be able to request pathology if there is a local agreement in place between the director of the clinical unit and Pathology Queensland/local health service
- Write 'copy of report to...' RFDS/other collaborative health provider on the pathology form as appropriate
- Point-of-care testing (PoCT) is available in some facilities eg i-STAT
- See Pathology Qld for:
  - pathology test list
  - rural and remote pathology request forms
- If outside Qld, refer to local pathology services

Step 7: Collaborate with MO/NP as needed

- Always consult MO/NP if you are not sure
- Have CEWT score completed
- Use ISBAR, p. 25 to guide your communication
- Check your local facility guidelines to find out who to contact - during and after hours:
  - see Qld contacts, p. 24. **If in doubt, call the retrieval service in your State/Territory eg RSQ 1300 799 127 (Qld)**

Differential diagnosis

Differential diagnosis - child

Recommend

- Use the following flowcharts to assist with differential diagnosis
- They are not intended to be a replacement for clinical judgment, expertise or experience
- Always work within your individual scope and refer to a MO/NP as needed

Child with fever

If < 3 months of age with T ≥ 38 contact MO/NP urgently[1,2]

Fever in most children < 5 years has a viral cause. A careful assessment will identify focus of infection in most patients

Consult MO/NP if fever with no obvious source of infection, or at any time you are unsure

Do History and physical examination - child, p. 464

Unwell[3]
- Headache
- Neck stiffness or resistance
- **Note:** often present with non-specific symptoms ± prior URTI

Consider Meningitis, p. 70

Unwell[4]
- High fever
- Stridor, drooling
- Unable to eat, drink or talk + reluctant to move neck
- Not immunised

Consider bacterial tracheitis or Epiglottitis, p. 493

Unwell[5]
- Abdominal pain
- Loin or suprapubic tenderness
- Vomiting
- Smelly urine
- **+ if ≥ 3 years** dysuria, frequency

Consider UTI, p. 535

Unwell[1]
- ↑RR
- Crackles in chest
- Chest recession
- Nasal flaring
- ± poor feeding

Consider Pneumonia, p. 488 or Bronchiolitis, p. 486

Unwell[1]
- Limp
- Joint pain
- Not moving joints

Consider Septic arthritis, p. 537

Basically well[6]
- Joint pain ± swelling
- Murmur, chest pain
- Jerky movements
- Rash
- Nodules

Consider ARF, p. 498

Basically well[7]
- Sudden onset diarrhoea
- ± vomiting, abdominal pain

Consider Gastroenteritis, p. 522

Basically well[1]
- Nasal discharge
- Cough
- Sore throat

Consider URTI, p. 477 or Sore throat, p. 478

Basically well[8]
- Bulging eardrum
- Discharge from ear
- ± URTI symptoms

Consider AOM, p. 509

Always consider Sepsis, p. 62

Suspect febrile neutropenia if T ≥ 38.5 × 1 **OR** ≥ 38 × 2 an hour apart **+** chemotherapy in prior 2 weeks OR absolute neutrophil count (ANC) < 1 × 10^9/L

Treating fever

Remove excess layers of clothing, but ensure child is not underdressed. Avoid sponging + cold baths. Encourage oral fluids if tolerated to maintain hydration

Consider paracetamol OR ibuprofen if child appears distressed (do not use with sole aim of reducing T)[1,2]

Fact sheet *Fever* https://www.childrens.health.qld.gov.au/health-a-to-z

Child with cough

Contact MO/NP urgently if < 3 months
Contact MO/NP if significant features of assessment unclear or you are unsure of cause

Do History and physical examination - child, p. 464

Unwell[1]	**Sudden onset in previously well child**[2]	**Well to unwell**[3]	**Wheeze**[4]	**Paroxysmal cough**[5]	**Basically well**[6]
• Fever • ↑RR • Chest recession, nasal flaring • Crackles in chest • Chest or abdominal pain • ± poor feeding	• Cough ± stridor • ± wheeze • Airway compromise • ± history of ingesting or choking on something	• Barking cough • Stridor at rest • ± respiratory distress • URTI like symptoms	• ↑RR • Difficulty breathing or absent breath sounds	• Whoop • Apnoea • Vomiting after coughing spasms	• Runny/blocked nose • Sneezing, cough • Sore throat, headache • ± fever
Consider Pneumonia, p. 488 or Bronchiolitis, p. 486	Consider Foreign body inhalation, see Choking, p. 75 or Anaphylaxis, p. 80	Consider Croup, p. 483	Consider Asthma, p. 92 or Bronchiolitis, p. 486	Consider Pertussis, p. 491	Consider URTI, p. 477

Always consider Sepsis, p. 62 and Button battery, p. 78

CHILD WITH COUGH

Child with stridor

Contact MO/NP urgently

Stridor is a harsh vibrating sound occurring on inspiration due to upper airway obstruction

Consider causes: **croup** (common), **button battery, inhaled foreign body**, **epiglottitis** (rare but important), **trauma**, **angio-oedema**, **mass** (tumour or abscess)

Get rapid history, including Hib immunisation status. Limit examination. **Do not examine mouth or throat**

Significant features of assessment unclear or you are unsure of cause? Yes → **Consult MO/NP urgently**

No

Unwell[1]

- High fever
- Drooling
- Unable to eat, drink or talk/ muffled voice
- Reluctant to move neck or hyperextension of neck
- Not immunised

Consider Epiglottitis, p. 493

Well to unwell[2]

- Barking cough
- Stridor at rest
- ± respiratory distress
- URTI like symptoms

Consider Croup, p. 483

Sudden onset in previously well child[3]

- Cough ± stridor
- ± wheeze
- Airway compromise
- Usually there is a history of ingesting or choking on something

Consider Foreign body inhalation, see Choking, p. 75

Acute onset in previously well child[4] **±**

- Swelling of tongue, lips
- Swelling/tightness in throat
- Itchy rash (hives)
- Wheeze or persistent cough
- ± history of exposure to allergen eg:
  - food
  - bites/stings
  - medicine or blood product

Consider Anaphylaxis, p. 80

Always consider Sepsis, p. 62 and Button battery, p. 78

Child with vomiting

Contact MO/NP urgently if < 3 months

Vomiting is a common and important symptom, which may indicate serious illness especially in a very young child. **Be aware of vomiting without diarrhoea.** Causes may include: **infection** (pneumonia, UTI, meningitis, AOM), **bowel obstruction** (pyloric stenosis, intussusception, appendicitis, hernia), **reflux oesophagitis**, ↑ **ICP** (trauma, abscess or tumour), **metabolic** (diabetic ketoacidosis, poisoning)

Do History and physical examination - child, p. 464

Significant features of assessment unclear or you are unsure of cause, or if bile or blood stained vomit ▶ Yes ⟶ ▶ Consult MO/NP

No

Unwell[1]	**Unwell**[2]	**Unwell**[3]	**Unwell**[4]	**2–6 weeks old**[5]	**3 months–3 years**[6]	**Basically well**[7]
• Fever • Headache • Neck stiffness or resistance • **Note:** often present with non-specific symptoms ± prior URTI	• Fever • ↑ RR • Chest recession, nasal flaring • Crackles in chest • Chest or abdominal pain • ± poor feeding	• BGL › 11 • Ketones (blood) • Thirsty, ↑ urine • Vomiting • Non-specific symptoms + general malaise	• Abdominal pain • Loin or suprapubic tenderness • Smelly urine • **+ if ≥ 3 years** dysuria, frequency	• Projectile vomits soon after feed • Hungry following feed • Weight loss or poor weight gain	• Abdominal pain intermittently • ± red currant jelly stool • Pallor, especially during episodes of pain • Lethargy	• Sudden onset diarrhoea • ± fever • ± abdominal pain
Consider Meningitis, p. 70	Consider Pneumonia, p. 488 or Bronchiolitis, p. 486	Consider DKA, p. 87	Consider UTI, p. 535	Consider Pyloric stenosis, p. 531	Consider Intussusception, p. 532	Consider Gastroenteritis, p. 522

Also see Nausea and vomiting, p. 40. **Always consider** Sepsis, p. 62 and Button battery, p. 78

Child with abdominal pain

Contact MO/NP urgently if child with significant pain OR if < 3 months

Do History and physical examination - child, p. 464. Also see Abdominal pain, p. 198

Consult MO/NP if any of

- Bile or blood stained vomit
- Bloody stool
- Distension or guarding
- Localised or rebound tenderness
- Palpable mass, vomit looks/smells like faeces - consider Bowel obstruction, p. 207
- Inguinal-scrotal pain or swelling - **assume Testicular torsion, p. 211 until proven otherwise**
- Significant features of assessment unclear or **you are unsure of cause**

History of trauma	**Unwell**[1]	**Unwell**[2]	**Unwell**[3]	**Basically well**[4]	**3 months–3 years**[5]	**Basically well**[6]
	• Fever • ↑RR • Chest recession, nasal flaring • Crackles in chest • ± poor feeding	• BGL > 11 • Ketones (blood) • Thirsty, ↑urine • Vomiting • Non-specific symptoms + general malaise	• Vomiting • Loin or suprapubic tenderness • Smelly urine • **+ if ≥ 3 years** dysuria, frequency	• Sudden onset diarrhoea • ± vomiting • ± fever	• Abdominal pain intermittently • ± red currant jelly stool • Pallor, lethargy	• Infrequent + hard stools • Overflow incontinence/ skid marks
Consider Abdominal injuries, p. 147	Consider Pneumonia, p. 488 or Bronchiolitis, p. 486	Consider DKA, p. 87	Consider UTI, p. 535	Consider Gastroenteritis, p. 522	Consider Intussusception, p. 532	Consider Constipation, p. 529

Always consider Sepsis, p. 62, Button battery, p. 78 and Testicular torsion, p. 211

HMP Upper respiratory tract infection (URTI) - child
Common cold

Background[1]

- Viral infection is the most likely cause and antibiotics are not recommended
- Primary bacterial infection is uncommon, however secondary bacterial infection may develop

1. May present with[2]

- Sneezing, blocked/runny nose, cough
- Headache, sore throat
- Malaise, low-grade fever

2. Immediate management

- Suspect Foreign body in nose, p. 196 if any nasal occlusion, facial swelling ± pain, or smelly, purulent or blood-stained nasal discharge[3]

3. Clinical assessment[1,2,4]

- If ‹ 12 months of age - consider Bronchiolitis, p. 486
- Ask about:
  - lethargy
  - ↑WOB, cough
  - how well are they feeding/drinking/eating
  - any severe symptoms eg T › 39, purulent nasal discharge, facial pain
  - medical history eg immunocompromised, neonatal lung disease, home oxygen, prematurity
- Do vital signs +
  - weight - bare weight if ‹ 2 years
- Do physical examination, including:
  - chest - look/listen for:
    - ↑RR + ↑WOB/respiratory distress eg accessory muscle use, abdominal breathing, inter/subcostal recession, tracheal tug
    - crackles, wheeze
  - ENT
  - neck stiffness, palpate neck for enlarged/tender lymph nodes
  - Hydration assessment - child, p. 522
- **Note:** ↑RR + crackles in chest could be signs of carditis. See Acute rheumatic fever, p. 498

4. Management[1]

- Consider differential diagnosis eg Sore throat, p. 478, Child with fever, p. 472, Child with cough, p. 473, Child with stridor, p. 474, Allergic rhinitis, p. 238
- Contact MO/NP if ‹ 3 months, or if:
  - severe symptoms or respiratory distress
  - worsening after initial improvement
  - URTI persists › 7–10 days without improvement
  - significant medical history

- **If mild symptoms and otherwise well:**
  - reassure parent/carer that URTI is self-limiting and symptoms usually clear within 7 days
  - discuss **Symptomatic treatment**

Symptomatic treatment of URTI[1,5]

- Drink plenty of water, keep away from smoke and get plenty of rest
- If headache or fever + uncomfortable, paracetamol or ibuprofen may help. See Acute pain, p. 32
- **Note:** do not use over-the-counter cough and cold medicines in children
- Frequent hand washing + nose blowing. Sneeze and cough etiquette to help stop spreading

5. Follow up

- Advise to be reviewed if symptoms worsen or concerned. Consult MO/NP

6. Referral/consultation

- As above

HMP Sore throat - adult/child
Pharyngitis, tonsillitis

Recommend[1,2]

- Treat sore throats with antibiotics promptly in Aboriginal and Torres Strait Islander people living in rural + remote settings and in others who are at high risk of ARF, p. 498 and APSGN, p. 494

1. May present with[1,2]

- Sore throat ± fever
- Difficulty swallowing, not eating/drinking as much, croaky voice

2. Immediate management[2]

- Look for symptoms of **airway obstruction/compromise** or **deep neck space infection eg peritonsillar abscess (quinsy),** including:
  - muffled voice, stridor, trismus (unable to open mouth)
  - drooling, neck swelling/twisting, posturing ie sitting forward, neck extension
  - severe neck pain, respiratory distress
- If any of above, **urgently contact MO/NP** for **urgent retrieval** + airway management
- Do vital signs
- Screen for Sepsis, p. 62

3. Clinical assessment[2]

- Get history, including:
  - cough, fever, rash
  - feeding - normal or reduced intake, difficulty swallowing
  - number of times passed urine/wet nappies in last 24 hours
  - other symptoms eg diarrhoea, vomiting, headache, malaise, runny nose, red eyes, hoarse voice, joint pains
  - past history - ARF or RHD, immunocompromised, immunisation status

- Do physical examination, including:
  - **chest** - listen for crackles/wheeze, air entry
  - **throat/mouth**:
    - redness, swelling/pus on tonsils
    - ulcers/vesicles, strawberry tongue
    - greyish or green membrane - may indicate diphtheria
  - **ears**
  - palpate neck for enlarged/tender lymph nodes
  - look for rash + signs of APSGN, p. 494 and ARF, p. 498
- Use table below for **differential diagnosis of sore throat**

Sore throat[2]

Symptoms	Probable cause	Management
• Cough, hoarse voice • Conjunctivitis, nasal congestion • Red throat ± tonsils • ± rash, diarrhoea	**Viral sore throat or tonsillitis** Most common cause in all ages	**Give antibiotics in all cases of sore throat if at high risk of ARF** (see next page) • Antibiotics not usually needed in general population • Symptomatic treatment • Can be difficult to tell if it is caused by a virus or Strep A - do a throat swab MCS or PoCT if available, to confirm
• Fever › 38 • Tender/swollen lymph nodes in neck • Red throat ± tonsils ± pus on tonsils • No cough, runny nose/congestion	**Strep A sore throat or tonsillitis** More common in school aged children and adolescents	
Other presentations that may have a sore throat as a symptom		
• Sudden fever › 38.5 • Followed by distinctive rash - red initially, then dry and rough with a 'sandpaper' feel • Facial flushing + white area around mouth • Tongue - white initially, then red and bumpy 'strawberry tongue'	**Scarlet fever** More common between 5–15 years	• If suspected, consult MO/NP • MO/NP may advise to treat with antibiotics
• Fever, nausea • Severe sore throat • Swollen lymph nodes, swollen spleen/liver • Rash, fatigue	**Epstein-Barr virus** (Glandular fever) Common in adolescents and young adults	• If suspected, consult MO/NP • Epstein-Barr virus serology • Symptomatic treatment • Lasts 2–3 weeks, fatigue sometimes for months
• Vesicles or ulcers in mouth and throat • Rash ± vesicles on hands and feet • ↓ appetite, malaise	**Hand, foot and mouth disease** Common in children ‹ 10 and family/school contacts with infection	• If suspected, consult MO/NP • Symptomatic treatment • Usually resolves within 7 days • Advise to return daily until improved
• Fever › 38.5, malaise • Vesicles or ulcers in mouth and throat • Swollen lymph nodes in neck • Headache, abdominal pain, vomiting, ↓ appetite	**Herpangina (mouth blisters)** More common ‹ 5 years	
Non-infectious causes eg Allergic rhinitis, p. 238, smoke, dry air, cancer, reflux		

4. Management[1,2]

- Contact MO/NP if:
  - ‹ 12 months
  - unable to drink/signs of dehydration
  - T ≥ 39
  - looks sick, not alert/interactive when ↓T
  - rash or signs of ARF or APSGN
  - immunocompromised
  - suspected diphtheria
  - severe throat pain
- Use flowchart below to determine if antibiotics are indicated or not for 'sore throat'

Antibiotic indications for sore throat[1]

Is patient at high risk of ARF - ANY of
- Living in an ARF endemic setting
- Aboriginal and Torres Strait Islander person living in rural or remote setting, or
- Maori or Pacific Islander person, or
- Existing RHD, or history of ARF/RHD and aged ‹ 40

May be at high risk of ARF if
- Family or household recent history of ARF/RHD
- Overcrowded living ie › 2 people/bedroom, or low socioeconomic status
- Migrant or refugee from low/middle income country

Yes

- Do throat swab MCS first
- **Give antibiotics immediately**

Allergic to penicillins

No

- Give 1 dose of IM benzathine benzylpenicillin (Bicillin L-A®)
- If IM injection not possible, give oral phenoxymethylpenicillin + advise importance of taking whole course to prevent ARF

Yes

- **If hypersensitive** eg rash, give cefalexin
- **If anaphylaxis or immediate reaction** give azithromycin

No

Do NOT give antibiotics routinely
- If symptoms suggest Strep A sore throat/tonsillitis:
  - take throat swab MCS or PoCT
  - advise to be reviewed next day or sooner if worried/new symptoms develop eg rigors, dehydration
  - if not improving/getting worse in 3–7 days + swab confirms Strep A consider oral phenoxymethylpenicillin

Note: if on Secondary prophylaxis for ARF, p. 502 still needs more antibiotics, unless given ≤ 7 days prior.[1] If given today, advise RHD Register ✆ 1300 135 854 ArfRhdregister@health.qld.gov.au
The next secondary prophylaxis dose will be due in 28 days ie the clock is reset from this dose

Symptomatic treatment[2,3]

- Paracetamol or ibuprofen for pain and fever. See Acute pain, p. 32
- Throat lozenges for adolescents/adults
- Drink plenty of water, avoid sugary drinks
- Keep away from smoke, get plenty of rest

S4	Benzathine benzylpenicillin (Bicillin L-A®)				Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP					
RIPRN may proceed					
Form	**Strength**	**Route**	**Dose**		**Duration**
Prefilled syringe	1.2 million units/ 2.3 mL	IM	< 10 kg	450,000 units 0.9 mL	stat Inject slowly over at least 2–3 minutes
			10– < 20 kg	600,000 units 1.2 mL	
			≥ 20 kg	1.2 million units 2.3 mL	
Offer CMI: May cause diarrhoea, nausea and pain at injection site					
Note: Ventrogluteal, p. 552 or outer mid-thigh sites preferred. Do not give in deltoid. See Managing injection pain, p. 551					
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems					
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,4]					

S4	Phenoxymethylpenicillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 500 mg bd **Child** 15 mg/kg (max. 500 mg) bd	10 days
Oral liquid	125 mg/5 mL 250 mg/5 mL			
Offer CMI: May cause diarrhoea, nausea or thrush. Food has little effect on absorption				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,5]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult** 1 g bd **Child** 25 mg/kg (max. 1 g) bd	10 days
Oral liquid	250 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,6]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Adult** 500 mg daily **Child** 12 mg/kg (max. 500 mg) daily	5 days
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,7]				

5. Follow up

- Check results of throat MCS if taken
- Advise to be reviewed the next day, or earlier if worried, symptoms worsen or new symptoms develop eg vomiting, dehydration, fever, rigors:[2]
  - contact MO/NP if not improving
- If at high risk of ARF, or previous ARF or RHD:[1]
  - provide education on signs + symptoms of ARF and APSGN, which can occur about 10–14 days after sore throat or skin sores
- If repeated presentations, consider referral to ENT

6. Referral/consultation

- As above

HMP Croup - child

Background[1]

- Onset may be abrupt + more common at night, usually develops with concurrent URTI symptoms
- Croup is a viral inflammation and swelling of the upper airway, which can lead to obstruction
- Also see QPEC guidelines *Croup - emergency management in children*

1. May present with[1]

- Barking cough
- Inspiratory stridor, hoarseness of voice, URTI like symptoms
- ± respiratory distress - accessory muscle use, abdominal breathing, inter/subcostal recession, tracheal tug

2. Immediate management[1,2]

- **Always consider differential diagnosis eg** Foreign body inhalation, Button battery, p. 78, Pertussis, p. 491, Bronchiolitis, p. 486, Epiglottitis, p. 493

ALERT do not examine throat + avoid distressing child, as distress may exacerbate symptoms

- **Minimise distress by:**[2]
  - minimise handling, keep the child calm eg sitting quietly, reading or watching TV
  - keep the child with parents/carers eg nurse upright on parent/carer's lap
  - allow the child to adopt a position of comfort that minimises airway obstruction

Assess severity

Mild	Moderate	Severe
• Occasional barking cough • No audible stridor at rest • No or mild respiratory distress at rest • SpO_2 ≥ 94%, no cyanosis • Alert	• Frequent barking cough • Audible stridor at rest • Moderate respiratory distress • SpO_2 ≥ 94%, no cyanosis • Little or no agitation	• Persistent stridor at rest (may be expiratory) • Severe respiratory distress • SpO_2 ≤ 93% or cyanosis • Fatigue or altered mental state

Give oral dexamethasone or prednisolone
Continue as per **Clinical assessment**

Do vital signs + reassess severity at least every 15 minutes
Is stridor persistent or ↑ WOB

