

# Clinical Procedures Manual for remote and rural practice

Supporting clinical practice in the bush

4th edition

**CARPA**  
Centre Australian Rural Practitioners Association Inc



**CRANAplus**  
improving  
remote health

**RPHCM**  
Remote Primary Health Care Manuals

Centre for Remote Health  
Alice Springs, 2017

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E-mail: [remotephcmanuals@flinders.edu.au](mailto:remotephcmanuals@flinders.edu.au)

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# Preface

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People who live in remote, rural and isolated areas experience higher levels of trauma, and delays to treatment associated with location and geography — often vast distances, and sometimes water, weather or transport issues. Remote health practitioners not only provide emergency care, but as part of a primary health care service also perform a wide range of clinical procedures on site. The *Clinical Procedures Manual for remote and rural practice* is designed to support this practice.

The advanced practice skills needed to work in these areas can be developed and maintained through the Remote Health Practice Program at the Centre for Remote Health, and the Remote Emergency Care (REC) and Maternity Emergency Care (MEC) courses run by CRANAp<sup>l</sup>us.

For more information contact:

- Centre for Remote Health — [www.crh.org.au](http://www.crh.org.au), phone: +61 8 8951 4700
- CRANAp<sup>l</sup>us — [www.crana.org.au](http://www.crana.org.au), phone: +61 7 4047 6400

Support for remote practitioners and their families is available through Bush Support Services, offered through CRANAp<sup>l</sup>us. This includes the free, confidential 24 hour Bush Support Line — 1800 805 391.

## Remote Primary Health Care Manuals logo

The RPHCM logo, developed by Margie Lankin, tells this story:

The people out remote, where they use the manuals, are coming into their health service. They are being seen from one of the manuals ... desert rose, the colours of the petals. The people sitting around are people who use the manuals – men and women. People who are working for Indigenous health... doctors and nurses and health workers. Messages are being sent out to the community from the clinic, from the people, to come in to the clinic to be seen. Messages about better health outcomes. People are walking out with better plans, better health, better health outcomes.

## About this manual

The fourth edition of the *Clinical Procedures Manual for remote and rural practice (CPM)* has been produced as part of the suite of Remote Primary Health Care manuals, through a collaboration between CRANAp<sup>l</sup>us, the Central Australian Aboriginal Congress, Central Australian Rural Practitioners Association, and the Centre for Remote Health. The other manuals in the suite are the *CARPA Standard Treatment Manual (CARPA STM)*, the *Minymaku Kutju Tjukurpa Women's Business Manual (WBM)*, and the *Medicines Book for Aboriginal and Torres Strait Islander Health Practitioners (Medicines Book)*.

As with previous editions it has been written by remote practitioners, for their remote and rural colleagues. The aim is to incorporate the practice wisdom and experience of these practitioners into a practical, best-practice guide to the many routine and emergency procedures carried out in the bush.

It is intended that this manual will remind, reassure, and clearly instruct as needed. It provides procedures and general principles that can be used in a range of settings to support your endorsed standard treatment guidelines, eg *CARPA STM*, *WBM*.

This manual presumes knowledge and skills at the level of a registered health professional who has undertaken, or is undertaking, advanced skills training for remote or rural practice.

Remember that you should:

- Be prepared and upskilled for remote and rural practice
- Be current in remote emergency, life support, and maternal emergency care
- Work to your level of competence and confidence and carefully consider the circumstances
- Be guided by local policy
- Get advice or help from someone more qualified any time you are unsure.

## Your input

Feedback is an essential component of keeping the manuals 'by the users for the users'. Please submit your suggestions and comments via either

- Online feedback form at [www.remotephcmanuals.com.au](http://www.remotephcmanuals.com.au)
- Email to [remotephcmanuals@flinders.edu.au](mailto:remotephcmanuals@flinders.edu.au)

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## Contributors

Thank you to the practitioners, from all over Australia, who volunteered their time and expertise to ensure the manual remains evidence-based, relevant, practical and user-friendly. More information about the review process can be found at [www.remotephcmanuals.com.au](http://www.remotephcmanuals.com.au)

This acknowledges those contributors known to us. Due to the large number of volunteers, we have only recorded the highest level of participation.

## Remote Primary Health Care Manuals Editorial Committee

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Pamela Harnden, Paul Lee, Peter Thorn, Rebecca Henshaw, Ria Beatson, Rita Apelt, Rosemary Lee, Stephen Fuller, Sue Roth, Sung Lee, Tara White, Winnie Chen.

## **Project team**

Janet Struber, Stephanie Mackie-Schneider, Victoria Orpin, Sandeep Reddy, Sally Herring, Allison Gray.

**Assisting the team:** Karen Montey, Malissa Hodgson, Ross Carter, Sheree Zadow.

## **Content**

The following content has been reproduced for use in the manual.

- Ear examination chart ([p160](#)) — photos provided by Dr Michael Hawke, Hawke Library. [otitismedia.hawkelibrary.com](http://otitismedia.hawkelibrary.com)
- HEADSS framework for Psychosocial Health Assessment ([p102](#)) — Goldenring JM, Rosen DS. Getting into adolescent heads: an essential update. *Contemporary Pediatrics* 2004;21:64
- Children's BP charts ([p107](#)) — Centres for Disease Control and Prevention, United States. [www.cdc.gov](http://www.cdc.gov)
- Children's BMI charts 0–5 years ([p109](#)) (Table 4.7, Table 4.8) — WHO Child Growth Standards, 2009. [www.who.int/childgrowth/standards/en](http://www.who.int/childgrowth/standards/en)
- Children's BMI charts 5–19 years ([p110](#)) (Table 4.9, Table 4.10) — WHO Growth Reference 5–19 years, 2007. [www.who.int/growthref/en](http://www.who.int/growthref/en)

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# Using the Clinical Procedures Manual

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Use of the *Clinical Procedures Manual* is not intended to replace clinical judgement, expertise, or appropriate referral. It does not support practitioners to work beyond their level of competence or confidence or outside their scope of practice or health service policy.

Remember that clinical procedures can be invasive, painful, and frightening. Always be reassuring and encouraging, explain calmly what you are doing, and take your time.