No

Observe for minimum 4 hours
- Consult MO/NP urgently if symptoms persist or worsen
- Ongoing management as per MO/NP

Yes

Give O_2 without causing distress[1]
- Consider using O_2 tubing held near nose/mouth - 10 L/minute
- **Contact MO/NP urgently** who may order:
  - adrenaline (epinephrine) NEB +
  - dexamethasone 0.6 mg/kg (max. 12 mg) **OR** prednisolone 2 mg/kg (max. 50 mg)

Contact MO/NP urgently
- Who may order/arrange:
  - repeat adrenaline (epinephrine) NEB
  - urgent retrieval
- Monitor closely until retrieval

3. Clinical assessment[1]

- Do vital signs
- Get history, including:
  - fever
  - airway symptoms - getting worse, worse at night
  - any **Risk factors for severe croup**[1]
- Do physical examination + check for any:
  - changes in WOB
  - audible stridor
  - chest wall movement eg cave in during inspiration
  - paradoxical breathing - may indicate fatigue
- Weight - bare weight if ‹ 2 years

Risk factors for severe croup[1]

- Prematurity
- ‹ 6 months
- Structural upper airway condition eg tracheomalacia
- History of previous severe croup
- Unplanned re-presentation ‹ 24 hours of first croup presentation
- Down syndrome

4. Management[1]

Mild or moderate croup[1]

- Contact MO/NP promptly if:
  - moderate croup
  - any **Risk factors for severe croup**
  - if not tolerating oral corticosteroid - MO/NP may order budesonide NEB
- **If moderate croup**, MO/NP will advise ongoing management, which may include:
  - adrenaline (epinephrine) NEB
  - monitor closely - reassess severity + response to treatment
  - if symptoms resolve, MO/NP may advise discharge
  - **note:** if adrenaline (epinephrine) NEB given observe for at least 3 hours[1]
- **If mild croup + otherwise well,** observe for at least 30 minutes after oral corticosteroid:
  - if accessory muscle use, stridor at rest, or distress has not improved - urgently contact MO/NP + manage as per severe croup[2]
  - if no symptoms consider sending patient home
- Reassure and educate parents/carers on the cause, usual course and management to ↓ anxiety:[2]
  - + give croup fact sheet eg https://www.childrens.health.qld.gov.au/health-a-to-z

S3	Adrenaline (epinephrine)			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW and IPAP must consult MO/NP				
RIPRN and RN must consult MO/NP unless circumstances do not allow, in which case **proceed for severe croup** and notify MO/NP as soon as circumstances allow				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1:1,000 1 mg/mL	NEB with O_2 8 L/minute	5 mL (5 mg) undiluted	stat Repeat once after 10 minutes if persistent stridor and distress
Offer CMI: May cause restlessness, anxiety, headache or palpitations				
Management of associated emergency: Consult MO/NP [1-3]				

S4	Dexamethasone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	1 mg/mL	Oral*	**Mild/moderate** 0.15–0.3 mg/kg (max. 12 mg)	stat
Injection	4 mg/mL	IM/IV	**Severe** 0.6 mg/kg (max. 12 mg)	**IV** - inject undiluted over at least 1 minute
Offer CMI: Oral take with food to ↓ stomach upset. *Injection can be given orally if oral liquid not available (tasteless)				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4-6]				

S4	Prednisolone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	5 mg/mL	Oral	**Mild/moderate** 1 mg/kg (max. 50 mg) **Severe** 2 mg/kg (max. 50 mg)	stat
Offer CMI: Take with food to ↓ stomach upset				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,7]				

S4	Budesonide			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Inhalation solution	0.5 mg/2 mL 1 mg/2 mL	NEB with O_2 8 L/minute	2 mg	stat
Offer CMI: May cause facial irritation. Cover eyes during NEB and wash face afterwards				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,8]				

5. Follow up

- If not retrieved, advise to return if develops stridor at rest later the same day/night, otherwise be reviewed the next day or sooner if concerned
- Contact MO/NP promptly if symptoms recur

6. Referral/consultation

- As above

Bronchiolitis - child

Background[1]

- Bronchiolitis is a lower respiratory tract viral illness in infants < 12 months
- Also see QPEC guidelines *Bronchiolitis - emergency management in children*

1. May present with[1,2]

- Consider bronchiolitis if history of URTI followed by onset of **respiratory distress + fever and ≥ 1 of:**
  - cough
  - ↑ RR
  - ↑ WOB or respiratory distress - accessory muscle use, abdominal breathing, inter/subcostal recession, tracheal tug
  - widespread crackles or wheeze on auscultation

2. Immediate management

- Always consider differential diagnosis eg Sepsis, p. 62, Pneumonia, p. 488, Pertussis, p. 491, aspiration of milk/formula/foreign body, congestive cardiac failure[1]

Assess severity[1,2]

Mild	Moderate	Severe
• Settled • Normal - mild ↑ RR • No or mild chest wall retraction • SpO_2 > 92% • No apnoea • No feeding issues	• Some/intermittent irritability • ↑ RR • Moderate chest wall retractions • Tracheal tug, nasal flaring • SpO_2 90–92% • ± brief apnoea • ± reduced or difficulty with feeding	• Increasing irritability ± lethargy, fatigue • Marked ↑ or ↓ RR • Marked - chest wall retractions, tracheal tug, nasal flaring • SpO_2 < 90% (may not be corrected by O_2) • ± ↑ frequent or prolonged apnoea • Reluctant or unable to feed
Continue as per **Clinical assessment**	• **Give O_2** to maintain SpO_2 > 92% – nasal prongs 2 L/minute **OR** if more needed Hudson mask 4 L/minute **Contact MO/NP urgently**	

3. Clinical assessment[1]

- Ask about:
  - recent URTI symptoms
  - feeding/hydration:
    - duration/frequency of feeds - breastfeeding or formula
    - number of wet nappies in last 24 hours
- Do:
  - vital signs
  - listen to chest for crackles or wheeze
  - check ears
  - bare weight
  - Hydration assessment - child, p. 522
- Assess for **Risk factors for severe disease**[1]

Risk factors for severe disease[1]

- Born ‹ 37 weeks
- ‹ 10 weeks of age
- Underlying conditions eg chronic neurological conditions, lung disease, congenital heart disease, Down syndrome
- Aboriginal and Torres Strait Islander
- Failure to thrive
- Exposure to cigarette smoke
- Breastfed for ‹ 2 months

4. Management

- Contact MO/NP in all cases, urgently if moderate-severe
- Primary treatment is supportive - appropriate oxygenation + hydration[1]

Moderate–severe symptoms[2]

- Requires urgent retrieval
- Monitor closely:
  - vital signs + WOB
  - SpO_2 - aim for › 92%
  - discontinue O_2 if SpO_2 persistently › 92%. **Note:** brief ↓ SpO_2 ‹ 92% does not require O_2

High flow nasal cannula (HFNC) oxygen therapy

- MO/NP may consider HFNC if other methods ineffective[1] **+ following consultation with paediatrician** at a Level 4 facility, or retrieval services who will consult paediatrician[3]
- If used, patient should be immediately retrieved
- **Follow local policies/guidelines for use** + ensure staff skilled in use[1]

- **Do NOT give** corticosteroids, adrenaline (epinephrine) or nebulised hypertonic saline[1,2]
- Only give salbutamol on MO/NP advice
- Encourage small, frequent feeds. MO/NP may consider:
  - nasal saline drops ± superficial suctioning of the nares to assist feeding if moderate distress. **Note:** deep nasal suction is not recommended
  - NG or IV hydration if inadequate feeds eg ‹ 50% of usual feeds over 12 hours

Mild symptoms

- If any **Risk factors for severe disease** rapid deterioration more likely. Consider retrieval[1,2]
- **Note:** illness severity peaks at day 2–4
- Support parent/carer to offer small frequent feeds. Consider nasal saline drops prior to feeding[1]
- Consider sending home in consultation with MO/NP if:[1,2]
  - able to maintain SpO_2 in room air
  - feeding adequately
  - parent/carer can safely manage infant at home eg consider time of day, parent/carer understanding of condition, access to clinic
- Give bronchiolitis advice + fact sheet prior to sending home eg https://www.childrens.health.qld.gov.au/health-a-to-z

5. Follow up

- If not retrieved, advise to be reviewed the following day or earlier if concerned eg worsening symptoms or not feeding well - consult MO/NP if not improving

6. Referral/consultation

- As above

HMP Pneumonia - child

Recommend

- Children with severe pneumonia living north of Mackay, Tennant Creek and Port Hedland, require a different antibiotic regimen during the wet season to cover for melioidosis[1]

Background

- Viruses are the most common cause in children › 2 months eg influenza A, RSV[1]
- Also see QPEC guidelines *Community acquired pneumonia - emergency management in children*

1. May present with[2]

- Looks unwell, fever, cough, ↑RR
- ↑WOB - use of accessory muscles eg:
  - tracheal tug
  - subcostal and intercostal recession (indrawing under or between the ribs)
  - infants may have nasal flaring, grunting, head bobbing, episodes of apnoea
- **Note:** bacterial pneumonia should be considered if persistent fever › 38.5 + chest recession + ↑RR

2. Immediate management[1-3]

- Do vital signs
- **Screen for** **Sepsis, p. 62**

Rapidly assess severity

Mild	Moderate	Severe
• No or mild ↑WOB	• Mild/moderate ↑WOB	• Moderate/severe ↑WOB
• RR normal to mild ↑	• RR normal to moderate ↑	• ± grunting/nasal flaring/apnoea
• SpO_2 ≥ 90%	• SpO_2 ≥ 90%	• Severe ↑RR ± exhaustion
• BP + HR normal	• BP normal	• SpO_2 ‹ 90%, cyanosis
• Alert	• Normal or mildly ↑HR	• BP normal
• Feeding normally	• Alert	• Moderate ↑HR while afebrile
		• Alert

Continue as per **Clinical assessment**

- **Give O_2** to maintain SpO_2 ≥ 95%
- **Contact MO/NP urgently**
- **Urgent retrieval**

3. Clinical assessment[2]

- Also consider other diagnoses eg Bronchiolitis, p. 486
- **Get rapid history,** including:
  - rapid breathing, apnoea
  - cough
  - pleuritic pain (sharp chest pain) in older child
  - abdominal pain
  - fever
  - feeding - normal or reduced intake/ability to feed
  - times passed urine/number of wet nappies in last 24 hours
  - vomiting, diarrhoea

- recent infections eg bronchiolitis
- recent travel
- Hib and pneumococcal immunisation status

- Do physical examination, including:
  - listen to chest for any crackles, wheeze
  - Hydration assessment - child, p. 522
  - ENT
  - skin for rash
- Assess for **Risk factors for severe pneumonia**

Risk factors for severe pneumonia[2]

- Born ‹ 37 weeks
- Younger age
- Immunocompromised
- Underlying conditions eg chronic lung disease, cardiopulmonary disease, cancer
- Aboriginal and Torres Strait Islander

4. Management[1,2,4]

- Contact MO/NP in all cases, **urgently if moderate–severe or ‹ 3 months:**
  - if ‹ 2 months treat as per Sepsis, p. 62

Moderate–severe pneumonia

- Arrange urgent retrieval
- Monitor closely:
  - vital signs + WOB
  - if unable to maintain SpO_2 ≥ 90% **consult MO/NP urgently**
- MO/NP may order:
  - oral amoxicillin (or IV/IM antibiotics if unable to tolerate oral):
    - if allergy to penicillins - MO/NP will advise
  - chest x-ray
  - bloods, blood cultures
- If not tolerating oral fluids, MO/NP may consider NG or IV fluids
- Offer paracetamol for discomfort of fever or pain. See Acute pain, p. 32

Mild pneumonia

- MO/NP may order oral amoxicillin:
  - if allergy to penicillins, give azithromycin
- If any **Risk factors for severe pneumonia**, further observation/hospitalisation may be required
- Consider sending home in consultation with MO/NP if:
  - normal RR + HR
  - able to maintain SpO_2 › 90% in room air
  - feeding adequately and tolerating antibiotics
  - parent/carer can safely manage infant at home eg consider time of day, parent/carer understanding of condition, access to clinic
- Provide **Advice to parents/carers** before sending home

S4	Amoxicillin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg , 500 mg	Oral	**Child › 2 months** 25–30 mg/kg (max. 1 g) tds	3 days **or, if moderate–severe** 5–7 days
Oral liquid	250 mg/5 mL 500 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea or thrush				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,5]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Child** 10 mg/kg (max. 500 mg) daily	3 days
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,6]				

Parent/carer advice [2]

- Most children usually improve within 1–2 days of starting antibiotics, although they may cough for a few days/weeks
- Bring your child back if you are worried or if any:
  - vomiting and are unable to drink much
  - difficulty breathing
  - very sleepy, becomes pale or sweaty, or begins to look blue in the skin
  - pauses between breaths
- Make sure your child is getting enough fluids. Smaller feeds given more often may help
- Paracetamol may help if child looks uncomfortable

5. Follow up

- If not retrieved advise to be reviewed next day, or earlier if concerned. Consult MO/NP if not improving
- Advise to see MO/NP at next clinic

6. Referral/consultation

- As above

HMP Pertussis - adult/child
Whooping cough

Background[1]

- Still prevalent - outbreaks occur every 3–4 years. Infants < 6 months at ↑ risk of complications

1. May present with[1,2]

- Apnoea or cyanosis ± cough - may be only symptom in infants
- Intermittent violent uncontrollable coughing ± 'whoop' when breathing in
- Persistent cough up to 3 months, otherwise well
- Vomiting following coughing spasms

2. Immediate management[3]

- Do vital signs
- If SpO_2 ≤ 93%, cyanosis or apnoea:
  - give O_2
  - contact MO/NP urgently
- Use droplet PPE. If able, see patient away from main treatment room

3. Clinical assessment[1-3]

- **Ask about:**
  - cough - onset, persistent or getting worse, vomiting after coughing, cyanosis, apnoea
  - similar illness in household contacts
  - vaccination status - patient + household contacts
  - other symptoms
- **Check:**
  - WOB + chest - listen for air entry, crackles, wheeze
  - weight - bare weight if < 2 years
- Take nasopharyngeal swab for pertussis PCR

4. Management[2,3]

- Contact MO/NP promptly if:
  - young child or baby - even if mild symptoms
  - acutely unwell
- Advise Public Health Unit you suspect pertussis

If pertussis suspected or diagnosed

- Consult MO/NP + Public Health Unit, who may advise:
  - if ≤ 3 weeks of cough or other symptom onset give:
    - azithromycin to patient and contacts ie if been within 1 m of patient for > 1 hour
- Advise patient/carer:
  - highly infectious - spreads by coughing/sneezing + direct contact eg wiping nose, mouth
  - **stay away from others until antibiotics have been taken for 5 days**, especially:
    - children + babies, pregnant women, work, school, preschool or child care
  - cough can continue for a few weeks. Coughing fits (paroxysms) can recur with **other** respiratory infections in the following months, recurrent pertussis is unlikely. See MO/NP if concerned

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Adult** 500 mg on day 1, then 250 mg daily **Child ≥ 6 months** 10 mg/kg (max. 500 mg) on day 1 THEN 5 mg/kg (max. 250 mg) daily **Infant < 6 months** 10 mg/kg daily	5 days
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush. In neonates, advise parents to report if starts vomiting or irritable when feeding - may indicate pyloric stenosis				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2-4]				

5. Follow up

- As per MO/NP:
  - if discharged home advise to return if symptoms worsen or they are concerned
  - follow up swab result

6. Referral/consultation[1]

- Notify Public Health Unit of confirmed or suspected pertussis cases ⓘ

Epiglottitis - child

Background[1]

- A life-threatening condition caused by infection of the epiglottis + surrounding area
- Since the *Haemophilus influenzae* type b (Hib) vaccine, epiglottitis is rare

1. May present with[2]

- High fever, looks sick
- Hyperextension of neck, may not move neck
- Drooling saliva, difficulty swallowing
- Stridor, muffled voice
- Restless, unsettled

2. Immediate management[1,2]

- Patients with epiglottitis often have sepsis:
  - contact MO/NP urgently + urgent retrieval required
- See Sepsis, p. 62 for further management + urgent antibiotics - ceftriaxone or cefotaxime
- Avoid distressing child as may exacerbate symptoms:
  - **do not examine throat**
  - allow child to settle in the position most comfortable
  - if O_2 required + mask distressing, consider using O_2 tubing held near nose/mouth - 10 L/minute

3. Clinical assessment[1,2]

- Assess as per Sepsis, p. 62
- Also look for drooling + absent cough with low pitched expiratory stridor (often snoring)

4. Management[1]

- Manage as per Sepsis, p. 62

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Post streptococcal diseases

HMP Acute post streptococcal glomerulonephritis (APSGN) - adult/child

Recommend[1,2]

- Aim to prevent APSGN by promoting:
  - early treatment of impetigo (skin sores), fungal skin infections + sore throats
  - community control of scabies and skin sores
  - regular washing + hand hygiene, especially children

Background[1,2]

- APSGN is an inflammatory kidney disease which occurs 2–3 weeks after a skin or throat infection with Group A *Streptococcus* (GAS), or occasionally groups C or G. In rare cases can occur concurrently
- Common in Aboriginal and Torres Strait Islander children in Northern Australia in areas with high levels of scabies, skin sores and overcrowded living conditions
- Most common 1–17 years of age, but can occur at any age

1. May present with[1-4]

- **Microscopic haematuria** detected on urinalysis
- **Acute nephritis - typical presentation:**
  - 'puffy face', 'puffy eyes' (facial oedema) - often on waking
  - blood in urine on dipstick - urine can look smoky, tea/cola coloured
  - hypertension
  - peripheral oedema eg in legs/hands
  - proteinuria
  - **if severe:**
    - respiratory distress due to pulmonary oedema
    - lethargy, general weakness, anorexia
    - uncommon - severe headache, convulsions, coma
- ± skin sores/infected scabies OR recent history of skin sores or sore throat[4]

2. Immediate management

- If severe symptoms, urgently consult MO/NP

3. Clinical assessment[1,3]

- Get history + ask about:
  - puffiness of face or eyes, legs or arms
  - urine colour + output - has it decreased
  - any other symptoms eg SOB, feeling unwell, off food
  - do any household contacts have similar symptoms[2]
  - recent history of skin sores/infected scabies (prior 3–6 weeks) or sore throat (prior 1–2 weeks)[2]
  - previous medical history, including APSGN or close contacts with APSGN
- Do physical examination, including:[1]
  - vital signs
  - weight - bare weight if ‹ 2 years. Assess against recent weights
  - skin for sores/Infected scabies, p. 303
  - face, hands and feet for oedema/puffiness
  - throat - any redness
  - listen to chest for crackles or wheeze - may indicate pulmonary oedema

- **Assess if hypertensive:**[5]
  - **if child** do not rely on CEWT BP ranges to assess for hypertension:
    - measure on right arm for consistency with appropriately sized cuff
    - can vary considerably during the same visit or across visits. Do 3 BPs at least 30 minutes apart, with at least 1 manual[6]
    - use **Hypertension in child** table below:
      - **if systolic BP (sBP) ≥ values for age (years) and height (cm), then child is hypertensive** (ie sBP is ≥ 95th BP percentile)

Hypertension in child[5]

Age		Girls							Boys						
1	Height	75.4	76.6	78.6	80.8	83	84.9	86.1	77.2	78.3	80.2	82.4	84.6	86.7	87.9
	sBP	101	102	102	103	104	105	105	102	102	103	103	104	105	105
2	Height	84.9	86.3	88.6	91.1	93.7	96	97.4	86.1	87.4	89.6	92.1	94.7	97.1	98.5
	sBP	104	105	106	106	107	108	109	104	105	105	106	107	107	108
3	Height	91	92.4	94.9	97.6	100.5	103.1	104.6	92.5	93.9	96.3	99	101.8	104.3	105.8
	sBP	106	106	107	108	109	110	110	106	106	107	107	108	109	109
4	Height	97.2	98.8	101.4	104.5	107.6	110.5	112.2	98.5	100.2	102.9	105.9	108.9	111.5	113.2
	sBP	107	108	109	109	110	111	112	107	107	108	108	109	110	110
5	Height	103.6	105.3	108.2	111.5	114.9	118.1	120	104.4	106.2	109.1	112.4	115.7	118.6	120.3
	sBP	108	109	109	110	111	112	113	107	108	109	109	110	111	112
6	Height	110	111.8	114.9	118.4	122.1	125.6	127.7	110.3	112.2	115.3	118.9	122.4	125.6	127.5
	sBP	109	109	110	111	112	113	114	108	109	110	111	112	113	114
7	Height	115.9	117.8	121.1	124.9	128.8	132.5	134.7	116.1	118	121.4	125.1	128.9	132.4	134.5
	sBP	109	110	111	112	113	114	115	110	110	111	112	114	115	116
8	Height	121	123	126.5	130.6	134.7	138.5	140.9	121.4	123.5	127	131	135.1	138.8	141
	sBP	110	111	112	113	115	116	117	111	112	112	114	115	116	117
9	Height	125.3	127.6	131.3	135.6	140.1	144.1	146.6	126	128.3	132.1	136.3	140.7	144.7	147.1
	sBP	112	112	113	114	116	117	118	112	112	113	115	116	118	119
10	Height	129.7	132.2	136.3	141	145.8	150.2	152.8	130.2	132.7	136.7	141.3	145.9	150.1	152.7
	sBP	113	114	114	116	117	119	120	112	113	114	116	118	120	121
11	Height	135.6	138.3	142.8	147.8	152.8	157.3	160	134.7	137.3	141.5	146.4	151.3	155.8	158.6
	sBP	115	116	117	118	120	123	124	114	114	116	118	120	123	124
12	Height	142.8	145.5	149.9	154.8	159.6	163.8	166.4	140.3	143	147.5	152.7	157.9	162.6	165.5
	sBP	118	119	120	122	124	125	126	116	117	118	121	124	126	128
13	Height	148.1	150.6	154.7	159.2	163.7	167.8	170.2	147	150	154.9	160.3	165.7	170.5	173.4
	sBP	121	122	123	124	126	126	127	119	120	122	125	128	130	131
14	Height	150.6	153	156.9	161.3	165.7	169.7	172.1	153.8	156.9	162	167.5	172.7	177.4	180.1
	sBP	123	123	124	125	126	127	127	123	125	127	130	132	133	134
15	Height	151.7	154	157.9	162.3	166.7	170.6	173	159	162	166.9	172.2	177.2	181.6	184.2
	sBP	124	124	125	126	127	127	128	127	129	131	132	134	135	135
16	Height	152.1	154.5	158.4	162.8	167.1	171.1	173.4	162.1	165	169.6	174.6	179.5	183.8	186.4
	sBP	124	125	125	127	127	128	128	130	131	133	134	135	136	137
17	Height	152.4	154.7	158.7	163.0	167.4	171.3	173.7	163.8	166.5	170.9	175.8	180.7	184.9	187.5
	sBP	125	125	126	127	128	128	128	132	133	134	135	137	138	138

Diagnosis of APSGN[1,2]

Possible APSGN	Laboratory suggestive evidence only
Probable APSGN	Clinical evidence only
Confirmed APSGN	Laboratory suggestive evidence AND clinical evidence

Clinical evidence[2]

At least 2 of the following:

- Facial and/or peripheral oedema
- Macroscopic and/or moderate haematuria on dipstick eg ≥ 2+ red blood cells
- Hypertension

Laboratory suggestive evidence[2]

Requires all 3 criteria:

- Haematuria on microscopy (RBC › 10/uL) **AND**
- Evidence of recent GAS infection eg +ve culture from skin or throat, or elevated/rising ASO or Anti-DNase B titre **AND**
- Reduced C3 level

- **Take pathology:**
  - **if symptoms of acute nephritis:**[1,2]
    - if skin sores present - MCS swabs from 2 different sites. See How to take a wound swab, p. 318
    - MCS throat swab if indicated
    - bloods - ASOT, Anti-DNase B titres, C_3, C_4, FBC, film, UE, LFT
    - urinalysis - check for blood and protein + do MSU for MCS and ACR
    - on the pathology form, write 'APSGN case' and request emm typing if GAS isolated[2]
  - **if microscopic haematuria but NO other symptoms + no history of APSGN in prior 6 months:**
    - urine for MCS and ACR

4. Management[1,3]

- **If hypertension ± oedema/fluid overload:**
  - consult MO/NP promptly who may order furosemide ± nifedipine[7]
- **If 'Clinical evidence' suggests 'Probable APSGN'** promptly consult MO/NP:[1]
  - retrieval/hospitalisation required + specialist paediatrician/nephrology advice[2]
  - give benzathine benzylpenicillin (Bicillin L-A®)
  - if allergic to penicillins give oral trimethoprim + sulfamethoxazole[2,8]
  - treat Scabies, p. 303 if present
  - notify Public Health Unit for further advice + management of contacts
- **If microscopic haematuria found on urinalysis** but NO other symptoms:
  - if prior history of APSGN:
    - haematuria can persist for 3–6 months or longer (up to 2 years) post resolution[4]
  - if no history of APSGN in last 6 months, or if concerned, advise to see MO/NP at next clinic

S4	Benzathine benzylpenicillin (Bicillin L-A®)					Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP						
RIPRN may proceed						
Form	**Strength**	**Route**	**Dose**			**Duration**
Prefilled syringe	1.2 million units/ 2.3 mL	IM	< 10 kg	450,000 units	0.9 mL	stat Inject slowly over at least 2–3 minutes
			10– < 20 kg	600,000 units	1.2 mL	
			≥ 20 kg	1.2 million units	2.3 mL	
Offer CMI: May cause diarrhoea, nausea and pain at injection site						
Note: Ventrogluteal, p. 552 or outer mid-thigh sites preferred. Do not give in deltoid. See Managing injection pain, p. 551						
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems						
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,8,9]						

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd **Child ≥ 1 month** 4 mg/kg (max. 160 mg) bd *Dose as per trimethoprim component*	3 days
Oral liquid	40 + 200 mg/5 mL			
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice. Dose is safe in APSGN but be aware of hyperkalaemia and ↑ creatinine[10]				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,8,11]				

5. Follow up[1]

- Follow up contacts in collaboration with Public Health Unit
- Children with a history of APSGN should be monitored through an individualised care plan developed in conjunction with a paediatrician. Check care plan is in place and follow up anything outstanding[4]
- Resolution of APSGN:
  - usually resolves quite rapidly assuming concurrent resolution of infection[7]
  - microscopic haematuria can persist from 3–6 months to 2 years[4]
  - proteinuria may persist longer - mild increase sometimes up to 2 years or more[7]

6. Referral/consultation

- Consult MO/NP for all suspected cases
- APSGN is notifiable in Qld, NT and WA [1,12,13]

HMP Acute rheumatic fever (ARF) - adult/child

Recommend[1]

- **Always consider ARF if sore ± swollen joint(s)/limp in a child** from a high risk population
- Help prevent ARF by promoting:
  - prevention + early treatment of scabies, impetigo (skin sores) and sore throat
  - regular washing + hand hygiene, especially children

Background[1]

- ARF is an abnormal immune reaction following an untreated Strep A infection which causes inflammation that can affect the heart, joints, brain and skin
- **A recurrent or single severe episode of ARF has a high risk of heart valve damage.** Around 1/2 of those with ARF progress to rheumatic heart disease (RHD) within 10 years of initial episode
- ARF peaks in children aged 5–14 years, is less common from the age of 35, and rare under age 4
- **Resources:**
  - *ARF and RHD guidelines* https://www.rhdaustralia.org.au/arf-rhd-guidelines
  - *ARF & RHD guideline app* and *ARF Diagnosis calculator* https://www.rhdaustralia.org.au/apps
  - *Suspected acute rheumatic fever clinical pathway* (Qld) https://clinicalexcellence.qld.gov.au/resources/clinical-pathways

1. May present with[1]

- Symptoms may evolve over several weeks. Can be non-specific eg aching joints + low grade fever
- **Child with limp/not able to walk**
- **Sore ± swollen joint** - most common symptom (arthritis):
  - swollen hot joint with pain on movement
  - usually asymmetrical and migratory - 1 joint becoming inflamed as another subsides
  - may involve 1 or multiple joints
  - large joints usually affected - especially knees and ankles, and wrists and elbows
  - can be extremely painful - often out of proportion with clinical signs
  - problems weight-bearing or walking unaided
- Joints may be painful but not swollen (arthralgia)
- **Fever ≥ 38** or recent fever - common
- **Carditis** eg:
  - significant heart murmur
  - may be signs of heart failure eg:
    - ↑RR, ↑HR (resting)
    - crackles in base of lungs, pulmonary oedema
    - ↑JVP, oedema in feet/lower legs
    - puffy face, enlarged liver
- **Sydenham chorea** - a mood and movement disorder. **Note:** confirmed chorea is 'definite ARF'
  - jerky, uncontrollable movements eg https://www.youtube.com/watch?v=VFBOTwmVAoA
    - especially affects hands, feet, tongue, face
    - disappears during sleep
    - may affect 1 side of the body only
  - most common in adolescent females
  - relatives/teachers may describe 'jumpy kids'
  - strongly associated with carditis
  - **note:** chorea can develop later and continue for months after resolution of other symptoms

- **Subcutaneous nodules - rare:**
  - crops of small round painless nodules (firm + freely mobile) over elbows, wrists, knees, ankles, Achilles tendon, occiput and vertebrae
  - highly specific for ARF
  - strongly associated with carditis
- **Erythema marginatum - rare:**
  - circular patterns of bright pink macules or papules on trunk and proximal extremities
  - painless, not itchy, blanches under pressure, accentuated by heat
  - difficult to detect in dark skinned people
  - highly specific for ARF

2. Immediate management[1]

- Look for signs of carditis/heart failure. **If any urgently contact MO/NP +**
  - do ECG
  - strict bed rest

3. Clinical assessment[1]

- **Ask about current symptoms**, in particular:
  - pain or swelling in limb(s) or joint(s)
  - jerky/uncoordinated movements
  - recent fever (reliable history of)
  - measures taken to treat symptoms eg have they tried ibuprofen or paracetamol for joint pain:
    - how effective
  - history from a relative/teacher eg strange movements
- **Get past history**, including:
  - recent sore throat, painful joints or skin infections, and if treated
  - past episodes of ARF, previous symptoms suggesting ARF, or prior diagnosis of RHD
  - family history of ARF or RHD
  - benzathine benzylpenicillin (Bicillin L-A®) injections (or other treatment) for ARF or RHD:
    - if so, have any injections been missed
  - other current medications
  - 1 or more high **Risk factors for ARF or RHD**

For past history of ARF or RHD + injection history contact QH RHD Program ✆ 1300 135 854 ArfRhdRegister@health.qld.gov.au or local RHD control program (WA, NT, SA or NSW)

Risk factors for ARF or RHD[1,2]	
High risk factors	• Aboriginal and Torres Strait Islander/Pacific Islander/Maori person • Lives in rural or remote community or other area with overcrowded living (ie › 2 people/bedroom) and/or lower socioeconomic status • Prior diagnosis of ARF or RHD
Other risk factors	• Age 5–20 years • Prior residence in high risk ARF setting • Frequent/recent travel to a high risk ARF setting • Family or household history of ARF or RHD • Migrant or refugee from low socio-economic origin

- **Do physical examination**, including:
  - vital signs - note any fever
  - inspect and palpate joints for:
    - swelling, tenderness and mobility
    - does the pain seem out of proportion to the joint signs
  - inspect:
    - skin for old or infected sores
    - throat for redness
    - for any jerky movements of the face, tongue, trunk and limbs
  - auscultate the heart if skilled - listen for a murmur/abnormal sounds eg whooshing sound
  - ECG - check for prolonged PR interval, a sign of carditis
  - chest x-ray - MO/NP may order[2]

Upper limits for normal PR interval on ECG[1]

Age (years)	Seconds
3–11	0.16
12–16	0.18
17+	0.20

- **Take pathology:**
  - bloods:
    - FBC, ESR, C-reactive protein (CRP)
    - ASOT and anti-DNase B titre
    - blood cultures if T ≥ 38
  - throat swab - culture for Group A Strep
  - if skin sores - swab for MCS. See How to take a wound swab, p. 318
  - **note:** take swabs before giving antibiotics
  - STI/BBV tests, p. 433 if indicated[2]

ARF diagnosis calculator

In collaboration with MO/NP use clinical pathway ± ARF diagnosis calculator
Suspected ARF clinical pathway (Qld) https://clinicalexcellence.qld.gov.au/resources/clinical-pathways
ARF Diagnosis calculator https://www.rhdaustralia.org.au/apps **(download App)**

4. Management[1]

- Consult MO/NP for all suspected cases
- If monoarthritis (inflammation of 1 joint) suspect Septic arthritis, p. 537 until proven otherwise
- Offer analgesia. See Acute pain, p. 32
  - give paracetamol. **Avoid NSAIDs (eg ibuprofen)** until diagnosis confirmed or ruled out. Can cause joint symptoms to disappear complicating the diagnosis
  - if severe pain consult MO/NP
- **If ARF suspected give:**
  - benzathine benzylpenicillin (Bicillin L-A®). 1 dose to eliminate any residual Strep A
  - (only) if Bicillin L-A® contraindicated, ie allergy, replace with:
    - cefalexin if hypersensitivity to penicillins eg rash OR
    - azithromycin if anaphylaxis or immediate reaction to penicillins
- **MO/NP will arrange hospitalisation/retrieval:**
  - should occur within 24–72 hours after onset of symptoms, even if symptoms resolve - for physician/cardiology review, echo and for diagnosis:
    - ARF is difficult to diagnose
    - correct diagnosis is important so that people who do have ARF are correctly treated to prevent RHD, and those who do not avoid unnecessary treatment
    - thorough investigations for alternative diagnoses should always be undertaken eg septic arthritis, disseminated gonococcal infection, gout, innocent murmur, congenital heart disease
- Contact Public Health Unit, QH RHD Program ✆ 1300 135 854, or local RHD control program for advice as needed

S4	Benzathine benzylpenicillin (Bicillin L-A®)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Prefilled syringe	1.2 million units/2.3 mL	IM	**Child < 20 kg** 600,000 units (1.2 mL) **Adult or Child ≥ 20 kg** 1.2 million units (2.3 mL)	stat Inject slowly over at least 2–3 minutes
Offer CMI: May cause diarrhoea, nausea and pain at injection site				
Note: Ventrogluteal, p. 552 or outer mid-thigh sites preferred. Do not give in deltoid. See Managing injection pain, p. 551				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,3,4]				

S4	Cefalexin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg, 500 mg	Oral	**Adult** 1 g bd **Child** 25 mg/kg (max. 1 g) bd	10 days
Oral liquid	250 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, vomiting, dizziness, headache or thrush				
Note: If renal impairment seek MO/NP advice				
Contraindication: Severe or immediate allergic reaction to a cephalosporin or a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,5]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Adult** 500 mg daily **Child** 12 mg/kg (max. 500 mg) daily	5 days
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,4,6]				

5. Follow up[1]

- As per guidance of specialist MO

6. Referral/consultation[1]

- Consult MO/NP on all occasions of suspected ARF
- Suspected ARF requires notification to the Public Health Unit within 48 hours (Qld, NT, WA, SA + NSW) based on clinical presentation

HMP Secondary prophylaxis for acute rheumatic fever (ARF) - adult/child

Recommend[1]

- Strict regular long-term benzathine benzylpenicillin (Bicillin L-A®) prophylaxis **(every 21–28 days)** is critical to prevent recurrent Group A Strep infections causing ARF
- **Every day of non-treatment over 28 days puts the person at risk of recurrence of ARF, progression of RHD, or progression of heart valve disease**

Background[1]

- Recurrent ARF can lead to rheumatic heart disease (RHD), which involves heart valve damage
- The duration of secondary prophylaxis is a specialist decision based on a number of individual and environmental factors. Prophylaxis should only be ceased by a specialist MO based on age, time since last ARF and severity of RHD
- **Resources:**
  - Qld Health RHD Program (QH RHD Program) maintains Bicillin L-A® and echo registers + is available for clinical support and education ✆ 1300 135 854 ArfRhdregister@health.qld.gov.au. If outside of Qld, contact your local RHD control program (WA, NT, SA or NSW)
  - *ARF and RHD guidelines* https://www.rhdaustralia.org.au/arf-rhd-guidelines
  - *Administering Bicillin* https://www.rhdaustralia.org.au/resources/administering-bicillin
  - *A patient's guide to getting a Bicillin injection* https://vimeo.com/548628780/6eb8148cd8
  - *QH RHD Program* https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/diseases/acute-rheumatic-heart-disease

1. May present with

- History of ARF or diagnosis of RHD

2. Immediate management

Not applicable

3. Clinical assessment

- Ask:
  - **date of last benzathine benzylpenicillin (Bicillin L-A®) injection:**
    - check medical record, or
    - contact RHD Register ✆ 1300 135 854 (Qld), or local RHD control program
    - **note:** the Viewer (Qld Health) medication tab is updated within 24 hours of injection being entered into the Register
  - **if any problems** during or after prior injections
- Check and complete items on the patient's ARF or RHD cycle of care. See *Chronic Conditions Manual*
- Check vaccinations are up-to-date including pneumococcal and influenza[2] (check documented evidence, p. 542)

4. Management[1]

- **Injections can be given anytime between 21–28 days:**
  - **note:** a specialist may recommend a 21 day regimen for patients who have breakthrough ARF despite receiving all injections on a 28 day regimen OR have a high level of risk eg severe RHD, OR a history of heart valve surgery

- **Facilitate a positive injection experience:**
  - see strategies for Managing injection pain, p. 551
  - discuss with patient where they would like the injection:[1]
    - Ventrogluteal, p. 552 is preferred site as has thicker muscles and less nerves than other areas
    - outer mid thigh is acceptable
    - upper outer quadrant of buttock is associated with sciatic nerve damage, so is generally not recommended
    - do not use deltoid
- **Give benzathine benzylpenicillin (Bicillin L-A®):**
  - advise ArfRhdregister@health.qld.gov.au (or local RHD control program) date administered

S4	Benzathine benzylpenicillin (Bicillin L-A®)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP (or have current medication order)				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Prefilled syringe	1.2 million units/2.3 mL	IM	**Child < 20 kg** 600,000 units (1.2 mL) **Adult and child ≥ 20 kg** 1.2 million units (2.3 mL)	Once every 21–28 days Inject slowly over at least 2–3 minutes
Offer CMI: May cause diarrhoea, nausea and pain at injection site				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Ensure access to adrenaline (epinephrine) 1:1,000 to treat anaphylaxis eg if giving in patient's home. Consult MO/NP. See Anaphylaxis, p. 80 [1-3]				

Alternative treatment situations

- If allergic to penicillins, specialist will order oral erythromycin
- If patient has bleeding problems after injections or consistently declines Bicillin L-A® (despite attempts to identify and address any barriers to injections) specialist may order oral phenoxymethylpenicillin
- If oral antibiotics given:
  - advise ArfRhdregister@health.qld.gov.au (or local RHD control program) date supplied
  - emphasise consequence of missed doses
  - encourage to consider returning to injections if not contraindicated
  - ↑ monitoring for Group A Strep infections eg Impetigo, p. 299, Sore throat, p. 478 and symptoms of ARF, p. 498

S4	Phenoxymethylpenicillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP (or supply on current medication order)				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg	Oral	**Adult and child** 250 mg bd	Ongoing as per specialist advice
Oral liquid	125 mg/5 mL 250 mg/5 mL			
Offer CMI: May cause diarrhoea, nausea or thrush. Food has little effect on absorption				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

S4	Erythromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP (or supply on current medication order)				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg	Oral	**Adult and child** 250 mg bd	Ongoing as per specialist advice
Oral liquid	200 mg/5 mL			
Offer CMI: Take on an empty stomach 1 hour before or 2 hours after food. May cause nausea, vomiting, diarrhoea, abdominal pain/cramps or thrush. Can be taken with food if causes stomach upset				
Note: Can prolong QT interval, avoid using with other medicines that prolong QT interval				
Contraindication: Severe or immediate allergic reaction to macrolides, use with some statins, severe hepatic impairment. Caution with myasthenia gravis and severe renal impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,5]				

5. Follow up[1]

- Identify and work through any barriers to injections +
  - reschedule next appointment before they leave the clinic
  - update recall system to start in 21 days time
  - fill out injection reminder card https://www.rhdaustralia.org.au/resources/injection-reminder-cards
  - encourage to download and use *Treatment tracker* App https://www.rhdaustralia.org.au/resources/treatment-tracker-app-iphone (iPhone)
- Provide ongoing support and education eg *Strong Heart Strong Body* book https://rhdaustralia.org.au/resource-library/

6. Referral/consultation

- As needed, contact the QH RHD Program for clinical support or education ✆ 1300 135 854, (or local RHD control program)

Ear problems

Ear assessment - adult/child

Recommend[1]

- **Check ears every time a child attends the clinic**
- Encourage to bring child to clinic if any ear symptoms, or concerns about hearing or language
- If hearing loss, the school/day care can put in measures to assist the child eg sound field amplification systems and student placement (seating) in the classroom

Background[1]

- Otitis media (OM) is inflammation ± infection of the middle ear space. OM in Aboriginal and Torres Strait Islander children can start in the first months of life, and may lead to recurrent ± chronic infections and hearing loss. **Hearing loss can have a lifelong impact** eg speech development, learning
- **Resources:**
  - *Deadly ears* https://www.childrens.health.qld.gov.au/chq/our-services/community-health-services/deadly-ears/
  - *Care for kids* http://www.careforkidsears.health.gov.au/internet/cfke/publishing.nsf/Content/Home
  - *Otitis media guidelines* + App https://otitismediaguidelines.com/#/start-main-
  - *Blow, breathe, cough* https://www.youtube.com/playlist?list=PLUaMS4QuzOXDWas_q55lITmlU3OD_JJbz
  - *Chronic Conditions Manual* - **how to do** hearing checks, tympanometry and audiometry

Preventing ear infections[1,2]

- Frequent handwashing, especially after blowing nose/coughing
- Keep face and hands clean of nasal discharge
- Pneumococcal and influenza vaccination
- 'Blow, breathe, cough'
- Breastfeed. If bottle feeding, use upright position (not lying in cot)
- Restrict use of dummies › 6 months of age
- Keep sick children away from babies
- Keep away from smoke