**In using this manual it is assumed that:**

- **You know the meaning of, and are able to do, the following**
  - An aseptic technique
  - Draw up and give common injections
  - Safely throw away (dispose of) sharps and syringes
  - Cardiopulmonary resuscitation (CPR)
- **BEFORE doing any procedure you have**
  - Taken a full medical history and done a physical examination
  - Explained the procedure to the person and/or their carer and gained informed consent
  - Ensured patient privacy
  - Talked with someone more experienced than you when
    - This is suggested by the guideline
    - You are unsure of the clinical management
    - It is a clinically serious situation
  - Used your clinical guidelines to give pain relief, sedation, antibiotics, tetanus injections etc as needed
- **AFTER finishing a procedure you will**
  - Record everything in the person's file notes, and in other documents as required by the condition or local policies
  - Give appropriate advice, instructions and warnings to the person, and arrange follow-up or handover.

## The procedures

Procedures are written in dot point form, and are usually under 4 headings:

- **Title** — what the procedure is and why it is done
- **Attention** — lists dangers and warnings, general dos and don'ts, and handy tips to help with the procedure
- **What you need** — lists equipment and medicines needed in the order that they are used, and equipment/medicines that may be needed
- **What you do** — explains procedure in the order it is done, makes helpful comments as it goes along, highlights important facts

**Always** begin by reading whole procedure, and carefully checking points listed under Attention.

When options are given they are listed in order of preference. Only move down the list if earlier options are not available, or are not acceptable to the person or their carer.

### Information boxes

- Black boxes — easy to find information
- Thin red boxes — important information
- Thick red boxes — very important or life saving information

### The symbols

The symbols found in boxes at the beginning of a section or procedure are reminders about common equipment and tasks.



**Light** — you need a bright light to do this procedure.



**Gloves** — put on clean, nonsterile gloves for personal and patient protection.



**Mask** — use a mask for personal protection.



**Eye protection** — use glasses/goggles for personal protection.



**Sterile technique** — use sterile (aseptic) technique and 3 minute hand wash before putting on sterile gloves.



**Pathology** — label, pack and store pathology specimens and fill in forms.



**Sharps disposal** — throw away needles and other used sharps safely.

### Language

We use simple language in all but the most advanced procedures. Where possible we have used common words followed by the medical term in brackets.

### Abbreviations

Abbreviations or acronyms may be used without explanation. There is an abbreviation list, including acronyms, in the reference section.

**Indigenous**

The term Indigenous has been used to mean both Aboriginal and Torres Strait Islander Australians. We mean no disrespect by using this inclusive term for different cultural groups and apologise for any discomfort or sorrow it may cause.

**Medicines**

Medicines are named for their active ingredients. Where a brand name for a medicine or other product is used it is in italics, and usually in brackets.

The mention of specific products does not imply that they are endorsed or recommended in preference to others of a similar nature that are not mentioned.

**Online version**

The *Clinical Procedures Manual for remote and rural practice* is available online as part of the Remote Primary Health Care Manuals at:  
[www.remotephcmanuals.com.au](http://www.remotephcmanuals.com.au)



# 1 Remote context

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# Cultural safety

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Primary health care in remote and rural Australia often involves working with culturally diverse and socio-economically disadvantaged groups. To provide effective health care, practitioners must be committed to providing culturally appropriate health care.

Good practice requires practitioners to recognise and manage the power they have. Without this, consultations can be a demeaning and disempowering experience for patients — contributing to further ill health.

## Culturally appropriate health care

Involves consideration of cultural awareness, cultural safety/security and cultural competence.

- **Cultural awareness** — developing knowledge about a particular people or cultural group. Includes its history, traditions, belief system/s, language/s, geographical features
- **Cultural safety/security** — an environment that is safe for people, where there is no insult or harassment, imposition, or denial of a person's identity. It is about living and working together with dignity and respect for differences
  - Indigenous people working in the clinic and broader community (eg ATSIHPs, ALOs, clinic board members) can influence how the health service operates and to help ensure it is a safe environment for patients
- **Cultural competence** — a commitment to engage respectfully with people from other cultures. It requires the ability to identify and challenge one's own cultural assumptions, prejudices, and one's values and beliefs

## Tips

- **Remember**
  - Always show respect and consideration. Ask local experts about appropriate forms of respect for your community
  - Medical procedures can be invasive, frightening, painful
  - Always maintain dignity, privacy, confidentiality for patients
  - Public rather than private settings may be more suitable for some people, on some occasions. Make sure the person is able to make an informed choice
  - It is not always the patient who gives the history or makes decisions — this may be the role of others, usually relatives
  - Be aware of local time (eg school bell, shop hours) and local activities (eg sports carnival, ceremonies)
    - These can also influence whether the person can attend appointments
- **Cultural beliefs**
  - Traditional beliefs about health and illness remain intact, embedded and valid in many Indigenous communities

- In many cases Indigenous people will use traditional healers and traditional medicines before presenting to the clinic. It is very important to acknowledge and respect this. Traditional medicines/therapies can work in conjunction with Western medicine
- Be aware of non-verbal body language and gestures — pointing, hand signals, eye contact. May have very different meanings for patient and practitioner
- Culture can influence the way people react to stressful or traumatic situations, including wailing, silence, inflicting harm on others or self-harming after traumatic events including death
- **Loss and grief (p136)**
  - Indigenous communities may follow some or all of these practices after a death
    - Deceased person's name should not be spoken
    - Deceased person's house is smoked, painted or vacated
    - Special rituals undertaken
    - Certain relatives of deceased may choose not to speak
    - Relatives of the deceased may live outside the community to mourn. May need special clinic visits
    - In some communities 'sorry business' (grieving) involves self-inflicted injury (sorry cuts) and family fighting
    - Payback may be part of grieving/healing process
- **Effective communication**
  - English can be a second or third language for Indigenous Australians
    - Ask if person would like an interpreter to assist
    - Using family members to interpret can be sensitive. Be cautious, let person guide you. Using local Indigenous staff may be an option, if appropriate
  - Don't assume that conversations conducted in English have the same meaning for practitioner and patient
  - Don't try to speak a language learnt in another community. Similar sounding words can have different meanings and may be offensive
  - Hearing problems, common in all age groups, can make communication more difficult
  - Don't shout. Always speak clearly and warmly
- **Consider how you question patients**
  - Direct questions can be considered rude. Consider getting permission if you need to ask a lot of questions
    - Only ask one question at a time and allow person time to consider it
    - Be aware that they may be thinking about it in their own language before responding
  - Avoid double negatives (eg 'You don't do nothing like that, do you')