1. May present with[1]

- No symptoms - routine check of ears
- Sore, itchy, or discharging ear(s) or hearing loss
- Young child - pulling/rubbing/holding ear(s), unsettled/irritable, disturbed sleep, ↓ feeding
- Concerns about ears, hearing or language/talking

2. Immediate management[1]

- If unwell screen for Sepsis, p. 62

3. Clinical assessment[1]

- **If ear symptoms, ask about:**
  - onset, severity, duration
  - pain/itchy
  - discharge - colour, amount
  - deafness, fullness
  - dizziness/tinnitus (ringing in the ear)
  - recent swimming/water sports
  - trauma/blow to ear eg slap, diving, foreign body[3]

Positioning child to examine ears and throat

- Any other symptoms eg:
  - runny nose, sore throat, cough, fever, vomiting, lethargy, loss of appetite
  - hearing loss
  - concerns about language/talking, learning or behavioural problems (could mean ↓ hearing)
- Get past history:
  - prior ear infections, perforations, operations to ear, ENT review - what, when, treatment
  - prior serious illnesses eg meningitis
  - last hearing test/audiology (date), results
- Palpate for swollen/tender lymph glands - around ears can indicate otitis externa (OE); if in neck, not usual for isolated OM but can indicate presence of an URTI
- **Check nose, throat, chest** + other systems as needed

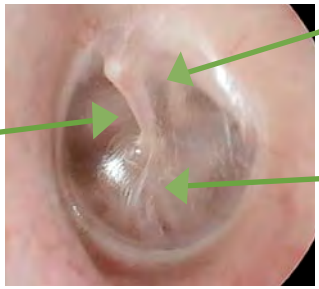
Examine ears[1,4,5]

- Examine both ears. Start with normal ear

Ear examination - look for		
Pinna (outer ear)		• Discharge, flaky or scaly skin • Pain on moving pinna or tragus (flap of skin in front of ear canal) • Is ear pushed out - downward and forward
Behind ear		• Redness or swelling, bony tenderness
Ear canal		• **Look inside with otoscope** if pain levels allow: – to straighten canal, pull pinna: **adult** - up, out and back; **child** - down and back • If pus/discharge - take swab for MCS + gently clean with Tissue spears, p. 516 • Swelling, redness, lumps, flakes/scales • Discharge, foreign body, debris, dislodged grommet (ventilation tube) • If **impacted wax** prevents examination consider syringing with warm water **if skilled**. Do NOT irrigate if perforation present or signs of OE. Caution if diabetes, immunocompromised or on anticoagulants[6]
Tympanic membrane (TM) (eardrum)	**Colour**	• Pearly grey, yellow, amber, blue, red, white (pus), white chalky patches (scarring)
	Translucency	• Shiny/translucent, opaque, dull/cloudy, fluid/bubbles
	Position	• Neutral, bulging or retracted (sucked in) • Handle of malleus - prominent if retracted; not seen well if bulging
	Perforation (hole) or grommet	• Position, size - a readily visible hole is 'moderate' to 'large' size[3] • Duration • **Note:** a severely retracted eardrum, retraction pocket or healed hole might be mistaken for a perforation[7]
	Mobility	• Consider if not too painful **+ eardrum intact** • **Check by** - gentle valsalva (hold nose and blow), pneumatic otoscopy or tympanometry (Type A is normal) • **If eardrum moves in and out easily** you can exclude a perforation + fluid in the middle ear (ie exclude otitis media and acute otitis media)
	Red flags[7]	**If any of below, it could be cholesteatoma** - consult MO/NP for urgent ENT referral • Hole or retraction in attic (upper) area • Crust/granulation/discharge in attic area • Severely retracted (sucked in) eardrum • Dull white mass behind eardrum • Perforation near edge of eardrum

Normal eardrum (left ear)

- Pearly grey, shiny, translucent, cone of light present, no redness, handle of malleus vertical
- Also see *Educational resources* in the Otitis media guidelines for photos



Ear differential diagnosis[1,4,5]

Red, swollen/tender behind ear ± ear pushed downward and forward — Yes → **Acute mastoiditis**[4,8]
- Consult MO/NP urgently
- Retrieval, IV antibiotics, ENT review

No ↓

Discharge/pus from ear — Yes → Otitis externa, p. 518 *Ear canal infection*

No ↓ / Yes ↓

Hole (perforation) or grommet in the eardrum — No/unsure → Yes ↑
- Small/scant discharge/debris
- Canal swollen/red, sore/itchy

Yes ↓ / No ↓

If a lot of discharge, it usually means a hole in the eardrum
Try to find if possible

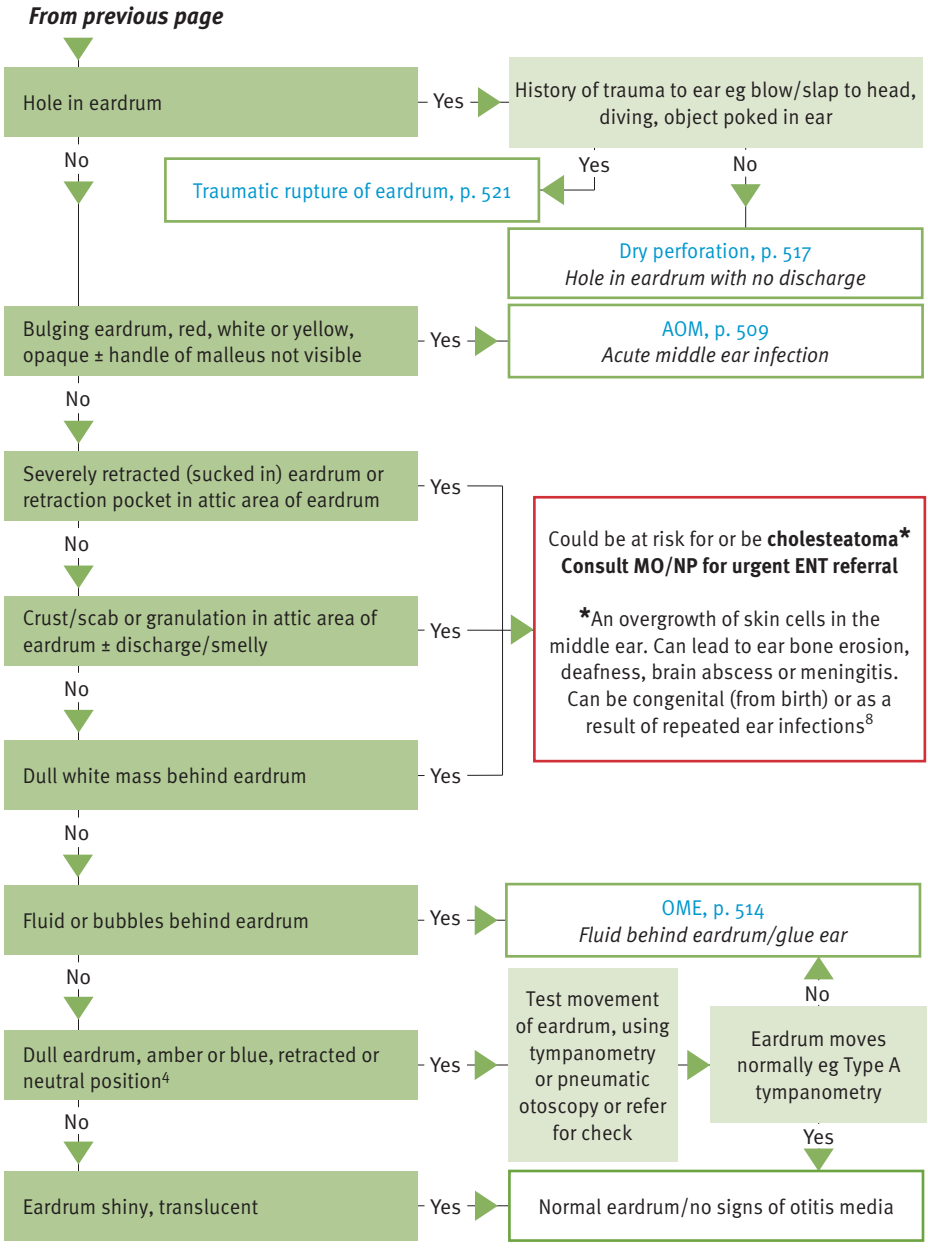
Has discharge been there for **≥ 2 weeks**
OR
Is it a 'dry perforation' with intermittent discharge

- No → AOM, p. 509 *Acute middle ear infection*
- Yes → CSOM, p. 515 *Chronic discharging ears*

Ear canal swollen, sore/itchy — Yes → Otitis externa, p. 518

No ↓

Next page


From previous page
Hole in eardrum
Yes
History of trauma to ear eg blow/slap to head, diving, object poked in ear
No
Yes
No
Traumatic rupture of eardrum, p. 521
Dry perforation, p. 517
Hole in eardrum with no discharge
Bulging eardrum, red, white or yellow, opaque ± handle of malleus not visible
Yes
AOM, p. 509
Acute middle ear infection
No
Severely retracted (sucked in) eardrum or retraction pocket in attic area of eardrum
Yes
No
Crust/scab or granulation in attic area of eardrum ± discharge/smelly
Yes
No
Dull white mass behind eardrum
Yes
Could be at risk for or be cholesteatoma* Consult MO/NP for urgent ENT referral
*An overgrowth of skin cells in the middle ear. Can lead to ear bone erosion, deafness, brain abscess or meningitis. Can be congenital (from birth) or as a result of repeated ear infections[8]
No
Fluid or bubbles behind eardrum
Yes
OME, p. 514
Fluid behind eardrum/glue ear
No
Dull eardrum, amber or blue, retracted or neutral position[4]
Yes
Test movement of eardrum, using tympanometry or pneumatic otoscopy or refer for check
No
Eardrum moves normally eg Type A tympanometry
Yes
No
Eardrum shiny, translucent
Yes
Normal eardrum/no signs of otitis media

HMP Acute otitis media (AOM) - adult/child

Acute middle ear infection ± perforation

Recommend[1,2]

- A red eardrum alone is not diagnostic of AOM. It can also be caused by crying, fever, URTI
- Always consider other causes of illness in a sick child with fever

Background[1,2]

- Perforation of the eardrum is common, resulting in ear discharge and relief of pain

1. May present with[1-3]

- Acute onset of:
  - bulging eardrum (can look red or white/yellow)
  - fluid in the middle ear **OR** ear discharge for < 2 weeks
- ± symptoms eg:
  - pain, fever, lethargy
  - URTI symptoms eg cough, runny nose
  - pulling/rubbing/holding ear(s)
  - unsettled/irritable (young child)
  - infant may present with feeding difficulties

2. Immediate management[1,2]

- Do vital signs
- Screen for Sepsis, p. 62
- Offer analgesia, see Acute pain, p. 32
  - if severe pain unrelieved by paracetamol ± ibuprofen, consult MO/NP

3. Clinical assessment[1]

- Get history, including:
  - pain - location, onset
  - discharge from ear - duration[1]
  - previous ear infections - when, how treated
  - grommets
  - other symptoms eg fever, cough, runny nose, rash, nausea/vomiting, diarrhoea
  - feeding - normal or ↓ intake
  - times passed urine/number of wet nappies in last 24 hours
  - immunocompromised
- Do physical examination, including:
  - full examination if unwell child
  - ears as per Ear assessment, p. 505
    - eardrum - look for bulging OR perforation with discharge
    - it may be difficult to see eardrum if profuse discharge, especially in infants[4]
  - nose, throat, chest
- If ear discharge, take swab for MCS

4. Management[1-4]

- **Consult MO/NP if any of:**
  - ‹ 3 months
  - T ≥ 39
  - rash, ↑RR, or respiratory distress
  - looks sick, lethargic, pale, irritable, not alert or interactive when T reduced
  - immunocompromised
- Assess if any **Indications for antibiotics** as per table below[3,4]

	Indications for antibiotics - if any of:
☐	Systemically unwell eg lethargic, pale, very irritable, fevers
☐	Infant ‹ 6 months
☐	Child ‹ 2 years with AOM in both ears
☐	Ear discharging/perforation
☐	Symptoms present for › 48–72 hours
☐	Uncertain access to follow up[1]
☐	**Child at 'HIGH RISK of complications'**/ chronic ear infections[4]

Child at 'HIGH RISK of complications'

- **Aboriginal and Torres Strait Islander child** if any of:
  - living in remote community
  - ‹ 2 years
  - first episode of OM ‹ 6 months of age
  - family history of CSOM (runny ears)
  - current or prior perforation
- **Any child** if any of:
  - immunocompromised, cochlear implant
  - craniofacial abnormalities, cleft palate
  - developmental delay, Down syndrome
  - existing hearing loss, severe visual impairment

- **If antibiotics NOT indicated:**[4,5]
  - reassure AOM will often resolve by itself
  - advise to be reviewed in 2–3 days or sooner if becomes more unwell
  - if after 2–3 days there is no improvement, offer antibiotics
- **If antibiotics ARE indicated** - see **Antibiotics for AOM** flowchart
- In all cases, advise:[1,3]
  - give regular paracetamol ± ibuprofen for pain.[4,6] See Acute pain, p. 32
  - symptoms usually last 2–3 days
  - if acute perforation - keep ear dry until resolved
  - if ears discharging - clean with Tissue spears, p. 516
- Offer fact sheet eg https://www.childrens.health.qld.gov.au/health-a-to-z/middle-ear-infection

Antibiotics for AOM[3,4]

- **Note: if allergy to penicillins,** REPLACE amoxicillin with **trimethoprim + sulfamethoxazole** and consult MO/NP if not responding to treatment

Aboriginal and Torres Strait Islander CHILD — **No** →
- Amoxicillin for **5 days**
- **If not improving after 2–3 days of antibiotics** change to amoxicillin + clavulanic acid **OR** as guided by MCS results*

Yes ↓

Is eardrum perforated/discharge — **Yes** →
- Amoxicillin **HIGH DOSE** for **14 days**
- **OR** if adherence a concern, a single dose of azithromycin + repeat dose in 7 days
- **Review in 4–7 days** or sooner if concerned:
  - **if resolved,** go to Follow up, p. 513

No ↓
- Amoxicillin for at least **7 days**:
  - if antibiotics have been given in prior month for AOM give **HIGH DOSE**
- **OR** if adherence a concern, a single dose of azithromycin
- **Review in 4–7 days** or sooner if concerned:
  - **if resolved,** go to Follow up, p. 513

If not resolved ↓

Bulging eardrum persists / **Eardrum has burst** →
- **Consult MO/NP** who may consider:
  - if taking amoxicillin, changing to amoxicillin + clavulanic acid for 7 days **OR** 2nd dose of azithromycin if not given already (and 7 days since 1st dose) **OR** as guided by MCS results*
  - ± adding ciprofloxacin ear drops. See CSOM, p. 515 for doses
- **Continue to review weekly**

↓
- Give **HIGH DOSE** amoxicillin for 7 more days (OR repeat dose of azithromycin)
- **Review again in 1 week**

↓
- **If resolved,** go to Follow up, p. 513
- **If not resolved,** consult MO/NP who may advise to continue **HIGH DOSE** amoxicillin **OR** start amoxicillin + clavulanic acid for 7 days:
  - + review adherence
  - **continue to review weekly until resolved**

↓
- **If resolved,** go to Follow up, p. 513
- **If discharge persists** for ≥ 2 weeks continue to manage as per CSOM, p. 515

***± discuss with ID specialist/microbiologist

S4	Amoxicillin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Capsule	250 mg 500 mg	Oral	**Adult and child ≥ 12 years** 1 g bd	5 days
Oral liquid	250 mg/5 mL 500 mg/5 mL		**Child › 1 month to ‹ 12 years** 30 mg/kg (max. 1 g) bd	5–7 days
			HIGH DOSE **Child › 1 month to ‹ 12 years** 45 mg/kg (max. 1 g) bd	7 days **If perforation** 14 days
Offer CMI: May cause rash, diarrhoea, nausea or thrush				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,4,7]				

S4	Azithromycin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	500 mg	Oral	**Child** 30 mg/kg (max. 1 g)	**Single dose** Give as direct observed treatment Repeat in 7 days if indicated
Oral liquid	200 mg/5 mL			
Offer CMI: May cause rash, diarrhoea, nausea, abdominal cramps or thrush				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,8]				

S4	Amoxicillin + clavulanic acid			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	875 mg + 125 mg	Oral	**Child › 2 months** 22.5 mg/kg (max. 875 mg) bd	5–7 days
Oral liquid	400 mg + 57 mg/5 mL		**Infant 1 month – ‹ 2 months** 15 mg/kg (max. 500 mg) tds	
			Dose as per amoxicillin component	
Offer CMI: Take with food. May cause rash, diarrhoea, nausea or thrush. Can cause severe diarrhoea (colitis) due to *C. difficile*				
Contraindication: Severe or immediate allergic reaction to a penicillin. Be aware of cross-reactivity between penicillins, cephalosporins and carbapenems				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,4,9]				

S4	Trimethoprim + sulfamethoxazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	80 + 400 mg 160 + 800 mg	Oral	**Adult** 160 + 800 mg bd	5–7 days
Oral liquid	40 + 200 mg/ 5 mL		**Child ≥ 1 month** 4 mg/kg (max. 160 mg) bd	
			Dose as per trimethoprim component	
Offer CMI: Take with food to reduce stomach upset. May cause fever, nausea, vomiting, diarrhoea, itch, rash or sore mouth. Avoid sun exposure. Report straight away if sore throat, fever, rash, cough, breathing difficulties, joint pain, dark urine or pale stools. Drink plenty of fluids				
Note: If elderly, renal/hepatic impairment, taking ACEI or potassium, HIV or SLE seek MO/NP advice				
Pregnancy: Do not use in the 1st trimester or in late pregnancy				
Contraindication: Serious allergy to sulfonamides, megaloblastic anaemia, severe hepatic impairment				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,4,10]				

5. Follow up[1,3]

- Advise to be reviewed in 4–7 days + weekly until resolved:
  - **if unwell advise daily review initially** (until improving), or sooner if concerned. Consult MO/NP if concerned
  - check taking antibiotics correctly at each review. Offer support as needed
- Follow up results of MCS. Check if sensitive to current antibiotics (discuss with MO/NP if not)

Ongoing follow up

- **If acute perforation, advise review again at 6 weeks.** If still perforated, refer to MO/NP clinic
- **If eardrum intact, advise review again at 3 months:**
  - check for persistent fluid behind the eardrum. If present, see OME, p. 514
  - **note:** it is common for fluid to be present for about a month after AOM but it is mostly gone by 3 months
- **If AOM resolved, but recurrent ie** ≥ 3 episodes in prior 6 months **OR** ≥ 4 episodes in prior year:
  - if **Child at 'HIGH RISK' of complications** refer to next MO/NP clinic:
  - in all cases, review monthly for 3 months:
    - if further episodes of AOM in the 3 month period, arrange ENT referral + hearing assessment
    - if no further AOM, advise parent/carer to return if any concerns
- Continue routine/opportunistic screening when child presents to clinic + as per **Ears and hearing checks** in *Chronic Conditions Manual*

6. Referral/consultation[1,11]

- If there are concerns about child's hearing, speech development, behaviour, or school progress, consider early referral for formal audiology assessment

Otitis media with effusion (OME) - child

Fluid behind the intact eardrum(s), glue ear

Background[1,2]

- If fluid persisting › 3 months in both ears, treatment may be needed to help restore hearing loss

1. May present with[1,2]

- Fluid behind intact eardrum(s) **AND** no symptoms:
  - detected by loss of movement of eardrum - shown by Type B tympanometry, pneumatic otoscopy or valsalva eg on routine ear check
- Suspect if:
  - dull eardrum/light reflex missing ± eardrum retracted
  - grey-white fluid or bubbles behind eardrum - can be hard to see
  - ± hearing loss - may be evident through speech delay/learning or behavioural issues

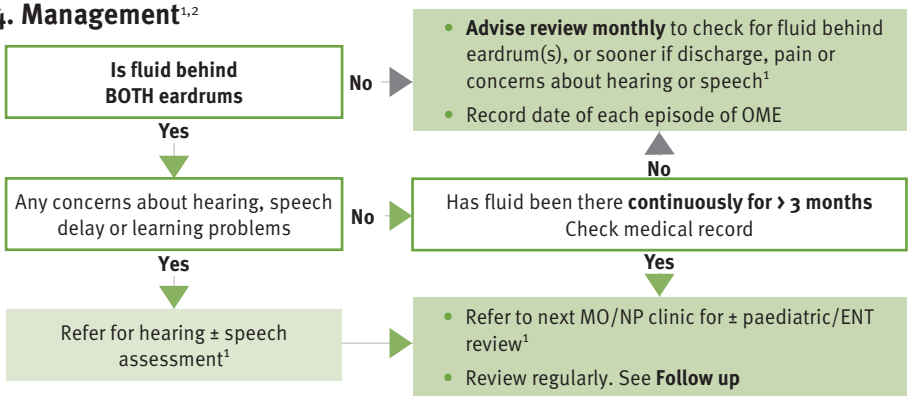
2. Immediate management

Not applicable

3. Clinical assessment[1,2]

- Get history and examine ears as per Ear assessment, p. 505, including:
  - prior OME/ear infections, when, treatment, is child under ENT specialist
  - any concerns about hearing, speech and learning/behavioural problems, development
  - hearing tests - when, results
  - do vital signs
  - if possible, do valsalva, tympanometry or pneumatic otoscopy to confirm eardrum not moving. See Ear assessment, p. 505