- Be wary of ready agreement. It can be a sign of misunderstanding, or simple courtesy
- Silence is often OK, give people plenty of time to answer. But remember that silence can also mean misunderstanding, or that practitioner is on culturally unsafe ground
- Make detailed notes of what person says about themselves, so you have accurate records for the future, don't need to ask same questions again
- **At end of consult, check that**
  - What you're doing is respectful of the person's needs and wishes
  - You have understood what the person has told you, and cleared up any uncertain points
  - Person has understood what you have said to them and can repeat any instructions you have given them

***Remember:***

- People generally want to do what is best for themselves and their families
- Conflicting priorities and past experiences can impact on their decisions
- Important to respect and support person's decisions, even when they challenge your clinical advice
- In the long term, relationships and trust between practitioners, patients and families enable quality health care

## Travelling in remote areas

**This procedure is a guide only.** All staff should do an accredited 4-wheel drive and/or boat skills course.

### Attention

- Travelling in remote areas can be dangerous
  - Weather, road/sea and vehicle/boat conditions, driver tiredness and inexperience make remote travel more dangerous than urban travel
- Treat it seriously and follow procedures, even on short trips
  - If you don't, you will endanger yourself, your patients, people who go to look for you

**Two essential safety precautions** for travelling in remote areas.

- 1. Carry enough drinking water** for you and your passengers, as well as fuel, spare tyre and tools
  - 2. Give an estimated time of arrival (ETA)**
    - Don't change your travel plans once you have given an ETA
    - Don't change your route without telling person expecting you
- Not turning up when expected may be the only sign that you are in trouble and need rescuing, and they will need to know where to look.

### What you need to know

#### About the vehicle

- Where spare set of vehicle keys kept
- Health service policies regarding use of the vehicle
- If it had been regularly serviced
- How to
  - Do a basic vehicle or boat check ([p11](#))
  - Fill both tanks with fuel, change over tanks, prime fuel pump
  - Check spare tyre, change a tyre, use jack/tools
  - Change tyre pressure for hard/soft surfaces
  - Use 4-wheel-drive gears, engage hubs
  - Set up UHF/HF radio antenna, use radio or satellite phone
  - Troubleshoot marine engines

#### Basic safe driving principles apply

- **Do not** eat/drink, use radio/phone, change music when driving
- Keep both hands on wheel at 10 and 2 o'clock positions
  - Don't wrap thumbs around steering wheel. If you hit a big rock and wheel spins suddenly, it can break your thumbs
- Keep your eyes on the road when talking
- Wear seat belts, use baby/child restraints
- Don't drive when tired, upset or hungry. Wait until next day if necessary

### Dirt roads are always dangerous

- Recommended maximum speed for 4-wheel-drive ambulances on dirt or gravel is 80km/hr
- Adjust speed to allow for slippery conditions in the wet or for poor road surfaces (eg bull dust, corrugations)
- Never drive outside your personal level of skill (comfort zone). Drive at 60km/hr all the way if you want to. Don't let passengers pressure you
  - Colleagues also have the right to tell you if they don't feel safe with your driving skills
- Try not to drive at night or into setting sun. If it can't be avoided — take someone with you to help watch out for livestock and native animals

Motoring deaths in the bush are most commonly single vehicle roll-overs caused by driving too fast or driver fatigue, often while not wearing a seat belt.

### What you need

#### Properly equipped vehicle

- Seat belts, child/infant restraints
- 2 engine batteries
- Bull bar, cargo barrier
- Oxygen cylinder carry racks — for emergency vehicles
- 2 spare tyres (at least), that can be reached whatever your height
- Tyre-changing tools, hydraulic jack, shovel, adjustable spanner
- Spotlights, as well as main headlights
- Communications devices — UHF/HF radio, satellite phone, location beacon
- 20L of water (minimum) per person stored in 5L containers. Carry in plastic crate/s held by straps
- Basic first aid kit
- Snow chains, snow and ice tools for windows etc, if needed
- 4 x hazard-warning road signs or flashing lights that can sit on top of vehicles, to warn other vehicles in case of an accident
- Large torch
- **Desirable**
  - Roof rack
  - Music or radio to help keep you awake

#### Properly equipped boat

- Working engine/motor
- Bungs in right places
- Radio/communications
- Compass, other navigational aids
- Safety equipment
  - Lifejackets, V-sheet, first aid kit
  - Flares, water dye, Emergency Positioning Infra Red Beacon (EPIRB)

- Tarpaulin — to use as a makeshift sail or temporary cover
- Oars, anchor, ropes
- Torch, mirror

## What you do before travelling

### Vehicle check

- Fuel. If 2 tanks, fill both. Use alpine grade diesel in cold climates
- Fan belt tight
- Radiator and battery water, hydraulic fluid levels
- Clean windscreen and lights
- Tyres and spares — inflated, minimum 3mm tread, wheel nuts tight but able to be undone
- Wheel-changing gear, tools, safety equipment for your area
- First aid kit, torch
- Make sure following are working — UHF/HF radio or phone, lights, brakes, wipers, dash instruments, trip meter, horn

### Boat check

- Bungs in place
- Fuel — full tanks plus half as much again as spare
- Correct load — **do not** overload
- Radio/satellite phone, compass and/or navigational aids all working
- Safety equipment on board

### Personal check

- Enough water and food for driver and passengers. When travelling in remote, dry, hot areas take extra drinking water. Will be needed if you have to wait for help or change a tyre
- Sun protection — cream, hat, sunglasses etc
- Personal breakdown kit — small torch, matches, sunscreen, snack food, fishing tackle, multi-purpose penknife, insect repellent, book etc

### Weather and conditions check

- Check weather and road/sea conditions with local people, police and/or road/maritime services
- Allow for road/sea/weather conditions when making your ETA

## Make a travel plan

### The trip

- Work out which route to take, who will come with you
- Tell person/service at your destination
  - Time you expect to depart (ETD)
  - Time you expect to arrive (ETA)

**Remember:** Allow an extra 1½–2 hours for tyre changes or problems

- Plan a halfway stop to take a break and call person/service with UHF/HF radio or satellite phone to let them know where you are, everything is OK

### As you are leaving

- Set trip meter, so that if there are any incidents on the road, you can tell emergency services your exact distance from base
- Make sure **you, your passengers, patients on stretchers** are all wearing seat belts, restraining belts etc

### At end of trip

- Tell person/service at destination you have arrived. Searches have been conducted for people who were safe at home but forgot to report in

### Accidents and breakdowns

- Use UHF/HF radio or satellite phone to arrange emergency recovery vehicle
- If UHF/HF radio or phone damaged in accident — need to wait until ETA passed and people come looking for you
- If passing vehicle — use their radio/phone or send message with them but stay with your vehicle

#### **ALWAYS follow these basic rules**

- **Stay with vehicle. Do not** try to walk for help
- Find nearby shade, conserve water
- If you think aircraft might be searching for you — clear some ground and mark SOS in big letters. Use clothes, rocks, colourful equipment etc
- If aircraft flies overhead — run/walk quickly across ground waving your arms to attract attention
- If you have **absolutely no choice** but to leave vehicle — leave note telling rescuers direction you headed, day and time you left, how you will mark trail (eg 'Will leave red-coloured cloth in branches of mulga')

## Consult by telephone, satellite phone, or radio

### Attention

- Make sure you know how clinic/vehicle radio or satellite phone works in case there are problems with normal phones. Keep instruction manuals handy for new staff
- **In every consultation, including emergencies**
  - Speak clearly and slowly
    - Allow for time delay after each sentence if needed
  - Use simple terms, and numbered anatomy pictures F 1.1 – F 1.5 ([p14](#)) to describe issue, eg
    - Position of lump
    - Position of pain
    - Place (site) of injury
  - Always **recheck** management plan with consulting doctor, especially at night when everyone is tired

### What you do

- **Before ringing doctor on call**
  - Do as much assessment as possible and practical. See *Clinical assessment of adults* ([p94](#)), *Clinical assessment of children* ([p98](#))
  - Have file notes with you
- Work through consultation logically. Use ISBAR (Identify, Situation, Background, Assessment and Recommendation) to help with clear communication
  - **I** dentify
    - Who you are talking to (name and role for file notes)
    - Who you are (name, role), where you are, contact details
    - Person you are talking about — name (and carer's name if child), date of birth, patient record number, community
  - **S** ituation — why you are calling
    - Is it urgent
    - Any abnormal observations, POC test results
  - **B** ackground
    - Patient's story — name, age, current complaint, relevant history
    - Procedures or treatments already tried, any outcomes
  - **A** ssessment
    - What you think the problem is — be clear, state the obvious, indicate how concerned you are
    - What you think should happen
  - **R** equest
    - What do you want them to do — advice, review, refer, evacuate
- Ask doctor to repeat all management and medicine orders, read them back

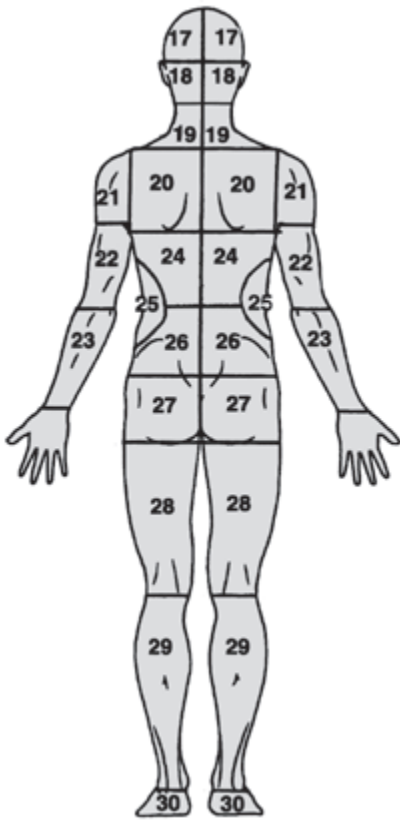
- **If not happy with advice**

- Tell doctor straight away and explain why. Always try to maintain a professional relationship
  - If still concerned — get second opinion from more senior doctor or specialist (follow local policy/practices)
- **Record in file notes** full name of consulting doctor, their advice, what you have agreed to do

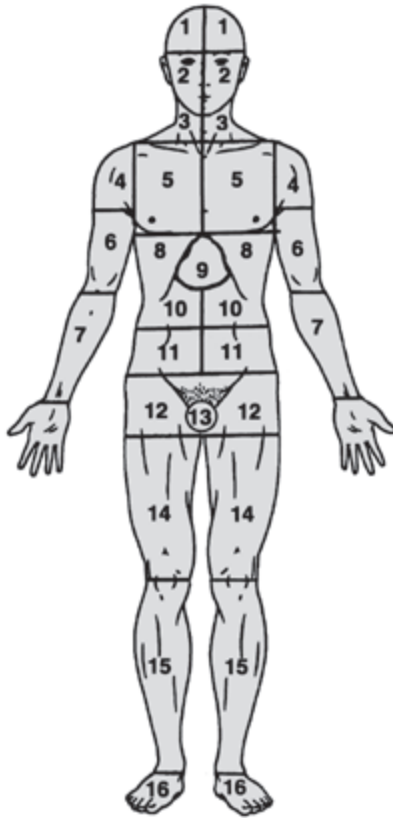
- **If person being evacuated**

- Permission needed from person and/or family for evacuation
- Consider options available
  - Local conditions that may affect evacuation
    - Weather, condition of road/airstrip, night lighting on airstrip
  - Which most suitable — doctor, clinic staff, patient and family may be involved in deciding
    - Emergency — RFDS, Aerial Medical Service, ambulance
    - Non-emergency — mail plane, bus, private car, other transport
- Is medical and/or family escort needed
- Any risks for person, escort or transport provider — alcohol, sniffing volatile substances, risk of violence (p23), risk of condition deteriorating
- **Medical consult** about
  - Will this problem, or underlying condition make person unwell if they fly
  - Antiemetic (*CARPA STM p105*) to stop vomiting, especially if hot weather, windy conditions, rough or windy road, choppy seas. Best given at least 20 minutes before travelling
  - Pain relief if needed (*CARPA STM p377*)
- Check you understand evacuation plan before you finish phone/radio call
- See *Evacuations (p16)* for how to prepare