4. Management[1,2]



- Consider antibiotics for otitis media ONLY if symptoms of acute infection present[3,4]

5. Follow up[1,5]

- Advise to be reviewed in 1 month - add to recall list/clinic reminders
- If bilateral OME resolved, or OME in 1 ear only, in the absence of speech, hearing or language concerns, continue regular review of ears eg monthly until effusion resolved

6. Referral/consultation

- As above

HMP Chronic suppurative otitis media (CSOM) - child

Ear(s) discharging for ≥ 2 weeks

Background[1]

- Chronic discharging ears can cause hearing impairment and disability. Occasionally serious complications can occur eg intracranial infection or mastoiditis

1. May present with[1,2]

- Ear discharge present for ≥ 2 weeks + eardrum perforation (hole)

2. Immediate management

Not applicable

3. Clinical assessment[2]

- Get history as per Ear assessment, p. 505, including:
  - amount + duration of ear discharge
  - prior ear infections, when, treatment, is child under ENT specialist, grommets
  - any concerns about hearing, speech and learning/behavioural problems, development
  - hearing tests - when, results
- Do vital signs
- Examine ears:
  - take swab for MCS first
  - use Tissue spears, p. 516 to clean
  - document size and location of hole in eardrum eg draw picture in notes
  - if grommet - note position (still in eardrum); any granulation tissue around base
- If pus thick and you are unable to view eardrum, consider initial irrigation of ear:
  - use diluted povidone iodine (Betadine®) (1 part Betadine® to 20 parts warm water) - followed by Tissue spears, p. 516
  - if cleaning and irrigating not effective, refer to MO/NP for suctioning under direct supervision

4. Management[1,2]

- Consult MO/NP promptly ± ENT referral if:
  - T › 38.5 or systemically unwell + screen for Sepsis, p. 62
  - redness/swelling behind the ear
  - perforation in Attic area, p. 507
  - crusting or granulation tissue - in attic area or around base of grommet
- If discharge ‹ 2 weeks, treat as AOM, p. 509 with perforation. Unless child has history of dry perforation with intermittent discharge, in which case continue as below

If discharge ≥ 2 weeks[2]

- Give ciprofloxacin ear drops
- If hole in eardrum is not visible or very small (pin hole size), consult MO/NP who may add amoxicillin or azithromycin as per AOM, p. 509
- Advise:
  - dry mop with Tissue spears, p. 516 before ear drops + as needed
  - importance of continuing tissue spears + ear drops until ears dry - **may be › 2 weeks/long-term**
  - water precautions (when swimming/bathing) - use cotton wool in ear with Vaseline® over top, Blu Tack®, or earplugs with swimming cap
  - hearing loss likely while discharging

Tissue spears[3]

- Wash hands before and after doing
- Get tissue. Find the edge of the tissue that will tear straight. Tear strips 1–1.5 cm thick along full length of tissue, then fold strip in half. Twist/roll to form a spear
- Hold edge of ear and pull 'back' (young child) or 'back and up' (older child) to straighten ear canal
- Insert spear into ear. Twist slowly until it stops going in, or child cries, coughs or blinks
- Leave for about 30 seconds to soak up discharge. Remove and repeat with fresh spears until tip dry

Show parent/carer how to do

- **Note:** do not use cotton buds to clean ears

S4	Ciprofloxacin			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed for Aboriginal and Torres Strait Islander persons only				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ear drops	0.3%	Ear	**Child ≥ 1 month** Instil 5 drops in affected ear bd	**CSOM** Minimum 9 days Continue until ear has been dry for at least 3 days
				AOM with discharge and visible perforation Until ear has been dry for 3 days
Offer CMI: Clean ears with **Tissue spears** first. The drops will only work if pushed through the hole in the eardrum using 'tragal pumping' (press several times on the flap of skin in front of the ear canal). Show parent/carer how to do				
Note: 1 bottle should last for 9–10 days				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [1,2,4]				

5. Follow up

- Advise:[1,2]
  - see MO/NP at next clinic for ENT referral[2]
  - **review weekly** until resolved + to get more ear drops
  - at each visit check:
    - any discharge on otoscopy (only profuse discharge is visible outside the ear)
    - using drops correctly
    - adequate **Tissue spearing**
- Consider MO/NP input as needed/not resolving
- **Review 4–6 weeks** after resolved for inspection of TM ± residual perforation

6. Referral/consultation[1,2,5]

- Early ENT referral recommended
- Consider referral for hearing test at time of diagnosis
- If language, learning or behavioural problems, consider referral to speech pathology

Dry perforation - adult/child
Hole in eardrum with no discharge

1. May present with[1]

- Perforated eardrum (hole) without any discharge

2. Immediate management Not applicable

3. Clinical assessment[1]

- Get history and examine ears as per Ear assessment, p. 505, including:
  - duration of perforation (if known)
  - recent trauma to ear/head eg slap
  - prior ear infections, when, treatment, is child under ENT specialist
  - concerns about hearing, speech and learning/behavioural problems, development
  - hearing tests - when, results
- Examine ears:
  - document size and position of perforation eg draw picture in notes
  - do valsalva, tympanometry or pneumatic otoscopy to confirm eardrum not moving to exclude healed perforation. See Ear assessment, p. 505
  - note any crusting/scab or granulation on the eardrum/near hole

4. Management[1]

- If related to trauma, see Traumatic rupture of eardrum, p. 521
- **Consult MO/NP for urgent ENT referral if hole** could indicate Cholesteatoma, p. 508 eg:[2]
  - is in Attic area, p. 507 (upper area) of eardrum OR
  - boarders rim of the eardrum OR
  - crusting/scab or granulation on the eardrum/near the hole
- **Otherwise,** advise parent/carer:
  - if a child, is at risk of developing chronic discharging ears
  - will often heal by itself in time, but need to monitor
  - water precautions (when swimming/bathing) - use cotton wool in ear with Vaseline® over top, Blu Tack®, or earplugs with swimming cap

5. Follow up[1]

- Advise to return if ear starts discharging
- Otherwise, review monthly until healed

6. Referral/consultation[1,3]

- If perforation persists for › 3 months or is associated with pain, discharge or significant speech and language concerns, consider early ENT and audiology referrals
- If language, learning or behavioural problems, consider referral to speech pathology

HMP Otitis externa (acute) - adult/child

Ear canal infection, swimmer's ear, tropical ear

1. May present with[1,2]

- Ear pain (can be severe), tenderness on moving outer ear
- Hearing loss, feeling of 'fullness'
- Itch, discharge

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Get history including:
  - onset, duration
  - swimming/water exposure or trauma to ear canal eg vigorous cleaning/scratching, use of hearing aids, cotton buds
  - prior otitis externa - when, treatment
  - immunocompromised, diabetes, recent radiotherapy
- Do vital signs
- Examine ears - often very painful, approach gently:
  - if discharge, take swab for MCS first
  - dry mop using Tissue spears, p. 516 to clean any discharge/debris from canal. **Do not syringe with water**[2,3]
  - using otoscope, look for:
    - widespread redness/swelling of ear canal, any vesicles[2]
    - discharge/debris/foreign body
    - eardrum - intact or perforated - may be too swollen to see. If no discharge, consider tympanometry. Type A means the eardrum is intact[1]
- Is cause likely **bacterial or fungal**[4]

Bacterial	Fungal
• Very painful on pulling pinna, pressing tragus and on otoscopy	• Itch is predominant over pain, all manipulations are tolerable
• Narrow, swollen ear canal	• Usually wide canal
• Smelly creamy or dry pus, yellow colour, scaly/flaky canal	• Debris is thick 'wet newspaper' (hyphae) and 'salt and pepper' (spores)

4. Management[1]

- Offer analgesia. See Acute pain, p. 32
- Consult MO/NP if any of:
  - fever; cellulitis/redness extends outside the ear canal; vesicles in canal or on eardrum
  - immunocompromised, diabetes or recent radiotherapy - for oral antibiotics + ear drops
- **Give ear drops:**[2-6]
  - if bacterial infection suspected give:
    - dexamethasone + framycetin + gramicidin (eg Otodex®, Sofradex®) **OR**
    - **if perforated eardrum, grommet, or eardrum not visualised**, use ciprofloxacin + hydrocortisone
  - if fungal infection suspected give:
    - triamcinolone + neomycin + nystatin + gramicidin drops (eg Kenacomb Otic®, Otocomb Otic®)
    - **OR** flumetasone + clioquinol (eg Locacorten vioform®)

- **If canal occluded due to swelling - use wick with drops:**
  - insert wick into canal eg Merocel Ear Wick®, Pope Oto Wick®, or 1 cm strip of ribbon gauze[2,5]
  - advise will be uncomfortable to put in, but will ensure drops get deep into the canal
  - once inserted, saturate wick with 5 ear drops (as above)
  - leave wick in place + continue drops at home from next day

Advise[1,3]

- Symptoms should improve after 2–3 days of treatment, with full resolution up to 2 weeks[4]
- Keep ear dry during + for 2 weeks after treatment. Use cotton wool balls with Vaseline® over top while showering; avoid swimming

Ear drops advice - otitis externa[4,6]

- Get someone else to put drops in if possible
- Clean ear with Tissue spears, p. 516 first. Clean well, especially if fungal infection, as remaining spores can lead to recurrent infections
- Warm bottle of drops in palm for 5–10 minutes
- Lie with affected ear up. Put in drops and then gently press the tragus for 30 seconds. Stay lying with ear up for at least 3–5 minutes
- **Stop using if** develops ringing in ears, hearing loss, or difficulty with balance[6]

S4	Dexamethasone + framycetin + gramicidin (Otodex®, Sofradex®)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ear drops	Dexamethasone 0.05% framycetin 0.5% gramicidin 0.005%	Ear	3 drops into affected ear tds	5–7 days Use until a few days after symptoms cleared. Do not exceed 2 weeks
Note: Do not use if perforated eardrum, grommet, or eardrum not visualised				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,5,7]				

S4	Ciprofloxacin + hydrocortisone			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ear drops	0.2% + 1%	Ear	3 drops into affected ear bd shake bottle first	7 days
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,8]				

S4	Triamcinolone + neomycin + nystatin + gramicidin (Kenacomb Otic®, Otocomb Otic®)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ear drops	Triamcinolone 0.1% neomycin 0.25% nystatin 100,000 units/mL gramicidin 0.025%	Ear	3 drops into affected ear tds	3–7 days
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,9]				

S4	Flumetasone + clioquinol (Locacorten vioform®)			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Ear drops	Flumetasone 0.02% clioquinol 1%	Ear	**Adult and child › 2 years** 3 drops into affected ear bd	5–7 days Use until a few days after symptoms cleared Do not exceed 2 weeks
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,10]				

5. Follow up

- **If wick inserted** advise to be reviewed in 2–3 days:[3]
  - remove wick. If canal still swollen, insert another wick and continue with drops
  - if canal not swollen (wick may have fallen out by itself), continue drops without wick
  - advise review again in 2 days. If no improvement, consult MO/NP
- **If no wick inserted** advise review in 5 days (or sooner if worried/worsening):
  - if no improvement consult MO/NP, who may change ear drops ± consider other causes
- **After treatment, advise:**[5,6]
  - do not insert cotton ear buds/other objects into ears. Leave wax alone - see clinic if concerned
  - if prone to otitis externa - use ear plugs while swimming, showering or bathing. Consider using acetic acid + isopropyl alcohol ear drops eg Aquaear® after water exposure to help dry ears (only if eardrum intact)

6. Referral/consultation

- As above

Traumatic rupture of eardrum - adult/child

1. May present with[1,2]

- Hearing loss, tinnitus (ringing in ears), earache
- + history of:
  - blow to ear eg slap, fall from water skis, diving
  - rapid change in ear pressure eg air travel, scuba diving, blast/explosion
  - object poked in ear eg cotton tipped applicator
  - irrigation to ear, foreign body removal or strong suction to ear

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Ask about:
  - circumstances + mechanism of injury eg any water exposure
  - date/time of injury + when first noticed symptoms
  - vertigo/dizziness, hearing loss, tinnitus, light-headedness, other symptoms/injuries
  - prior history of ear infections/problems
- If blow to head, assess for Head injuries, p. 140 including base of skull fracture
- Do vital signs
- Do otoscopy - note location + size of perforation, any discharge/pus:
  - do NOT syringe ears with water or remove any blood in canal - can delay healing
- Check hearing using audiometry (if possible)

4. Management[1]

- If vertigo/dizziness **seek urgent medical advice ± retrieval**
- Consult MO/NP in all cases, who may advise:
  - ciprofloxacin ear drops if 'dirty' injury (eg in water) or discharge/infection
  - ± ENT and audiology referral
- Advise to keep ear dry until healed. Use Blu Tack® or cotton wool in ear with Vaseline® over top while showering. Avoid swimming
- Most perforations will heal without treatment within 2 months[3]
- If related to assault/Domestic and family violence, p. 232, offer support/referral as per local policies. Also consider Child protection, p. 539

5. Follow up[1]

- Advise to:
  - be reviewed in 2–3 days,
  - see MO/NP at next clinic
  - + review 2 weekly until healed if asymptomatic, or sooner if concerned eg infection

6. Referral/consultation

- MO/NP may refer to ENT specialist if not healed after 3 months[4]

Gastrointestinal problems

HMP Gastroenteritis/dehydration - child
Diarrhoea ± vomiting

Recommend[1]

- Rehydration is the most important part of management eg with oral rehydration solution (ORS)

Background[1]

- Most gastroenteritis is viral, self-limiting and resolves without specific treatment
- Antibiotics are of no benefit in most cases and may exacerbate diarrhoea
- Also see QPEC guidelines *Gastroenteritis - emergency management in children*

1. May present with[1]

- Sudden onset of diarrhoea ± vomiting, fever or abdominal pain, dehydration

ALERT re-presentation with suspected gastroenteritis is high risk for underlying disease eg sepsis. Reconsider diagnosis and seek senior MO review

2. Immediate management[1]

- Do vital signs
- Do **Hydration assessment** - more numerous/pronounced symptoms + signs indicate greater severity. If in doubt, manage as if dehydration falls into the more severe category
- **If any signs of shock** contact MO/NP urgently + treat as per Shock, p. 60
- Screen for Sepsis, p. 62

Hydration assessment

	No signs of dehydration	Clinical dehydration 5–10% fluid loss	Shock › 10% fluid loss
Level of consciousness	alert + responsive	altered responsiveness	↓
Skin colour	unchanged	unchanged	pale or mottled
Extremities	warm	warm	cold
Eyes	not sunken	sunken	sunken
Mucous membranes	moist	dry	dry
HR	normal	normal	↑
RR		↑	↑
Peripheral pulses		normal	weak
Capillary refill		normal	› 2 seconds
Skin turgor		↓	↓
BP		normal	↓

ALERT consider Button battery, p. 78 ingestion in all children with vomiting

3. Clinical assessment[1]

Consider differential diagnosis

- **Look for signs of:** FB ingestion, meningitis, DKA, bowel obstruction, testicular torsion, appendicitis, intussusception, pneumonia, UTI, otitis media

- Get history, including:
  - gastrointestinal symptoms:
    - date/time of onset, frequency of stools/vomiting
    - is there blood ± mucous in stools
    - contents of vomit + colour eg bile stained (forest green in colour)
    - location and severity of abdominal pain
    - times passed urine/number of wet nappies in last 24 hours
    - how many drinks/breastfeeds in last 24 hours
  - other symptoms eg fever, rash, headache, jittery movements
  - known illness in contacts - home, daycare or school
- Do physical examination, including:
  - BGL + ketones (blood or urine)
  - weight - bare weight if ‹ 2 years. **Note: if re-presentation, reweigh + compare to previous weight**
  - urinalysis - look for signs of UTI
  - abdomen - listen for bowel sounds, look for distension + palpate for guarding, rigidity
- Do stool MCS + PCR if:
  - blood ± mucous in stool
  - immunocompromised
  - recent travel overseas
  - diarrhoea › 7 days
- Any **Red flags** and **Risk factors for dehydration**[1]

Red flags if any contact MO/NP urgently	• **Any vomiting without diarrhoea** • **Re-presentation/parental concerns** • **5–10%** weight loss from recent weight • Severe or localised abdominal pain • Abdominal distension • Bilious (green) vomiting • Blood in stool or vomit • Appears very unwell/very drowsy	• T › 39 (38.5 if ‹ 3 months) • Headache • Rash • Previous GI/surgical history/complex medical history • Failure to respond to standard treatment • Returned traveller • Persistent diarrhoea
Risk factors for dehydration	• ‹ 1 year, particularly preterm or ‹ 6 months • Infants low birth weight/failure to thrive • › 5 diarrhoeal stools in 24 hours, especially in infants	• Stopped breastfeeding during illness • Signs of malnutrition • Immunocompromised • Underlying chronic conditions

4. Management[1]

- **Contact MO/NP urgently if:**
  - ‹ 3 months
  - **Red flags** - may be more serious cause
  - **Risk factors for dehydration**
- See **Hydration management** flowchart

Hydration management[1]

No signs of dehydration

- Prevent dehydration
- Encourage fluid intake eg:
  - ORS (preferred)
  - diluted apple juice 50:50
  - breast milk/formula
- Inappropriate fluids:
  - soft drink, cordial, sports drinks, water by itself

Any Risk factors for dehydration

No → Consider discharge with **Parent/carer advice**

Yes →

Observe 1–4 hours

- Give ORS
- Aim for 10 mL/kg/hour, small amounts frequently
- ± Ondansetron, p. 42

Maintaining hydration - consider both input + output

Yes → Consider discharge with **Parent/carer advice**

No → Contact MO/NP for ongoing rehydration ± retrieval

If clinically dehydrated

- **Contact MO/NP urgently**
- If able give ORS:
  - aim for 12.5 mL/kg/hour, small amounts frequently with syringe/cup
- **If severe and › 6 months** rapidly rehydrate via NGT/IV 50 mL/kg **over 4 hours:**
  - age ≤ 3 years - ORS via NGT
  - age › 3 years - sodium chloride 0.9% + glucose 5% IV or ORS via NGT
- **If severe and ‹ 6 months** give slower rate via NGT:
  - 50 mL/kg **over 8–12 hours**
- ± Ondansetron, p. 42
- Strict fluid balance + weigh nappies

Responding to treatment ie signs of clinical dehydration resolved

Yes →

Consult MO/NP

- Start usual fluids/feeds after 2–4 hours/earlier if child wants
- Consider discharge with **Parent/carer advice**

No →

Contact MO/NP urgently

- Ongoing rehydration as per MO/NP
- Retrieval/ hospitalisation

Parent/carer advice[1]

- Offer fact sheet eg *Gastroenteritis* https://www.childrens.health.qld.gov.au/health-a-to-z
- Keep your child drinking fluids, like Gastrolyte®, breast milk or formula, watered down apple juice
- Give small sips often using syringe, spoon, cup or icy poles
- Avoid sugary drinks eg soft drink, cordial and sports drinks. Water by itself is not recommended
- Offer food if they want it and start gradually with plain pasta, rice or potato, dry toast or plain biscuits
- Avoid fatty and sugary foods

Return to the clinic immediately if

- You are worried
- Symptoms getting worse, or unable to keep fluids down
- Develops severe tummy/neck or head pain, rash, high fever
- Have less than half usual wet nappies in a day, or not going to toilet a lot + dark coloured urine
- Becomes drowsy or fussy
- Vomit turns green or you notice blood in stool or vomit
- May have swallowed a button battery

- Wash hands often with soap and water. Alcohol sanitiser will not kill the infection
- Symptoms usually resolve within 1–2 days. Stools can remain loose for 1–2 weeks
- Do not give antidiarrhoeal medicines
- Keep your child away from others until no loose stools in a 24 hour period and they are well[2]

5. Follow up[1]

- Advise to be reviewed the following day or earlier if parent/carer is concerned
- Contact MO/NP if re-presentation, symptoms worsen or persist after 2–3 days

6. Referral/consultation[2]

- As above
- Notify Public Health Unit if ≥ 2 cases of diarrhoea ± vomiting in the same location ⓵

HMP Giardiasis - adult/child

Background

- Transmission occurs by ingestion of contaminated water, food or toys, or person-to-person[1]

1. May present with[1]

- Diarrhoea, excessive gas or flatulence
- Abdominal bloating + discomfort
- Fatigue, weight loss, failure to gain weight - child
- Nausea, vomiting
- +ve pathology ± symptoms

2. Immediate management Not applicable

3. Clinical assessment

- Ask about:[1]
  - recent travel
  - diarrhoea - onset/duration (**note:** can be acute or chronic), watery, mucus or blood, greasy
  - vomiting, fever, pain
  - similar illness in contacts
  - contact with contaminated water eg swallowing water while swimming, untreated water
- Do physical examination, including:
  - vital signs
  - weight - bare weight if ‹ 2 years. Assess against recent weights
  - Hydration assessment - adult, p. 202 or child, p. 522
  - palpate abdomen for tenderness, guarding
- Do a stool MCS + multiplex PCR if:
  - abdominal/severe symptoms › 2 weeks eg pain, diarrhoea[2]

4. Management[1,2]

- Antibiotics are not required, unless:
  - patient handles food[3]
  - if severe or prolonged symptoms, or
  - as advised by Public Health Unit
- Contact MO/NP if:
  - severe symptoms eg mucus or bloody diarrhoea, pain, fever
  - dehydrated:
    - for rehydration see Gastroenteritis - adult, p. 202 or Gastroenteritis - child, p. 522