1.3



1.4



1.5

# Evacuations

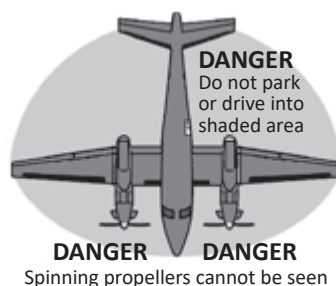
## Evacuating by air

### Attention

- Decision to do medical evacuation is not made lightly, make sure you know and follow correct procedures
- Usually 3 categories for evacuation
  - Priority 1 — Life-threatening emergency. Flight departs in shortest possible time subject to weather and essential safety requirements
  - Priority 2 — Urgent medical transfer. Flight departs promptly
  - Priority 3 — Elective transfer. Flight arranged to make best use of resources and crew hours
- If person uncooperative and/or a risk to crew or aircraft (eg person with psychosis, dementia, affected by drugs or alcohol) — **medical consult**
- Make sure
  - Person and/or family/guardian have agreed to evacuation
    - Ask person and/or escort to get ready (clothes, money etc), where they will be (eg home address and directions)
    - Remind them about luggage limits (usually less than 7kg) and dangerous goods as per CASA/CAA regulations
  - Contact details recorded for next of kin/person responsible
  - Doctor or flight organiser aware of
    - Airstrip where person is being collected
    - Weather conditions in area
    - Weight of everyone travelling
    - Phone/satellite phone number you will be available on until evacuation completed — and 2 other ways to contact you in case this doesn't work (eg radio channel)
- Someone must stay near clinic radio/phone during wait for evacuation so messages from flight/ambulance base or doctor can get through

### Rules for aircraft arrival and departure

- Person opening gate to airfield for an evacuation (or in charge of evacuation) is responsible for who enters airfield at that time
- People and vehicles must stay behind fence with gate shut until aircraft door is opened, propellers have stopped turning
  - You can't see a spinning propeller — F 1.6
- If no fences — people and vehicles must stay at least **30m** from aircraft
- No smoking
- Vehicles
  - Have headlights on park — don't blind pilot
  - **Do not** reverse vehicle toward aircraft unless directed to by crew member

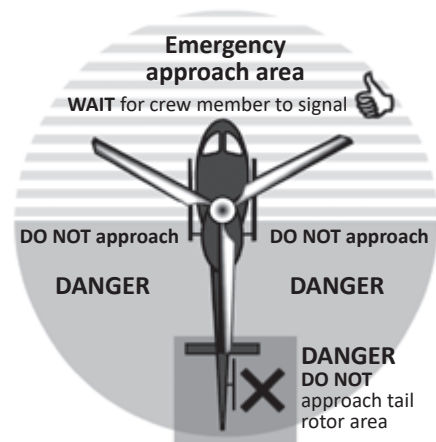


1.6

- Park vehicle loading/unloading person at least **5m** (or length of wing) from aircraft, engine turned off
- **Do not** drive across line from aircraft nose to wingtip, or tail to wingtip — F 1.6, keep parallel to aircraft
- Pilot will not start aircraft engines until all people and vehicles are back behind fence line or at least **30m away**
- **Do not** approach aircraft when door is closed or rotating beacon on aircraft belly is on
  - **Do not** walk under the aircraft wings
- Always stay by airstrip until aircraft has taken off safely. If there are problems with person or aircraft — they may return

### Helicopters

- **Do not** approach helicopter until rotors have stopped turning
- If an emergency and you must approach helicopter while it is running —
  - Approach within the 9 to 3 o'clock position only — F 1.7
  - Stop and wait well clear of rotor arcs until pilot has seen you
  - Make sure pilot or crew member aware of your intention by giving a **thumbs up** signal, wait for **thumbs up** reply before going further
- **Never** go toward rear of helicopter, even if it is shut down, unless directed to do so by a crew member — F 1.7
- On sloping ground, approach and depart on downhill side — F 1.8
- Under rotor arcs — duck (crouch down) — F 1.8, don't wear hats, make sure you carry loose items securely
- Be careful of long objects such as IV poles. **Do not** carry pointing upward
- **If blinded by dust from rotor downwash** — stop and sit on ground until dust clears or help arrives



1.7



1.8

### Practitioners

- Your first responsibility is clinical care for your patient
  - Other members of community should help during evacuation
- **When you arrive in new community** — find out as soon as possible
  - How air medical evacuation takes place
  - Where airfield is, person responsible for maintaining and checking it, their 24 hour contact information
  - What sort of lighting the airstrip uses — see *Lighting airstrip* (p19)

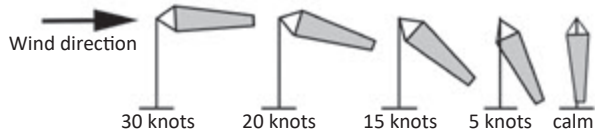
- Who helps with transfers, checking and lighting airstrip. How are they contacted
- If there is no help — you need to know how to do this for yourself
- **Helping the air medical retrieval crew**
  - Follow their directions
  - Give doctor on call or flight organiser all relevant information about person, including weight. Helps make sure they bring correct equipment (eg longer straps for obese patient)
  - Keep them up to date on developments, especially clinical deterioration
  - Plan ahead to make sure aircraft is not kept waiting on airstrip
    - If you will need to stay in clinic with patient — have someone else collect crew
    - Have lifting team ready to load person onto stretcher and/or aircraft. Consider weight of person and how many needed to lift them safely
  - Choose appropriate transport vehicle. Retrieval team may refuse to travel in vehicle they consider unsafe — check their requirements

## What you do

### Prepare for landing

Make sure you or person collecting retrieval team are at airfield 15 minutes before expected arrival time. **Do not** speed — drive carefully.

- **Weather — check and tell flight organiser**
  - Visibility — how far you can see, fog, rain, cloud covering hilltops
  - Cloud cover — estimate in 8s. 8/8 = total cover, 4/8 = half sky covered
    - If a dark night — how many stars can you see (indicates clear sky)
  - Position of windsock — which direction wind is coming from and how strong it is — F 1.9
- **Safety check for airstrip**
  - **Airstrip runway** — check condition well before aircraft lands, day or night. Is it safe — hard smooth surface, free of people, animals, vehicles, etc
  - **Test firmness** — drive stiffly sprung vehicle up and down at a speed of 75km/hr. Ride should be comfortable, no potholes
  - **Test for wetness** — drive heavy vehicle (eg 4-wheel drive) in zigzag pattern at less than 15km/hr along whole length of airstrip runway
    - If you slide, slip or tyre tracks more than 2cm deep (10 cent coin) — surface not good enough for a landing
  - **No objects within 30m** of centre of airstrip so there is room for aircraft to manoeuvre in an emergency
  - If you have any concerns — contact flight organiser



1.9

- **Check again**
  - Satellite phone and vehicle UHF/HF radio switched on and tuned in. Pilot must be able to talk to someone on ground as they approach airfield
  - About 5 minutes before arrival — airfield free of wildlife/cattle

## Night time procedures

### Airstrip must be lit

- 30 minutes before landing and until aircraft has parked
- 10 minutes before take-off and until 30 minutes after departure — in case they have to come back and land in an emergency

- Contact person whose job it is to set out and light flares or work electric lights. Know who alternate person is and how to contact them
- **Lighting airstrip**
  - Number of lighting systems available — solar lights that activate automatically at dusk, pilot or manual activated, mains or battery powered. Some airstrips have backup lighting system
  - Know how your airstrip lights work before you need them
- **Setting out flares or portable lights**
  - Begin at end aircraft will land. Aircraft always land into the wind — F 1.10
  - Put flares about 100m apart. Measure with vehicle trip meter
  - Move down one side of airstrip, going toward middle
    - When you get to middle, cross to other side of airstrip and work back up
    - Then start at other end, work toward middle, cross to other side of airstrip then work back to end again
    - This means any uneven gaps will be in middle of airstrip
  - **2 lights** should be placed at all 4 corners of the airstrip, 4m apart — F 1.10
  - If light set has lights with red and green lenses — put these across each end of the airstrip with red facing onto strip and green facing away
- **Indicating wind direction**
  - Park **beside** windsock with vehicle lights on high beam facing **into wind** — ‘wind on the windscreen’ — F 1.10. This tells pilot wind direction and that airstrip has been checked
  - **Do not** try to light windsock with hand-held spotlights

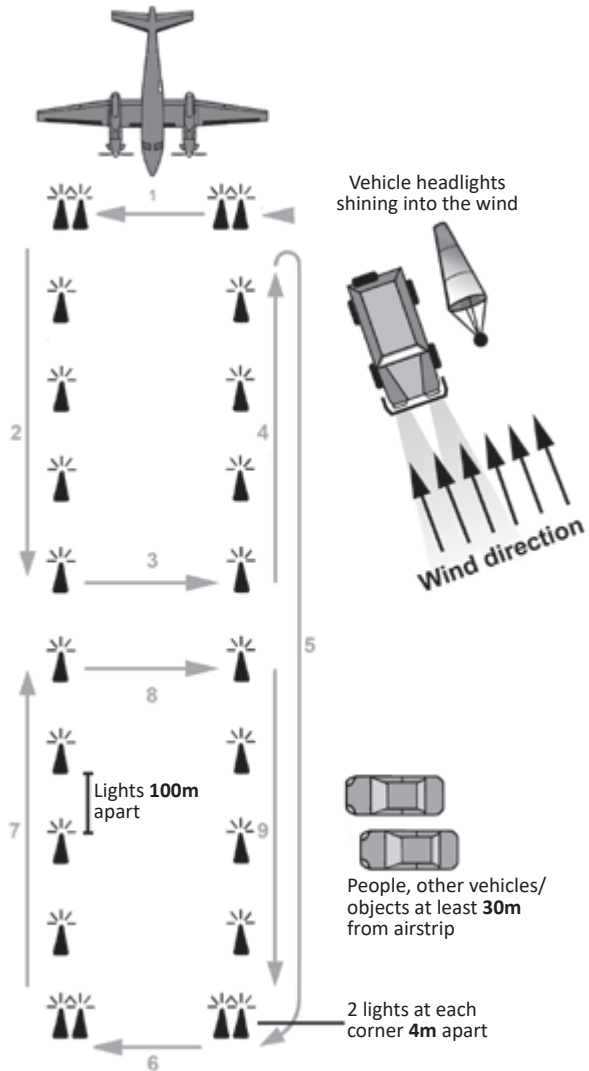
## To stop a landing

- If you arrive at airfield and it is **no longer safe for aircraft to land** — contact pilot/doctor/flight organiser immediately
- **If you can't get through in time**
  - Put white cross on middle of airstrip, or use cones to make one. White cross is universal symbol for ‘strip closed’
  - *OR* park your vehicle in middle of airstrip, facing direction the aircraft will land, with lights blazing. Leave the vehicle. Have a good explanation ready...

**Note:** Under normal circumstances, never park on or near airstrip when aircraft is due to land.

**Prepare and hand over patient**

- **Weigh person and their escort** (if there is one) **before** you talk with doctor/flight organiser
- **Talk with doctor/flight organiser** about
  - How sick the person is, how soon they need evacuating
  - Whether person
    - Should wait in clinic for retrieval team, or be taken to airstrip
    - Needs additional pain relief, sedation, other interventions (eg indwelling catheter)
    - Needs an escort, who it will be, if there is room on aircraft
  - Whether person and family agree to evacuation