- Advise patient/parent:[1]
  - infection usually self-curing
  - if they prepare/serve food, avoid handling food until no diarrhoea for 48 hours[4]
  - stay away from others until 24 hours after the last loose bowel motion + they are well[4]
  - wash hands + toys frequently to prevent spreading[4]
  - avoid drinking untreated water from creeks/rivers etc
  - wash raw fruits before eating

S4	Metronidazole			Extended authority ATSIHP/IHW/IPAP/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	200 mg 400 mg	Oral	**Adult** 2 g daily	3 days
Oral liquid	200 mg/5 mL		**Pregnant** 400 mg tds	5 days
			Child > 1 month 30 mg/kg (max. 2 g) daily	3 days
Offer CMI: Avoid alcohol while taking and for 24 hours after finishing the course. Take tablet with food to reduce stomach upset. Take oral liquid 1 hour before food for better absorption. May cause nausea, anorexia, abdominal pain, vomiting, diarrhoea, metallic taste, dizziness or headache				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [2,5]				

5. Follow up

- Advise to be reviewed if symptoms do not settle or concerned:
  - contact MO/NP who may consider reinfection, drug resistance, alternative diagnosis[2]

6. Referral/consultation

- As above
- Notify Public Health Unit ☽ if:[4]
  - ≥ 2 cases with diarrhoea ± vomiting in the same location, or
  - a single case in a food handler
  - if outside Qld, check local Public Health Unit advice

HMP Worms - adult/child

1. May present with[1-3]

Worm	Symptoms (usually none)
Threadworm	• Itchy bottom ± rash from scratching • Redness + itching around vaginal area in girls • Tiny (1 cm) white worms seen around anus or in stool
Hookworm	• Anaemia ± symptoms related to iron deficiency eg poor growth
Whipworm	• Heavy infection - bloody, mucoid stools, diarrhoea ± rectal prolapse, anaemia, poor growth
Tapeworm	• Heavy infection - diarrhoea, abdominal pain ± pallor, weight loss, weakness
Strongyloides	• Chronic infection - may get cough, crackles in lungs, epigastric pain, diarrhoea, itch ± nausea, weight loss, vomiting, weakness, constipation
Roundworm	• Worms in stools often first sign

2. Immediate management Not applicable

3. Clinical assessment[1,4]

- Ask about:
  - when last treated for worms
  - recent travel
- If not already done, do:
  - vital signs
  - weight - bare weight if < 2 years. Assess against recent weights
  - capillary Hb - check normal values in Anaemia, p. 533
  - offer to look for threadworms around anus (as appropriate)
- Take stool sample for stool MCS + OCP + multiplex PCR if:
  - treating child with anaemia
  - symptomatic
  - testing usually not needed if visible worms
- If chronic strongyloides suspected, consult MO/NP for testing advice

4. Management[4,5]

- Contact MO/NP if < 6 months of age

Worm	Management
• If giving presumptive treatment or community deworming program (as advised by Public Health Unit)	• Single dose of albendazole
• If threadworm - visible worms or symptoms	• Single dose of albendazole or mebendazole or pyrantel • Treat household contacts at same time • Repeat treatment in 2 weeks if still symptoms/visible worms
If confirmed on pathology	
Whipworm	• Albendazole (preferred) or mebendazole
Hookworm, roundworm	• Albendazole (preferred) or mebendazole or pyrantel
Tapeworm	• Contact MO/NP who may order praziquantel
Strongyloides	• Contact MO/NP who may order ivermectin

S4	Albendazole	Extended authority ATSIHP/IHW/IPAP/RIPRN

ATSIHP, IHW, IPAP and RN must consult MO/NP

RIPRN may proceed

Form	Strength	Route	Dose	Duration
Tablet	200 mg 400 mg	Oral	**Adult and child › 10 kg** 400 mg **Child › 6 months and ‹ 10 kg** 200 mg	once **or** If whipworm daily for 3 days

Offer CMI: Take on an empty stomach. Tablets may be crushed, chewed or swallowed whole. May cause nausea, vomiting, diarrhoea, headache, dizziness, fever or abdominal pain

Pregnancy: Avoid during 1st trimester, seek advice for use beyond 1st trimester. Use contraception during and for 1 month after treatment. Safe in breastfeeding

Contraindication: Ocular cysticercosis (tapeworm infection of the eye)

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,6]

S2	Mebendazole	Extended authority ATSIHP/IHW/IPAP

ATSIHP, IHW, IPAP and RIPRN may proceed

RN may administer; for supply see RN supplying, p. 11

Form	Strength	Route	Dose	Duration
Tablet	100 mg	Oral	**Adult and child › 6 months and › 10 kg** 100 mg **Child › 6 months and ‹ 10 kg** 50 mg	once **or** If whipworm, hookworm or roundworm bd for 3 days
Oral liquid	100 mg/5 mL			

Offer CMI: Tablets may be crushed, chewed or swallowed whole. May cause nausea, vomiting, diarrhoea, headache or abdominal pain

Pregnancy: Avoid during 1st trimester. May be used in breastfeeding

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,7]

S2	Pyrantel	Extended authority ATSIHP/IHW/IPAP

ATSIHP, IHW, IPAP and RIPRN may proceed

RN may administer; for supply see RN supplying, p. 11

Form	Strength	Route	Dose	Duration
Tablet	125 mg	Oral	**Adult and child › 1 year** 10 mg/kg (max. 1 g)	once **or** If hookworm daily for 3 days

Offer CMI: May cause nausea, vomiting, diarrhoea, abdominal cramps or headache. Tablets may be crushed and mixed with jam

Pregnancy: Safe in pregnancy and breastfeeding

Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,8]

S4	Ivermectin			Extended authority ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, RIPRN and RN must consult MO/NP				
Form	**Strength**	**Route**	**Dose**	**Duration**
Tablet	3 mg	Oral	**Adult and child › 15 kg** 200 microg/kg (rounded up to the nearest 3 mg)	once Repeat after 7–14 days
Offer CMI: May cause headache, fatigue, dizziness, abdominal pain, vomiting or diarrhoea				
Pregnancy: Avoid if pregnant. May be used if breastfeeding				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [4,9]				

- Reinfection of threadworm + whipworm is common. Advise on hygiene measures eg:[4]
  - shower/bath daily, frequent hand washing
  - keep finger nails short, avoid scratching bottom
  - wash bedding, towels + clothes in hot water where possible

5. Follow up

- If treatment repeated + symptoms continue/visible worms - contact MO/NP
- If strongyloides treated with ivermectin - repeat stool MCS + OCP + PCR, serology + check for eosinophilia to ensure eradication as guided by MO/NP[4,9]

6. Referral/consultation

- As above

Constipation - child

Background[1]

- Normal stool frequency in babies varies from most nappy changes to once a week (in some breast fed babies). In children it varies from several times/day to once every 3 days
- Also see QPEC guidelines *Constipation - emergency management in children*

1. May present with[1]

- Abdominal pain
- Less regular, hard or painful stools eg pellets, large ± abdominal pain before passing stool
- Passing stool in underwear, avoiding or holding off passing a stool

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Assess for **Red flags**

Red flags[1,2]

- Delayed passage of meconium › 48 hours
- Perianal disease
- Blood in/outside stool
- Thin strip/ribbon like stool
- Vomiting (especially bilious/green)
- Fever, weight loss, delayed growth
- Rashes, arthritis, sore eyes, mouth ulcers
- Urinary symptoms eg frequent UTI or retention
- Tense, tender or distended abdomen

- If abdominal pain, see Abdominal pain, p. 198
- Ask about:
  - what the child does when the family/carer thinks the child needs to poo
  - frequency + consistency of stools
  - disrupted routine eg toilet training, illness, travel, new sibling, starting day care/school
  - change in diet eg introduction of solids, new formula
  - history of constipation - is it new or chronic, did the child have constipation as a baby
- Do:
  - vital signs
  - weight - bare weight if < 2 years. Assess against recent weights
  - palpate abdomen - check left lower quadrant for palpable masses - can indicate faecal impaction
  - check anus - position, fissures, bleeding, other abnormalities. **Note:** digital rectal examination is not required

4. Management[1]

- If stools are infrequent but remain soft:
  - reassure parents/carer this is not constipation
  - some breastfed babies have bowel motions every 7–14 days. As long as the stool is soft this is normal[3]
- Contact MO/NP if:
  - any **Red flags**
  - likely constipated - if infrequent ie < 3 hard stools/week for at least 2 weeks, or frequent soiling
  - MO/NP may consider laxative treatment ± referral to paediatrician
- If constipated + toilet training, hold off toilet training until stools are soft + regular
- If child anxious or fearful of passing stool, consider discussing with parents/carer:
  - positive reinforcement, avoid blaming the child
  - encourage child to sit on toilet after meals, reward even if no stool is passed

5. Follow up[1]

- If given laxatives, advise to be reviewed:
  - in 3 days to check on progress, or
  - sooner if concerned or child is unwell

6. Referral/consultation

- Consider referral to the next child health nurse/MO/NP clinic

Pyloric stenosis - child

Background[1]

- Caused by a thickening of the pylorus (gastric outlet at the bottom of the stomach) causing obstruction + forceful vomiting
- Usually presents between 2–6 weeks of age

1. May present with[1]

- Vomiting, getting worse, projectile ± blood
- Always hungry
- Poor weight gain or weight loss
- Dehydration

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Ask about:
  - vomiting - after feeds, any blood, getting worse, amount, eager to feed after
  - family history of pyloric stenosis
- Do:
  - vital signs
  - bare weight. Assess against recent weights
  - Hydration assessment - child, p. 522
  - check abdomen for:
    - mass in right upper quadrant
    - wave like contractions (visible peristalsis) after a feed, see https://www.youtube.com/watch?v=JfGoVrSuV2Y
    - **note:** these features may be absent if early presentation

4. Management[1]

- Consult MO/NP who may advise:
  - IV fluids, bloods
  - retrieval/hospitalisation
  - nil by mouth, consider NGT if vomiting continues after stopping feeds
- Monitor closely until retrieval

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Intussusception - child

Background

- A condition where 1 part of the bowel telescopes into the next part + may cause a blockage[1]
- Commonly occurs 2 months–2 years, but can occur at any age[2]

1. May present with[2]

- Intermittent episodes of pain, looks very distressed ± pulling up legs
- Lethargy. Young child looks pale + sick
- Vomiting + diarrhoea
- Blood seen in stool

2. Immediate management[2]

- If signs of shock ↑HR, ↑RR, ↓BP, ↓LOC. See Shock, p. 60

3. Clinical assessment[2]

- If abdominal pain, see Abdominal pain, p. 198
- Ask about:
  - pain - does it come + go
  - vomiting - any bile
  - stools - any bleeding, red currant jelly stools - late sign + may not be seen on presentation
  - pallor, lethargy - can be episodic + may look well between episodes
  - recent rotavirus vaccination, bowel surgery
- Do:
  - vital signs
  - weight - bare weight if < 2 years
  - check abdomen for:
    - sausage shaped mass on right side
    - distension, tenderness, guarding
  - check nappy/stool + perianal area, any blood

4. Management[2]

- Consult MO/NP who may advise:
  - analgesia
  - retrieval/hospitalisation
  - nil by mouth, consider NGT if transferring by air
- Monitor closely until retrieval

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

HMP Anaemia - child

Recommend

- IM injection of iron is NOT recommended - absorption is poor, skin may become discoloured + injection is very painful[1]
- Routine Hb checks for Aboriginal and Torres Strait Islander children between 6–9 months, 18 months + girls 10–14 years. See *Chronic Conditions Manual*

Background

- Infants born at term and normal birth weight usually have sufficient iron stores for 4–6 months. Prevent iron deficiency by starting iron-rich foods around 6 months of age[1,2]
- Mild iron deficiency in children impacts brain development[3]
- Some babies eg premature babies, may be on iron as treatment/prevention on discharge from hospital special care nursery which should be continued

1. May present with

- Low Hb detected on routine health check:[4]
  - 6 months–4 years ≤ 109 g/L
  - 5–11 years ≤ 114 g/L
  - 12–14 years ≤ 119 g/L
- ± symptoms - tiredness, lethargy, irritability, pallor, pale conjunctivae, pica (eating non-foods eg dirt)[3]
- ± poor growth/appetite, recurrent gastrointestinal infections, worm infection, excessive cows milk consumption[3]

2. Immediate management Not applicable

3. Clinical assessment[3]

- Ask about:
  - maternal diabetes, anaemia in pregnancy
  - IUGR, low birth weight, prematurity
  - gastrointestinal disorders or surgery
  - diet - vegetarian or vegan
  - if baby:
    - were iron rich solids introduced at 6 months or later
    - breastfeeding, formula, cows milk, was cows milk introduced ‹ 12 months
  - if adolescent - heavy menstrual periods[3]
- Do:
  - vital signs + capillary Hb - if not already done
  - weight + height:
    - if ‹ 2 years - bare weight, length + head circumference
    - assess against recent measurements
  - check for heart murmur if skilled[5]
  - stool sample for stool MCS + OCP + multiplex PCR + faecal occult blood

4. Management

- Contact MO/NP if:
  - ‹ 6 months
  - heart murmur heard

Severe anaemia - Hb ≤ 80 g/L[4]

- Consult MO/NP promptly, who will advise ongoing treatment eg retrieval for iron infusion

Mild–moderate anaemia[4]

- Hb:
  - 6 months–4 years ≤ 109 g/L
  - 5–11 years ≤ 114 g/L
  - 12–14 years ≤ 119 g/L
- Give iron supplement eg Ferro-Liquid® or Ferro-Grad®
- Discuss diet and nutrition if contributing factor. See *Chronic Conditions Manual*. **Note:** dietary changes alone will not improve Hb

S2	**Ferrous sulfate** (Ferro-Liquid®, Ferro-Grad®)			**Extended authority** ATSIHP/IHW
ATSIHP and IHW must consult MO/NP				
RIPRN may proceed. RN may administer; for supply see RN supplying, p. 11				
Form	**Strength**	**Route**	**Dose**	**Duration**
Oral liquid	Ferrous sulfate 30 mg/mL	Oral	Daily **OR** twice weekly supervised	For at least 3 months, then review by MO/NP
Tablet	Ferrous sulfate 325 mg		**Weight** / **Mild–moderate** / **Severe**	
			‹ 10 kg: 0.5 mL/kg / 1 mL/kg	
			10–19 kg: 5 mL / 10 mL	
			20–29 kg: 10 mL / 20 mL	
			30–39 kg: 15 mL **OR** 1 tablet / 30 mL **OR** 1 tablet	
			› 40 kg: 20 mL **OR** 1 tablet / 40 mL **OR** 1 tablet	
Offer CMI: **Overdose of iron can be fatal.** Keep out of reach of children. Take on empty stomach. If causes upset stomach, take with food. Better absorbed with vitamin C. May cause black stools, diarrhoea or constipation. Tablets should be swallowed whole. Dilute Ferro-Liquid® with water, drink through a straw + follow each dose with plain water to prevent discolouration of teeth				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3,6]				

5. Follow up[1,2]

- Check stool MCS and treat for Worms, p. 527 if indicated
- **If severe** - follow up as guided by MO/NP
- **If mild–moderate** - advise to be **reviewed monthly** to check Hb + adherence to iron supplements:
  - if unable to adhere to daily doses of iron - give twice weekly oral iron under supervision
  - Hb should start to respond to treatment within a week. Expect Hb to rise 20 g/L every 3–4 weeks
  - if Hb not improved after 3 months, refer to MO/NP. Should have:
    - FBC + iron studies to confirm diagnosis ± to exclude other conditions
    - IV iron infusion
  - continue supplements for 3 months after Hb returned to normal to replenish stores
- Offer support to families as needed

6. Referral/consultation

- As above + consider referral to dietitian/child health nurse/health worker

HMP Urinary tract infection (UTI) - child

Background

- Diagnosing a UTI in young children can be challenging as symptoms are non-specific[1]
- Also see QPEC guidelines *Urinary tract infection - emergency management in children*

1. May present with[1,2]

- Fever, lethargy, irritable
- Vomiting, poor feeding + failure to gain weight
- Urinary symptoms - frequency, dysuria, haematuria, smelly urine
- Abdominal or loin pain
- Changes to continence in older child

2. Immediate management[1]

- Do vital signs, including BP
- Screen for Sepsis, p. 62

3. Clinical assessment[1]

- **Ask about:**
  - fever + use of antipyretics
  - pain - loin, suprapubic
  - previous UTI - when, treatment[2]
  - difficulties passing urine where age appropriate eg dribbling, straining
  - underlying conditions eg urinary tract malformations or surgery, spina bifida, phimosis (tight foreskin), labial adhesions
  - consider STI history where appropriate
- **Do:**
  - weight - bare weight if < 2 years. Assess against recent weights
  - Hydration assessment - child, p. 522
  - Abdominal examination, p. 199, check for:
    - palpable bladder, masses
    - loin or suprapubic tenderness
- Get clean catch urine specimen/MSU:
  - clean genital area with sodium chloride 0.9% soaked gauze, ask child to void
  - if child/baby unable to void on request, use **Quick-Wee** method to encourage
  - **note:** bag specimens are not recommended + cannot be used for UTI diagnosis
- Do urinalysis. If results:
  - leucocytes AND nitrites - likely UTI
  - leucocytes OR nitrites - possible UTI
  - **note:** blood or protein is not a reliable marker of UTI[1] - may indicate other causes eg APSGN, p. 494
- Send clean catch urine/MSU for MCS if:
  - leucocytes OR nitrites present
  - < 3 months of age

- If considering gonorrhoea + chlamydia PCR urine testing in older symptomatic child:[1]
  - discuss with MO/NP
  - see Child protection, p. 539

Quick-Wee[1,3]

- Give the child/baby a breastfeed, formula, drink
- **Clean** genital area with sodium chloride 0.9% soaked gauze
- Gently **rub** lower abdomen for a few minutes in a circular motion with gauze soaked in cold water
- **Catch** urine in sterile container

Clean

Rub

Catch

4. Management[1]

- Consult MO/NP if:
  - child ≤ 3 months of age
  - loin/flank or abdominal pain - may indicate pyelonephritis
  - likely/possible UTI from dipstick
  - unable to get urine sample
- Further management in collaboration with MO/NP
- Offer analgesia. See Acute pain, p. 32

5. Follow up[1]

- Advise to be reviewed in 1–2 days
- Check urine MCS + contact MO/NP if treatment needs modifying

6. Referral/consultation

- As above

Swollen/painful joint

HMP Acutely swollen/painful joint - child

Recommend[1-3]

- The causes can be difficult to diagnose. Be suspicious of septic arthritis (orthopaedic emergency), acute osteomyelitis and Acute rheumatic fever, p. 498

Background

- Also see QPEC guidelines *Limp - emergency management in children*

1. May present with[1-3]

- Hot, swollen, tender joint(s) ± fever, malaise and fatigue
- Painful hip
- Joint pain on movement
- Limp, problems with weight bearing, ↓ mobility

2. Immediate management[1]

- Vital signs
- Screen for Sepsis, p. 62

ALERT suspect **septic arthritis** if acute onset of severe, localised joint pain and difficulty weight bearing ± T › 38.5 **Contact MO/NP urgently**

3. Clinical assessment

- Assess for **Red flags**

Red flags[1]

- Systemic symptoms eg T ≥ 38, malaise, weight loss or night sweats
- ‹ 4 years of age
- Inability to weight bear or severe, localised joint pain
- Inflammation of 1 joint[2]
- Bony pain
- Possible unwitnessed trauma/non-accidental injury
- Overweight adolescent
- Persistent limp › 1 week
- Re-presentation

- Get history, including:[1,2]
  - pain - acute or gradual onset
  - ARF/RHD diagnosis or family history of
  - recent:
    - trauma, fall, injury or wound - can be minor
    - joint surgery
    - viral infection eg URTI, gastrointestinal
  - other symptoms eg skin infections, sore throat, diarrhoea, fatigue, rash
  - at risk sexual behaviour/IV drug use - as appropriate[3]
- Check vaccination status - Hib can cause acute osteomyelitis if ‹ 5 years + not fully vaccinated[4]

- Examine joints - including joint above and below:[1]
  - swelling, tenderness, warmth
  - active + passive mobility
  - in younger children watch how they move, weight bear, crawl, walk, run, jump + squat
  - point bony tenderness - may indicate acute osteomyelitis
- Check:[1]
  - abdomen, scrotum + spine - to exclude referred pain from other possible causes eg appendicitis, testicular torsion
  - for swollen lymph nodes
  - skin for bruising, recent sores
  - throat for redness
  - for risk factors and signs of Acute rheumatic fever, p. 498 (especially if pain seems out of proportion to joint signs)

4. Management[1-3]

- **Always consider** septic arthritis, acute osteomyelitis and Acute rheumatic fever, p. 498 as causes
- **Contact MO/NP for all acutely swollen/painful joint presentations - urgently if Red flag(s)**, who may advise:
  - blood cultures + streptococcal serology, IV antibiotics, urinalysis/urine PCR
  - x-ray
  - retrieval/hospitalisation ± referral to orthopaedic specialist/paediatrician
- Offer analgesia. See Acute pain, p. 32. **Note:** if Acute rheumatic fever, p. 498 suspected, do not give ibuprofen - can complicate diagnosis
- Consider non-accidental injury if inconsistent history, a lapse in supervision, a delay in seeking care or other injuries eg bruises, old fractures. See Child protection, p. 539

5. Follow up

- As per MO/NP

6. Referral/consultation

- As above

Child protection

Child protection

Recommend

- If outside of Qld, refer to local policy and procedures

Background

- Also see *Protecting children* https://www.dcssds.qld.gov.au/our-work/child-safety/protecting-children

1. May present with[1]

- Direct or indirect disclosure of abuse
- Injuries eg facial, neck bruising, fractures especially < 3 years of age
- Signs of neglect eg untreated physical problems, developmental delay
- Parental risk factors eg domestic and family violence (DFV), substance misuse, mental health concerns
- DFV indicators eg difficulty eating/sleeping, physical complaints, slow weight gain in infants, eating disorders, aggressive behaviour/language, depression, anxiety ± suicide attempts[2]

2. Immediate management

- Assess and treat any injuries
- Contact MO/NP if:
  - traumatic injuries eg head, chest, abdominal
  - ongoing management as per MO/NP
- If suspected sexual assault/abuse, also see Sexual assault, p. 234

3. Clinical assessment[1]

- **Ask about:**
  - who is the carer/guardian
  - if injured:
    - what happened, where, when, who was there
    - does injury(s) fit with the explanation
  - previous injuries
  - medical problems eg non-organic failure to thrive
  - is there a delay in seeking medical attention
  - social situation eg DFV
  - engagement of typical activities eg school attendance
- **Do** a comprehensive/detailed assessment and documentation of any injuries, bruising, scarring however minor:
  - check the whole body and use diagrams if required
  - vital signs
- Observe parent-child interactions, any:
  - cowering, hypervigilance, elevated startle responses

- Consider non-accidental injury if:
  - patterned skin injury, bruise, abrasion, burn you recognise eg hand, belt/buckle, cigarette
  - bruising to face, head, ears, bottom, arms
  - ‹ 12 months of age with any bruising or skin injury
  - ‹ 3 years of age with fracture(s)

4. Management[1,3]

- If non-accidental injury is suspected, contact MO/NP:
  - head injuries + fractures may not be obvious clinically + require further investigation eg CT scan/skeletal survey
- If you have formed a reasonable suspicion that:
  - a child has suffered, is suffering or likely to suffer significant harm **AND**
  - may not have a parent able and willing to protect them:
    - immediately complete and submit a **Report of suspected child in need of protection** form, see https://secure.communities.qld.gov.au/CBIR/ChildSafety# **AND**
    - ring Child Safety Regional Intake Service or Child Safety After Hours Service Centre:
      - ✆ 1300 681 513 or 1800 811 810
    - document the date, time + name of the person you spoke to in the child's medical record
    - file report in child's medical record
    - forward a copy of the form to the Child Protection Liaison Officer (CPLO)
    - notify local clinic management as required
- If uncertain about reporting or referring, the *Child protection guide* will help you decide. See https://secure.communities.qld.gov.au/cpguide/engine.aspx
- Also see *Chronic Conditions Manual*. Includes contact details

5. Follow up

- As needed based on individual circumstances

6. Referral/consultation

- MO/NP as above
- Child Protection Advisor or CPLO where available/as needed

Immunisation

Immunisation

Immunisation - adult/child

Recommend[1]

- Utilise all clinical encounters to assess vaccination status and, when indicated, offer vaccines
- Use the ***Australian Immunisation Handbook*** as your primary guideline and HMP for immunisation
- Some vaccines may be recommended but not funded. Refer to the National Immunisation Program (NIP) schedule and your State/Territory immunisation schedule for funded vaccines

Related topics

Anaphylaxis, p. 80
Tetanus immunisation, p. 545

1. May present with[1]

- Requesting immunisation(s)
- Opportunistic immunisation eg:
  - during any clinical encounter
  - as part of child health check/chronic disease check/refugee health
  - hospitalised patient
  - during antenatal visit. See Antenatal care, p. 350
  - during sexual health assessment
- Immunisation programs eg influenza, COVID-19, school
- Outbreak control response

2. Immediate management

Not applicable

3. Clinical assessment[1]

- Ensure vaccination procedures are followed as per the ***Australian Immunisation Handbook*** **(AIH)**

Preparing for vaccination

- **Obtain documented evidence of vaccines already given.** Check as appropriate:
  - Australian Immunisation Register (AIR)
  - *My Health Record*
  - medical records
  - other clinics/GP practice where may have been vaccinated
  - Personal Health Record
  - other organisation or state government immunisation database
  - overseas vaccination records (as appropriate)
- **Assess which vaccines are due.** Consider:
  - National Immunisation Program (NIP) schedule (+ your State/Territory NIP schedule)
  - missed doses; time interval since last dose(s); age of person
  - if any alternative/additional vaccines are recommended eg:
    - occupational and lifestyle factors
    - special risk groups; behavioural risk factors
    - medically at risk
    - Aboriginal and Torres Strait Islander status
- **Refer to the 'catch-up chapter' in the AIH as needed**

Tables from AIH available at
https://immunisationhandbook.health.gov.au/

- **Do pre-vaccination screen** using the AIH **'Table. Pre-vaccination screening checklist'**
  - consider actions for any conditions using **'Table. Responses to conditions or circumstances identified through the pre-vaccination screen'**
  - if needed, seek advice from a specialist immunisation clinic, an MO/NP with expertise in vaccination or Public Health Unit
- **Obtain valid consent:**
  - sufficient information about the risks and benefits of the vaccines to be provided
  - see AIH **'Table. Comparison of the effects of diseases and side effects of vaccines on the NIPs'**
  - document consent
  - **note:** explicit verbal consent is required prior to subsequent vaccinations even when written consent has been recorded at previous vaccination encounters
- **Check**:
  - anaphylaxis response kit available and checked - protocols, equipment and medicines to manage anaphylaxis. See AIH **'Preparing an anaphylaxis response kit'** https://immunisationhandbook.health.gov.au/resources/publications/preparing-an-anaphylaxis-response-kit
  - cold chain for storage and transport of vaccines has been maintained and monitored appropriately[2]
  - see ***National Vaccine Storage Guidelines 'Strive for 5'*** https://www.health.gov.au/resources/publications/national-vaccine-storage-guidelines-strive-for-5

4. Management[1]

Giving the vaccine

- The dose, route, site and technique of administration of the vaccine(s) must be in accordance with the AIH

After vaccination

- Observe patient for at least 15 minutes
- Advise (preferably in writing):
  - date of next vaccination
  - management of any expected adverse events following immunisation. See AIH **'Table. Common side effects following immunisation for vaccines used in the NIPs'**
  - how to report a serious or unexpected adverse event following immunisation
- Check the vaccination status of other family members + offer vaccinations as appropriate
- Document vaccination details in:
  - Personal Health Record (hard copy or eHealth) to be retained by patient
  - medical record
  - AIR
  - clinic recall system if appropriate

Vaccines with special conditions

- **Q Fever:** clinicians must have training in Q fever screening and vaccination as required by authorities in their local jurisdiction. Not recorded on AIR. For more information on Q fever see https://www.qfever.org/or contact your local Public Health Unit
- **Tuberculosis (BCG):** clinicians must be authorised by a Qld Tuberculosis Control Unit, or as per their State/Territory requirements

S4	Vaccines and immunoglobulins	Extended authority ATSIHP/IHW/IPN/MID/RIPRN/SRH
ATSIHP, IHW and RN must consult MO/NP. **Note:** ATSIHP and IHW may **NOT administer if Δ**		
IPN and RIPRN may proceed		
SRH may only proceed with *		
MID may only proceed with #. MID may proceed with Ω if completed an immunisation training course		
Antigens - may be used singularly or in combination form as available		
COVID-19 *#	Measles, mumps, rubella #*	
Cholera Δ	Meningococcal *Ω	
Diphtheria-tetanus-acellular pertussis (DTPa) #	Mpox *	
Diphtheria-tetanus-acellular pertussis (dTpa) #*	Pneumococcal *Ω	
Haemophilus influenzae type B (Hib) Ω	Poliomyelitis Ω	
Hepatitis A *Ω	Rabies - pre-exposure only Δ	
Hepatitis B #*	Respiratory syncytial virus (RSV) #*	
Hepatitis B Immunoglobulin # ***Midwives only*** For babies of HBsAg positive mothers	Rotavirus Ω	
Human papillomavirus *Ω	Typhoid Δ	
Influenza #*	Varicella Ω	
Japanese encephalitis Ω	Varicella-zoster - *NOT in immunocompromised people, see AIH* Ω	
Note: Dose, route, site and timing interval of administration to be in accordance with the AIH		
Management of associated emergency: See Anaphylaxis, p. 80 [1]		

5. Follow up[1]

- All serious or unexpected adverse events following immunisation (AEFI) must be promptly reported ☽. Use Qld AEFI form (if outside of Qld use local reporting systems)

6. Referral/consultation

- As needed, consult with a specialist immunisation clinic, an MO/NP/IPN with expertise in vaccination, Public Health Unit, or the immunisation section within your State/Territory health authority. See the AIH for contact details

Tetanus immunisation - adult/child

Recommend[1]

- Use the ***Australian Immunisation Handbook*** **(AIH)** as your primary guideline and HMP for tetanus immunisation

1. May present with

- Suspected tetanus prone wound

2. Immediate management

Not applicable

3. Clinical assessment[1]

Identify if the wound is tetanus prone

- **Any wound other than a clean, minor cut is tetanus prone:**
  - tetanus may occur after a seemingly trivial injury, such as from a rose thorn
  - it is also possible to have no obvious signs of injury
- **Higher risk for tetanus include:**
  - compound (open) fracture
  - bite
  - deep, penetrating wounds
  - wound containing foreign body, especially wood splinters
  - wound complicated by pyogenic (pus) infection
  - wound with extensive tissue damage eg contusions or burns
  - any superficial wound obviously contaminated with soil, dust or horse manure, especially if topical disinfection is delayed more than 4 hours
  - re-implantation of an avulsed (knocked out) tooth
  - depot injections (subcut or intradermal) in people who inject drugs

Tetanus prone

Not tetanus prone - no further treatment

Check if a tetanus booster ± tetanus immunoglobulin (TIG) is recommended

Type of wound	Prior tetanus vaccines	Time since last dose	Tetanus vaccine recommended	TIG recommended
Clean, minor wound	≥ 3 doses	≤ 10 years	no	no
		› 10 years	yes	
	‹ 3 doses or uncertain	uncertain	yes	
All other wounds	≥ 3 doses	‹ 5 years	no	no*
		≥ 5 years	yes	no*
	‹ 3 doses or uncertain	uncertain	yes	yes

*unless person has humoral immunodeficiency or HIV - refer to AIH

4. Management[1]

- All tetanus prone wounds must be disinfected and, where appropriate, have surgical treatment, even if the person has up-to-date tetanus vaccinations
- If a tetanus booster ± TIG is recommended:
  - ensure standard vaccination procedures are adhered to as per the AIH
  - see Immunisation, p. 542 for **Preparing for vaccination**, **Giving the vaccine**, **After vaccination**

S4	Tetanus vaccines		Extended authority ATSIHP/IHW/IPAP/IPN/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP			
IPN and RIPRN may proceed			
Vaccine	**Route**	**Age**	**Duration**
Child formulation DTPa or DTPa combination vaccine	IM	‹ 10 years	stat
Adolescent/adult formulation dTpa or dTpa combination vaccine		≥ 10 years ‡ ± pregnant	
Adult formulation dT (ADT)		≥ 10 years	
Note: Dose, route, site and timing interval of administration to be in accordance with the AIH. ‡ dTpa provides added protection against pertussis and should be considered for adults - not funded for tetanus prophylaxis			
Management of associated emergency: See Anaphylaxis, p. 80 [1,2]			

S4	Tetanus immunoglobulin (TIG)			Extended authority ATSIHP/IHW/IPAP/IPN/RIPRN
ATSIHP, IHW, IPAP and RN must consult MO/NP				
IPN and RIPRN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	250 units	IM	250 units if ≤ 24 hours since injury **OR** 500 units if › 24 hours since injury	stat Give in opposite limb to tetanus vaccine
Note: Supplied from Australian Red Cross Service. Dose, route, site and timing interval of administration of TIG to be in accordance with the AIH. Is viscous - administer slowly using 21 G needle for adults, 23 G for children				
Management of associated emergency: See Anaphylaxis, p. 80 [1]				

5. Follow up[1]

- If primary tetanus course not completed, catch-up schedule may be required (refer to AIH). Arrange next visit(s) to complete course
- All serious or unexpected adverse events following immunisation (AEFI) must be promptly reported ✆. Use Qld AEFI form (if outside of Qld use local reporting systems)

6. Referral/consultation

- As needed, consult with a specialist immunisation clinic, an MO/NP/IPN with expertise in vaccination, Public Health Unit, or the immunisation section within your State/Territory health authority. See the AIH for contact details

10

Appendices

Best possible medication history (BPMH)[1-4]

- Get an accurate and complete list (or as close as possible) of medicines the patient is currently taking at presentation, or as early as possible in care
- Online course ***Get it right! Taking a best possible medication history*** https://learn.nps.org.au/

Step 1

Review sources of available medicines information eg:

- Medication containers, blister packs
- Community pharmacist list, GP referral letters
- Medical record(s), *My Health Record* https://www.myhealthrecord.gov.au/
- The Viewer, QScript (Qld), or if outside of Qld local sources

Step 2

Interview the patient ± carer/family if possible

- Names of all medicines patient is taking
- Prescription, over-the-counter, complementary - dose, strength, form, concentration, frequency, duration and why taking:
  - use **Medication history checklist** (below) to guide interview
- Any difficulty taking medicines, how often missed
- Recent change to medicine(s) or doses
- Allergies/bad reaction to any medicines in past, what/when/has it happened since

Step 3

Verify the history with one or more sources of information

- Check that these match up/any inconsistencies
- If any discrepancies, ask patient ± advise MO/NP
- Check a medication reference if unsure about a medicine eg AMH, eMIMS

Step 4

Record the information on the medical record

- On the designated form, in the electronic medical record or *Enterprise-wide Liaison Management System* (eLMS) (Qld)
- Document allergies + any recent changes to medicines and why
- Give list of medicines when care transferred eg retrieval team, to patient/carer when discharged, at clinical handover

Medication history checklist[4]

- ☐ Prescription medicines
- ☐ Sleeping tablets
- ☐ Inhalers, puffers, sprays, subling tablets
- ☐ Oral contraceptives, hormone replacement therapy
- ☐ Over-the-counter medicines
- ☐ Anticoagulants/antiplatelets
- ☐ Analgesics
- ☐ Gastrointestinal medicines (for reflux, heartburn, constipation, diarrhoea)
- ☐ Topical medicines eg creams, ointments, lotions, patches
- ☐ Complementary medicines eg vitamins, herbal or natural therapies
- ☐ Inserted medicines eg nose, ear, eyes, pessaries, suppositories
- ☐ Injected medicines
- ☐ Recently completed courses of medicines
- ☐ Other people's medicines
- ☐ Smoking history eg tobacco, vapes, NRT
- ☐ Social and recreational drugs
- ☐ Intermittent medicines eg weekly or twice weekly
- ☐ Refrigerated medicines

High risk medicines - 'APINCH' - **A**nti-infectives, **P**otassium, other electrolytes, **I**nsulin, **N**arcotics, other sedatives, **C**hemotherapeutic agents, **H**eparin, enoxaparin, warfarin, other anticoagulants

Patient death in absence of medical officer

Recommend

- Follow HHS/local policy + procedures. If outside of Qld, refer to local policy + procedures
- Death in community can be very emotional + distressing. Be guided by local health workers + clinic management. See *Sad News, Sorry Business: Guidelines for caring for Aboriginal and Torres Strait Islander people through death and dying* https://www.health.qld.gov.au/__data/assets/pdf_file/0023/151736/sorry_business.pdf
- If suspected death by suicide, support services for family/friends and staff include StandBy Support After Suicide https://standbysupport.com.au and Thirrili's Postvention Suicide Support https://thirrili.com.au/
- If neonatal death or stillbirth - MO will advise. Also see Qld Clinical Guideline *Stillbirth care*

Resources

- *Life extinct form* (Qld Health intranet only) https://qheps.health.qld.gov.au/__data/assets/pdf_file/0034/2446477/mr41.pdf
- *Information for health professionals* (Qld) https://www.coronerscourt.qld.gov.au/for-health-professionals

Confirm deceased by checking all the following[1]

- No palpable carotid pulse
- No heart sounds heard for 30 seconds
- No breath sounds heard for 30 seconds
- No response to centralised stimuli
- Fixed dilated pupils

- Contact MO + local clinic management, who will advise ongoing management
- **Is this a reportable death, see** *Life extinct form* for full definitions

No

- Offer condolences to the family
- Family will advise cultural wishes/requirements

The **death is reportable** to the coroner if:[1,2]

- Unknown person
- Violent or unnatural, including trauma
- Happened in suspicious circumstances
- Death was healthcare related
- A cause of death certificate not likely to be issued (cause unknown)
- Death in care
- Death in custody or as a result of police operations

Yes or unsure

Immediately report to local Police

- Until advised:[2,3]
  - **DO NOT** move the body. **Note:** if in public place cover body with sheet + protect dignity of the deceased
  - **DO NOT** remove medical equipment eg IVCs, catheters
- Notify local clinic management + next of kin (if known/appropriate)[4]
- Police or MO will report the death to the coroner + advise ongoing management which may include completing *Life extinct form*
- Refer to HHS/local policy + procedure

Glasgow Coma Scale/AVPU

A	Alert
V	Responds to voice
P	Responds to painful stimuli
U	Unresponsive

Glasgow Coma Scale (GCS)[1,2]

Eyes open	Spontaneous	**4**		
	To speech	**3**		
	To pain	**2**		
	No response	**1**	If eyes closed by swelling, write **C**	
			Child/infant	**Nonverbal person** (child/infant/adult)
Best verbal response	Orientated	**5**	Alert, babbles, coos, words to usual ability	Spontaneous normal facial/oro-motor activity
	Confused	**4**	Less than usual words, spontaneous irritable cry	Less than usual ability/ response to touch only
	Inappropriate words	**3**	Cries only to pain	Vigorous grimace to pain
	Incomprehensible sounds	**2**	Moans to pain	Mild grimace to pain
	No response	**1**	No response to pain	No response to pain
			Child/infant/nonverbal person	
Best motor response	Obeys commands	**6**	Spontaneous or obeys verbal commands	
	Localises to pain	**5**		
	Withdraws from pain	**4**		
	Flexion to pain *decorticate*	**3**		
	Extension to pain *decerebrate*	**2**		
	No response	**1**		
	GCS total/15			

ALERT always act on **score ‹ 15 or drop of ≥ 2**
If ‹ 8 consider airway adjunct eg LMA, p. 54. Patient may require intubation

Injection pain

HMP Managing injection pain - adult/child

- Do not rush or force injection on patient. Staff or family must not restrain patient to give injection

Non-pharmacological strategies[1]

- Patients of all ages should have control over how and where they receive their injection
- Short wait time for injection
- Pain blocking techniques - applied to site prior to injection eg:
  - ice pack for 5 minutes
  - firm pressure for 10 seconds
  - ice and vibration:
    - Buzzy® - ice pack for 5 minutes then Buzzy® for 60 seconds and move Buzzy® directly above the site of insertion during injection keeping in contact with skin
    - Exocool®/CoolSense® - use Buzzy® for 60 seconds first, then Coolsense® for 10 seconds, then Buzzy® as above
    - other device eg Shot Blocker® - piece of C shaped plastic to fit around the injection site and press the skin with multiple, small, blunt bumps to 'saturate sensory nerves'. Inject through U shaped opening
- Distraction techniques eg electronic games, videos
- Refrigerate 'needle' prior to injection
- Allow the 'syringe/barrel' to reach room temperature before use
- Injecting slowly eg over 2–3 minutes - be guided by the patient

Pharmacological strategies[1]

- Paracetamol before injection and at appropriate intervals after. See Acute pain, p. 32
- Anaesthetic spray/cream before injection eg Emla®. **Note:** only anaesthetises skin, not lower layers
- Nitrous oxide + oxygen (Entonox®) during injection. See Acute pain, p. 32
- **If Bicillin L-A®:**
  - may be given with lidocaine to reduce the pain of the injection (see next page)[2]
  - if still highly distressed consider consulting MO/NP or if for ARF, QH RHD Program ✆ 1300 135 854 or local RHD control program for other options

S2	**Lidocaine + prilocaine** Emla®			**Extended authority** ATSIHP/IHW/IPAP
ATSIHP, IHW, IPAP, MID, RIPRN and RN may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Cream Patch	Lidocaine 2.5% Prilocaine 2.5%	Topical	**Adult and child › 6 months** Squeeze about 3.5 cm from tube onto intact skin and cover with an occlusive dressing OR apply 1 patch	Leave on skin for 1 hour Remove prior to injection
Offer CMI: Effect lasts for 30 minutes to 2 hours after removal. May cause temporary blanching and swelling of the skin				
Contraindication: Methaemoglobinaemia. Use with caution if taking medicines that may cause methaemoglobinaemia eg sulfonamides, nitrates				
Management of associated emergency: Consult MO/NP. See Anaphylaxis, p. 80 [3]				