1.10

- **Check weather and prepare airstrip** — see *Prepare for landing* (p18)
- **Get person ready**
  - Make sure they are in best condition they can be — pain relief, antiemetic, sedation, other pre-flight medicine needed, fluids replaced, urinary catheter in, oxygen on, etc
  - Have at least 2 functioning, secure IV cannula and access points
  - POC tests or others as directed by doctor/flight organiser
- Get paperwork ready, photocopy or print 2 copies of file notes (1 for flight crew, 1 for person), include any faxed confirmation of orders given over the phone
- Services may use ISBAR (Identify, Situation, Background, Assessment and Recommendation) for handover (p13)
- Stay near radio/phone for aircraft's expected time of arrival (ETA)
- Do regular observations according to person's clinical condition
  - Do final set of observations **just before** aircraft is due to arrive, so you are confident of person's condition before you hand over
  - **If person's condition has changed — medical consult**
- **Collect together and put ready in vehicle**
  - Person's travel bag (small, less than 7kg), check no dangerous goods packed
  - All paperwork
  - **Pathology** — packed according to aviation requirements (p368)
    - Wrap in absorbent material, put in sealed bag/container, then put in another sealed container before being put in protective outer package
    - If you need more information — contact RFDS/local provider
  - Any medical items person might need for flight — another bag of IV fluid, infusions, bottle of ORS made-up for child/adult with diarrhoea
  - If person needs oxygen while waiting — they will need it during transfer
    - Take oxygen cylinder with you in vehicle running at the rate you need
    - Have portable oxygen cylinder for transfer between vehicle and aircraft
  - Keep IV fluids running. Hard to monitor in a bumpy vehicle, but do your best
- **Go to airstrip 15 minutes before aircraft due to arrive. Keep to ETA**
  - Allow for time needed to load person from clinic into vehicle
  - Make sure they have been to the toilet
- Follow rules for aircraft arrival (p16)
- Check person's hands for matches or lighters, make sure crew aware if any being carried
- Hand over person and paperwork to air medical staff *OR* if instructed collect air crew from airstrip
- Wait until aircraft has taken off and is on its way before leaving airstrip
- Remember to turn off lights/flares 30 minutes after departure

## Evacuating by road or water

### Attention

- **Principles are the same as for evacuating by air (p16)**
  - **Medical consult**
  - Organise evacuation with service to be used — ambulance, boat, etc
  - Check weather — road/tide/water conditions
  - Prepare person
  - Hand over to ambulance/boat crew/hospital

### What else you do — principles and tips

- Check your vehicle/boat, and that you have enough fuel
- Collect all paperwork, pathology, emergency equipment etc
  - If possible — organise to take along a family member and another staff member to help with person and/or the driving
- Do a set of observations before you leave clinic
- Follow all medical instructions given during medical consult
- Make sure you are able to get in touch with doctor if person's condition gets worse. You may need to stop vehicle regularly to check person's condition, IV infusions etc

### If doing a 'halfway meet' with ambulance/boat —

- Make sure you know exactly when they are leaving their base. You don't want to be travelling with a very sick person any longer than needed
- When you see ambulance coming toward you, stop your vehicle in a safe place on side of road. **Do not** park on crests of hills or on corners
- Wait for ambulance crew to position their vehicle
- Do a set of observations before you hand over
- **At night** — ambulance and clinic staff can pass one another on road
  - Slow down whenever another vehicle approaches, look for blue and red lights
  - If ambulance — flash your headlights or turn on your own roof beacon, pull over safely on side of road
- **After handover** — you need to turn round and drive back to your community
  - You will be tired so drive slowly, keep watch for bad road conditions and wild animals or stock, especially at night
  - Radio/phone control base, give them an ETA (p9) for your return journey. **Let them know** when you do get back

### If driving through to hospital —

- Hand over person to emergency department staff, **medical consult** about event, person's condition, changes, treatments, concerns
- Give them your contact details in case they need further information

## Transport — person who may become violent

If transporting person who is or may become violent — **always do medical consult** about assessment and management plan.

Person can be transported against their wishes if they meet criteria for involuntary assessment or treatment under state/territory *Mental Health Act*.

If physical problems (eg head injury, delirium) — can be transported under common law. If under adult guardianship — can be transported with consent of guardian.

- **Call police for help when transporting violent person if any of**
  - Crime has been committed, weapons involved
  - Threat of violence is **not** because of mental or medical illness
  - You believe physical safety of attendants is under threat
  - You need help to physically restrain person to give sedation
  - Person needs supervision while awaiting transfer

### Person may become violent during transfer if

- History of violence or volatile substance misuse, drunk, under influence of drugs
- Making violent threats, very suspicious of others (paranoid)
- Delirium ([CARPA STM p199](#)), head injury ([CARPA STM p72](#))

### If person is or may become violent

- Need to be sedated (medicine to make them calm) and usually restrained
  - **Do not** use mechanical restraints (eg straps, blankets, handcuffs) unless necessary for safety of person or others. Follow local protocol, legal requirements and restrictions
- Explain sedation and restraint clearly to person and family
  - “You seem to be getting a bit agitated/cranky/wild, we want to give you some medicine to help you be calm, so you won't hurt anyone”
- Decide how you are going to transport person — talk with retrieval team

### Sedation

See *Mental health emergency* ([CARPA STM p192](#)).

**Remember:** If wrist restraints needed during transport — IV cannula needs to be in cubital fossa/upper forearm. Splint elbow straight.

### For transport by air

Air retrieval services must follow aviation regulations.

- Pilot and medical team will determine if travel safe
- Will usually involve restraint
- Pilot has ultimate responsibility

### For transport by road

- If medium/high risk of violence *OR* IV/IM sedation — must travel by ambulance
  - Must be able to restrain and provide IV medicine
  - Police transport to be considered as last resort only
- If low risk of violence — may travel by car
  - Patient sits back seat on passenger side
  - Need 2 people apart from driver and patient
  - Helps if at least 1 escort known to patient, can help keep them calm
  - Can use child lock on patient's door — but never on escort's door

## Assessing or treating someone in custody

**If asked to assess or treat someone in custody — always do medical consult about assessment and treatment plan.**

Assessing person in custody needs to be done carefully. May be mixture of injury, sickness, alcohol, drugs, mental illness problems. Person often scared, angry or sad about being in custody.

Make sure person knows where you are from, why you are there. Often happy to see health staff because they are there to help, and not part of police or court system.