S4	Lidocaine			Extended authority ATSIHP/IHW/IPAP/RIPRN/SRH
ATSIHP, IHW, IPAP, MID and RN must consult MO/NP (or administer on current medication order)				
RIPRN and SRH may proceed				
Form	**Strength**	**Route**	**Dose**	**Duration**
Injection	1% 50 mg/5 mL	IM	0.5 mL	stat To reduce injection pain of Bicillin L-A
Preparation: Transfer the Bicillin L-A® dose to a 3 mL syringe then draw up 0.5 mL of lidocaine 1%. Do not mix, to allow the lidocaine to be injected first. For detailed instructions, see *ARF and RHD guidelines* https://www.rhdaustralia.org.au/arf-rhd-guidelines				
Offer CMI: It will hurt as it goes in. Report drowsiness, dizziness, blurred vision, vomiting or tremors				
Management of associated emergency: Ensure resuscitation equipment readily available. Consult MO/NP. See Anaphylaxis, p. 80 [1,2]				

Ventrogluteal injection

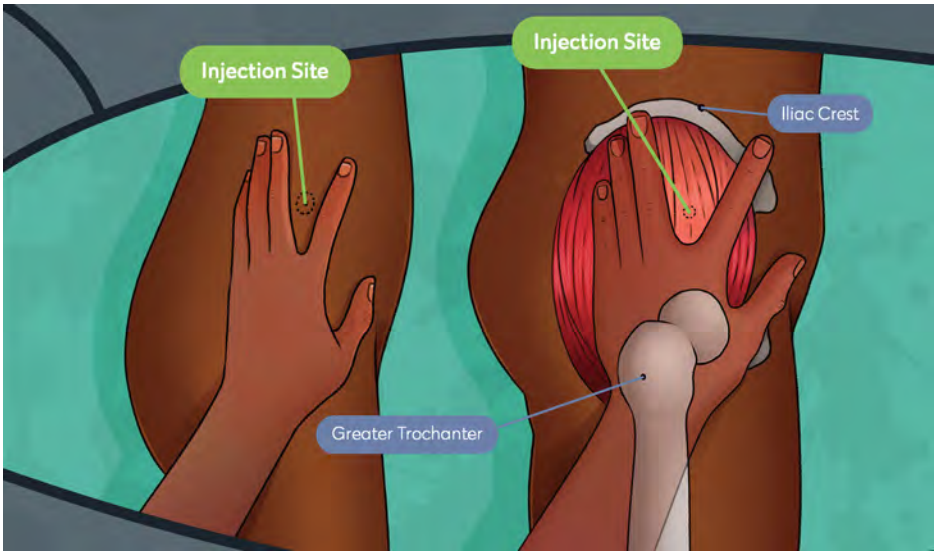


Image used with permission of Rheumatic Heart Disease Program, Qld Health

Technique[1,2]

- Place patient in a side-lying position
- Use your right hand on the patient's left hip; or left hand on the patient's right hip:
  - place palm of your hand on the greater trochanter, thumb towards pelvis/abdomen
  - place your index finger towards the front (anterior superior iliac spine) + fan the middle finger as far along the iliac crest as you can reach
- The injection site is in the middle of the triangle between the middle and index fingers
- See video - *Ventrogluteal injection technique* https://www.youtube.com/watch?v=BlO_hojT5ik&feature=youtu.be

Abbreviations and acronyms

4AT	Assessment test for delirium & cognitive impairment
AAA	Abdominal aortic aneurysm
Ab	Antibody
ABCD	Airway Breathing CPR Defibrillation
ABLV	Australian bat lyssavirus
ABW	Actual body weight
ACAT	Aged Care Assessment Team
ACE	Angiotensin converting enzyme
ACEI	Angiotensin converting enzyme inhibitors
ACR	Albumin/creatinine ratio
ACS	Acute coronary syndrome
ACWY	Four meningococcal serotypes
ACL	Anterior cruciate ligament
AdjBW	Adjusted body weight
ADT	Adult diphtheria and tetanus
AED	Automated external defibrillator
AEFI	Adverse event following immunisation
AF	Atrial fibrillation
AFB	Acid-fast bacilli
Ag	Antigen
AHD	Advanced health directive
AIH	Australian Immunisation Handbook
AIR	Australian Immunisation Register
ALS	Advanced Life Support
AMH	Australian Medicines Handbook
AMS	Antimicrobial stewardship
AMT4	Abbreviated mental test
Anti-HBc	Anti-hepatitis B core total antibodies
Anti-HBs	Anti-hepatitis B surface antibody
AOM	Acute otitis media
APH	Antepartum haemorrhage
APO	Acute pulmonary oedema
Approx.	Approximately
APSGN	Acute post streptococcal glomerulonephritis
APTT	Activated partial thromboplastin time
ARB	Angiotensin-receptor blocker
ARF	Acute rheumatic fever
ARP	Acute resuscitation plan
ART	Antiretroviral therapy
ASB	Asymptomatic bacteriuria
ASBD	Acute severe behavioural disturbance
ASCIA	Australian Society of Clinical Immunology and Allergy
ASHM	Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine
ASO/ASOT	Anti streptolysin O antibodies
ATSIHP A&TSIHP	Aboriginal and Torres Strait Islander Health Practitioner
AVPU	**A**lert, **V**oice, **P**ain, **U**nresponsive
AWS	Alcohol withdrawal scale
β-hCG	Beta human chorionic gonadotropin
BBV	Blood borne virus
BCG	Bacille Calmette-Guérin
bd	Twice a day
BF	Breastfeeding
BFV	Barmah Forest virus
BGL	Blood glucose level
BiPAP	Bi-level positive airway pressure
BLS	Basic Life Support
BMI	Body mass index
BP	Blood pressure
BPMH	Best possible medication history
BPPV	Benign paroxysmal positional vertigo
BPSD	Behavioural and psychological symptoms of dementia
BV	Bacterial vaginosis
C3	Complement component 3
C4	Complement component 4
Ca	Calcium
CATAG	Council of Australian Therapeutic Advisory Groups
CATCH	Children's Advice & Transport Coordination Hub
CCG	Clinical Care Guideline
CCM	Chronic Conditions Manual
CCT	Controlled cord traction
CD4	Cluster of differentiation 4
C. difficile	Clostridioides difficile

CDNA	Communicable Diseases Network Australia
CEWT	Children's Early Warning Tool
CHEM8+	i-STAT cartridge (chemistries/ electrolytes, haematocrit, Hb)
CHEM20	Biochemistry profile
CF	Counting fingers
CGM	Continuous glucose monitoring
CK	Creatine kinase
CKD	Chronic kidney disease
cm	Centimetre(s)
CMI	Consumer medicine information
CMIA	Chemiluminescent microparticle immunoassay
CMP	Calcium-magnesium-phosphate
CMV	Cytomegalovirus
CNS	Central nervous system
CO_2	Carbon dioxide
COCP	Combined oral contraceptive pill
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airway pressure
CPFMS	Child Protection Forensic Medical Service
CPLO	Child Protection Liaison Officer
CPK	Creatine phosphokinase
CPR	Cardiopulmonary resuscitation
CREDD	Children's Resuscitation Emergency Drug Dosage
CRP	C-reactive protein
CRT	Capillary refill time
CSF	Cerebrospinal fluid
CSOM	Chronic suppurative otitis media
CST	Cervical screening test
CT	Computed tomography
CTG	Cardiotocography
CTPA	CT pulmonary angiogram
CVA	Cerebrovascular accident
CVD	Cardiovascular disease
CXR	Chest x-ray
DASS	Depression anxiety stress scales
DAT	Direct antigen antibody
dBP	Diastolic blood pressure
DCI	Decompression illness
DEET	Diethyltoluamide
Detox	Detoxification
DFV	Domestic and family violence
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DMPA	Depot medroxyprogesterone acetate
DNA	Deoxyribonucleic acid
dT	Diphtheria-tetanus
DTPa dTpa	Diphtheria-tetanus-acellular pertussis
DVT	Deep vein thrombosis
EAP	Employee assistance program
EBM	Expressed breast milk
EC	Emergency contraception
ECG	Electrocardiogram
Echo	Echocardiogram
E. coli	Escherichia coli
EDD	Estimated date of delivery
EDO	Epididymo-orchitis
EEA	Emergency examination authority
eFAST	Extended focused assessment with sonography in trauma
eg	for example
EIA	Enzyme-linked immunosorbent assay
eLMS	Enterprise-wide Liaison Management System
EM	Endorsed midwife
ENT	Ears, nose and throat
EPA	Extended practice authority
EPDS	Edinburgh Postnatal Depression Scale
ESR	Erythrocyte sedimentation rate
etc	Etcetera
EUC	Electrolytes, urea and creatinine
EWARS	Early Warning and Response System
FAST	**F**acial weakness, **A**rm ± weakness, **S**peech difficulty, **T**ime to act fast
FB	Foreign body
FBC	Full blood count
FCU	First catch urine
fFN	Fetal fibronectin
FHR	Fetal heart rate
FLACC	**F**ace, **L**egs, **A**ctivity, **C**ry, **C**onsolability pain scale
FMEK	Forensic Medical Examination Kit
FMH	Fetomaternal haemorrhage
FNE	Forensic Nurse Examiner

FTA	Fluorescent treponemal antibody
G	Gauge eg 14 gauge
g	Gram
GAS	Group A *Streptococcus*
GBS	Group B *Streptococcus*
GCS	Glasgow Coma Scale
GDM	Gestational diabetes mellitus
GFR	Glomerular filtration rate
GHB	Gamma hydroxybutyrate
GI	Gastrointestinal
GIT	Gastrointestinal tract
GORD	Gastro-oesophageal reflux disease
GOV	Government
GP	General practitioner
Group A Strep	Group A *Streptococcus*
Group B Strep	Group B *Streptococcus*
GTN	Glyceryl trinitrate
H_2O	Water
HARM	**H**eat, **A**lcohol, **R**e-injury, **M**assage
Hb	Haemoglobin
HbA1c	Glycated haemoglobin
HBIG	Hepatitis B immunoglobulin
HBsAg	Hepatitis B surface antigen
HCl	Hydrochloric acid
HCV	Hepatitis C virus
HCV Ab	Hepatitis C virus antibody
HDFN	Haemolytic disease of the fetus and newborn
Hep A	Hepatitis A
Hep B	Hepatitis B
Hep C	Hepatitis C
HELLP	**H**aemolysis, **E**levated **L**iver enzymes and **L**ow **P**latelet count
HFNC	High flow nasal cannula
HHS	Hyperosmolar hyperglycaemic state
Hib	*Haemophilus influenzae* type B
HIV	Human immunodeficiency virus
HMP	Health management protocol
HPV	Human papilloma virus
HR	Heart rate - beats/minute
HRF	Hypercapnic respiratory failure
HRT	Hormone replacement therapy
HSV	Herpes simplex virus
HTN	Hypertension
HVS	High vaginal swab
IBW	Ideal body weight
ICP	Intracranial pressure
ICU	Intensive care unit
ID	Infectious disease OR Identification
I&D	Incision and drainage
IDC	Indwelling catheter
ie	That is
IG	Immunoglobulin
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IHD	Ischaemic heart disease
IHW	Authorised Indigenous Health Worker
IM	Intramuscular
INR	International Normalised Ratio
IOP	Intraocular pressure
IPAP	Isolated Practice Area Paramedic
IPN	Immunisation program registered nurse
i-STAT	Point-of-care analyser
IUD	Intrauterine device
IUGR	Intrauterine growth restriction
IV	Intravenous
IVC	Intravenous cannula
IVF	In-vitro fertilisation
IVP	Intravenous pyelogram
J	Joule
JEV	Japanese encephalitis virus
JVP	Jugular venous pressure
K	Potassium
kg	Kilogram(s)
kph	Kilometres per hour
L	Left OR Litre(s)
lab	Laboratory
LAM	List of Approved Medicines (Qld)
LARC	Long-acting reversible contraception
LBBB	Left bundle branch block
LDH	Lactate dehydrogenase
LFT	Liver function test
LGV	Lymphogranuloma venereum
LMA	Laryngeal mask airway
LMP	Last menstrual period
LNMP	Last normal menstrual period
LOC	Level of consciousness
LSD	Lysergic acid diethylamide

LVS	Lower vaginal swab
m	Metre
MAD	Mucosal atomisation device
Mane	Morning
MAO	Monoamine oxidase
MAOI	Monoamine oxidase inhibitor
max.	Maximum
MCS	Microscopy, culture, sensitivity
MDI	Metered dose inhaler
MDR	Multidrug-resistant
MEWT	Maternity Early Warning Tool
mg	Milligram(s)
Mg	Magnesium
MHAODS	Mental Health, Alcohol and Other Drugs
microg	Microgram(s)
MID	Midwife
MI	Myocardial infarction
mL	Millilitre(s)
mm	Millimetre(s)
mmHg	Millimetre of mercury
mmol	Millimole(s)
MMR	Measles, mumps, rubella
MO	Medical officer
mPCR	Multiplex PCR
MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant staphylococcus aureus
msec	Millisecond
MSDS	Material safety data sheet
MSE	Mental state examination
MSM	Men who have sex with men
MSU	Midstream urine sample
Mths	Months
MToP	Medical termination of pregnancy
NAAT	Nucleic acid amplification test
NAD	No abnormalities detected
NEB	Nebulised, nebule
NEWT	Neonate Early Warning Tool
NEXUS	National Emergency X-Radiography Utilisation Study
NG	Nasogastric
ng/mL	nanograms/mL
NGT	Nasogastric tube
NIPs	National Immunisation Program schedule
NIPA	Non-invasive prenatal analysis
NIPT	Non-invasive prenatal screening test
nmol	nanomoles/mL
nocte	At night
NP	Nurse practitioner
NPA	Nasopharyngeal airway
NRT	Nicotine replacement therapy
NSAID	Non-steroidal anti-inflammatory drug
NSTEACS	Non-ST-elevation acute coronary syndrome
NSTEMI	Non-ST-elevation myocardial infarction
NSW	New South Wales
NS1	Non-structural protein 1
NT	Northern Territory
O_2	Oxygen
OE	Otitis externa
OGT	Orogastric tube
OGTT	Oral glucose tolerance test
OM	Otitis media
OME	Otitis media with effusion
ORS	Oral rehydration solution
p.	Page
P2/N95	Standards applying to particulate filtering personal masks
PAPP-A	Pregnancy associated plasma protein-A
PBS	Pharmaceutical Benefits Scheme
PCCM	Primary Clinical Care Manual
PCI	Percutaneous coronary intervention
PCL	Posterior cruciate ligament
PCR	Polymerase chain reaction OR Protein/creatinine ratio
P/C Ratio	Protein/creatinine ratio
PDE5	Phosphodiesterase-5
PE	Pulmonary embolism
PEA	Pulseless electrical activity
PEP	Post-exposure prophylaxis
pH	Potential of hydrogen
PHR	Pregnancy health record
PIC	Poisons Information Centre
PICC	Peripherally inserted central catheter
PID	Pelvic inflammatory disease
PNG	Papua New Guinea
POC	Products of conception

PoCT	Point-of-care testing
POCUS	Point-of-care ultrasound
POP	Progestogen-only pill
PPE	Personal protective equipment
PPH	Postpartum haemorrhage
PPV	Positive pressure ventilation
PQ	Pathology Queensland
PR	Per rectum
PrEP	Pre-exposure prophylaxis
PROM	Prelabour rupture of membranes
prn	As needed
PTH	Parathyroid hormone
PV	Per vagina
PVD	Peripheral vascular disease
Q-ADDS	Queensland Adult Deterioration Detection System
QAS	Queensland Ambulance Service
qid	Four times a day
Qld	Queensland
QCG	Queensland Clinical Guidelines
Q-MEWT	Queensland Maternity Early Warning Tool
QPEC	Queensland Paediatric Emergency Care
QSSS	Qld Syphilis Surveillance Service
R	Right
RA	Recommendation for assessment
RAT	Rapid antigen test
RBC	Red blood cells
RBWH	Royal Brisbane and Women's Hospital
ReMS	Resuscitation Medication Safety
RFDS	Royal Flying Doctor Service
RHD	Rheumatic heart disease
Rh D	Rhesus factor (blood group)
RICE	**R**est, **I**ce, **C**ompression, **E**levate
RIPRN	Rural and Isolated Practice Registered Nurse
RN	Registered Nurse
RNA	Ribonucleic acid
ROA	Right occiput anterior
ROM	Range of motion or Rupture of membranes
ROSC	Return of spontaneous circulation
RPOC	Retained products of conception
RPR	Rapid plasma reagin test
RR	Respiratory rate - breaths/minute
RRV	Ross River virus
RSQ	Retrieval Services Queensland
S2	Schedule 2
S3	Schedule 3
S4	Schedule 4
S8	Schedule 8
SA	South Australia
SANE	Sexual Assault Nurse Examiner
SAT	Sedation assessment tool
sBP	Systolic blood pressure
SE	Southeast
SES	State Emergency Service
SGLT2	sodium-glucose co-transporter 2
SIDS	Sudden infant death syndrome
SJS	Stevens-Johnson syndrome
SLE	Systemic lupus erythematosus
SMO	Senior Medical Officer
SNRI	Serotonin and norepinephrine reuptake inhibitors
SOB	Shortness of breath
SpO_2	Peripheral oxygen saturation
SRH	Sexual or reproductive health registered nurse
SSRI	Selective serotonin reuptake inhibitors
Staph	*Staphylococcus*
stat	Immediately and once only
STEMI	ST-elevation myocardial infarction
STI	Sexually transmitted infection
SToP	Surgical termination of pregnancy
Strep	*Streptococcus*
Strep A	Group A Streptococcus
Subcut	Subcutaneous
Subling	Sublingual
T	Temperature in degrees celsius
TB	Tuberculosis
TBI	Traumatic brain injury
TBSA	Total body surface area
TCA	Tricyclic antidepressant
TDM	Therapeutic drug monitoring
tds	Three times a day
TED	Thoracic elevation device
TEMSU	Telehealth Emergency Management Support Unit
TEN	Toxic epidermal necrolysis
TFT	Thyroid function test
TG	Therapeutic Guidelines

TGA	Therapeutic Goods Administration
TIA	Transient ischaemic attack
TIG	Tetanus immunoglobulin
TM	Tympanic membrane
ToP	Termination of pregnancy
T. pallidum	*Treponema pallidum*
TPHA	Treponema pallidum haemagglutination assay
TPPA	Treponema pallidum particle agglutination assay
TSH	Thyroid stimulating hormone
UC	Urea and creatinine
UE	Urea and electrolytes
UEC	Urea, electrolytes and creatinine
UEG	Urea, electrolytes and glucose
URTI	Upper respiratory tract infection
USB	Universal Serial Bus
USS	Ultrasound scan
UTI	Urinary tract infection
UV	Ultraviolet
V	Volt
VA	Visual acuity
VBG	Venous blood gas
VE	Vaginal examination
VF	Ventricular fibrillation
Vic	Victoria
VP	Ventriculoperitoneal
VQ	Ventilation perfusion (scan)
VT	Ventricular tachycardia
VTE	Venous thromboembolism
VZV	Varicella-zoster virus
WA	Western Australia
WCC	White cell count
WFI	Water for injection
WOB	Work of breathing
Symbols	
↑	Increasing/increased
↓	Decreasing/decreased
>	Greater than
<	Less than
≤	Less than or equal to
≥	Greater than or equal to
–ve	Negative
+ve	Positive
±	Plus or minus
+	Plus or and
=	Equal to
®	Registered trade mark
✆	Phone number OR notifiable
%	Percent
º	Degrees
~	About/approximately

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NOTES

Anaphylaxis[1]

ANY ONE of the following could indicate anaphylaxis

- Difficult/noisy breathing
- Swelling of tongue
- Swelling/tightness in throat
- Difficulty talking/hoarse voice
- Wheeze or persistent cough
- Persistent dizziness or collapse
- Pale and floppy (young children)
- Vomiting and/or abdominal pain - for insect stings/bites

- **Any acute onset: hypotension**, **bronchospasm** or **upper airway obstruction**, OR illness with skin features + **respiratory/cardiovascular** or persistent severe **GI** symptoms

IMMEDIATE ACTION

- Call for help
- Remove allergen if still present
- Lay patient flat - do not allow to stand

Give intramuscular ADRENALINE (EPINEPHRINE) without delay
Deep IM into outer mid-thigh
Repeat 5 minutely as needed

- CPR if needed

When able

- Monitor HR, BP, RR, SpO_2
- Give O_2 + support airway
- IV access - adults + tachycardic ± hypotensive children

If hypotensive

- Give IV sodium chloride 0.9% 20 mL/kg **RAPIDLY**

Adrenaline (epinephrine) doses

Age (years)	**Weight** (kg)	**Adrenaline** 1:1,000
‹ 1	‹ 7.5	0.1 mL
1–2	10	
2–3	15	0.15 mL
4–6	20	0.2 mL
7–10	30	0.3 mL
10–12	40	0.4 mL
› 12–adult	› 50	0.5 mL

Additional measures MO/NP may consider

- Adrenaline (epinephrine) infusion - on advice of emergency medicine/critical care specialist
- If upper airway obstruction - nebulised adrenaline (epinephrine) ± intubation/cricothyrotomy
- If persistent hypotension/shock - sodium chloride 0.9% (max. 50 mL/kg in first 30 minutes)
- If persistent wheeze - bronchodilators, prednisolone or hydrocortisone

For detailed management, see Anaphylaxis, p. 80

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