- **Do not** be judgemental — leave that to legal system
- **Do** treat person with respect — doesn't matter what they are in jail for
- **Always** do assessment in clinic, not in a police cell, unless life-threatening emergency
- Know your health service policy regarding your authority to sign police forms
- If assessing someone who doesn't usually speak English — use interpreter or you may miss important cultural, family, personal matters. If no interpreter available — record this clearly in file notes
- Police must provide staff to make you and person safe during the assessment
  - If possible, have police stand outside door or at a distance so they can't hear you talking. Police presence may stop person talking and make assessment difficult
- If person violent or aggressive — **do not** put yourself in danger
  - Stop assessment if you have to, talk calmly and quietly, give them time to settle down, get advice

### Check file notes

- Medicines used
- Medical or mental health problems
- Drug or alcohol problems and risk of withdrawal
- Loss and grief, risk of suicide

### Ask

- Do they have any concerns about their health
- Do they have pain needing treatment (*CARPA STM p377*)

### Do

- **Medical consult**
- Take full history, do head-to-toe examination (*p94*), do mental status exam (*p113*), check for injuries
  - See relevant section/s of manual for area/s of concern
- Make sure person has been eating and drinking (hydrated)
- Advise them how to get police officer/nurse attention

- Arrange further assessment if needed. May need to transfer person while still in custody
- Record all findings and management plan in file notes
- If monitoring or treatment needed — give police clear written instructions
- If you think they are at risk due to physical or mental condition
  - Make this clear to police
  - **Medical consult** to consider evacuation

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# Preparation for trauma and emergencies

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## Getting equipment ready

### Attention

- **Put aside an hour a week to check equipment and prepare staff**
  - **Test equipment** in clinic and ambulance, including radios and phones
  - **Practise emergency procedures** (mock emergency) so you are prepared when emergencies happen
    - Get as many people as possible involved, so they all know their role
    - Being prepared helps staff feel more confident, leads to better care
- When you arrive in a new clinic — always familiarise yourself with emergency equipment (including ambulance) and procedures

## What you need — to be prepared

### Remote Emergency Kit

Essential equipment for trauma and emergencies outside clinic.

- Keep equipment separate, don't use for other purposes
- Keep emergency equipment together in 1 room. Use container made from robust material, water/dust proof
  - Have laminated check list
  - Have clear sign with equipment saying
    - Where emergency medicines are stored (eg fridge, pharmacy)
    - Where scheduled medicines are stored (eg safe, secured area)
  - Check weekly or after use, seal, write date for next check
- Stock for 2–3 casualties. **Do not** overfill
  - If you know there are more casualties — take second container with extra bandages, pads, oxygen masks, cannula equipment, IV fluids, cervical collars

### Contents

- Clinical procedures and protocol manuals (eg *CPM*, *CARPA STM*, *WBM*)
- Personal protective equipment
  - Goggles
  - Gloves (non-sterile)
  - Impervious gowns or overalls
  - Reflective vests
  - Head lamp (miner's torch)
  - Sharps container
- Airway
  - Suction — checked regularly with backup battery, tubing, connectors
  - Yankauer suckers (hard plastic suction device) – adult, child sizes
  - Y suction soft flexible catheters – all sizes
  - Cervical spine collars – all sizes or multi-size
  - Airways — oropharyngeal, nasopharyngeal, laryngeal mask – all sizes
  - Forceps — angled (adult and children sizes), artery, long nosed x2 of each

- Intubation equipment
  - Laryngoscope handles x 2 with fresh batteries
  - Curved laryngoscope blades (eg *Macintosh*) – sizes 2, 3, 4
  - Straight laryngoscope blades (eg *Miller*) – sizes 0, 2
  - Cuffed endotracheal tubes (ETTs) – 5.5mm x 2, 6.0mm x 2, 7.5mm x 4
  - Uncuffed endotracheal tubes (ETTs) – 4.0mm x 1, 5.0mm x 1, 5.5mm x 2
  - Introducer stylette (bougie), lubricant, angled forceps (eg *Magill*)
  - Tapes for tube restraints
- For cricothyroidotomy — 14G non-retractable cannula, 5mL syringe, oxygen tubing, 3 way tap, No. 11 disposable retractable pointed scalpel
- Wooden spatulas
- Breathing
  - Portable oxygen/suction equipment with tubing
  - Resuscitation bags and masks with oxygen attachment – adult, child, infant sizes
  - Stethoscope
  - Simple masks – adult x 3, child x 3
  - Non-rebreather masks – adult x 3, child x 3
  - Nebuliser
  - 14G non-retractable cannula for needle decompression x 6
- Circulation
  - IV giving sets (blood and fluid pump sets) x 4
  - IV cannula – 16 x 4, 18 x 4, 20 x 4, 22 x 4, 24 x 4
  - IV bungs, extension tubing, IV dressings
  - Intraosseous needle device
  - Intraosseous needles – 15mm (child), 25mm (over 40kg), 45mm (obese)
  - Tourniquet
  - Rapid infusers
  - Alcohol wipes
  - Tape
  - Adhesive strips
  - Syringes – 5mL x 6, 10mL x 6
  - Trauma scissors
  - Crepe bandages
  - Disposable scalpels
  - Large combine pads
  - Space blanket x 3
- Medicines — including sterile water and normal saline (4L)
- Gadgets
  - Pen torch
  - BP meter (sphygmomanometer) with multiple cuff sizes
  - O<sub>2</sub> sats monitor

- Monitoring and defibrillation equipment with batteries charged
- Watch with second hand
- Blood glucose meter
- Suture kit
- Sandbags
- **Extras** — need strong bag or backpack or container to carry these
  - Extra cervical collars
  - Nasogastric tubes – sizes 10Fr, 12Fr, 14Fr
  - pH paper
  - Urinary catheters – sizes 10G, 12G, 14G, drainage bags, lubricant, catheter syringe
  - Dressing packs x 2
  - Skin prep (eg aqueous chlorhexidine)
  - Limb splints – all sizes
  - Extra crepe bandages
  - Elastic bandages
  - Slings
  - Safety pins and tape
  - Clipboard with paper, pens, trauma forms etc
  - Triage cards to attach to patients
  - Rubbish bag
  - Vomit bags
  - Chest drain sets — ICC – 32 x 3, 20 x 3, 12 x 3, long artery forceps (eg Kelly haemostats) x 2 and scalpel (eg size No. 10 pointed), 4.0 skin suture set (4.0 prolene/nylon suture on curved needle x 2 and size 1 polyester (eg *Mersilene*) or 2 silk suture on curved needle x 2)
  - Midwifery Emergency Pack

### In remote ambulance

#### In addition to the remote emergency kit

- Emergency and local contact numbers laminated and stuck to visor, including
  - Doctor, RFDS, ambulance
  - Hospital
  - Your satellite phone number
  - Your mobile phone number
  - Your radio call signal
- Local community and regional maps with homelands marked
- Ceiling hook for IV
- **Safely secured**
  - Oxygen and suction
  - Emergency stretcher made up with blanket and pillow, wrapped in plastic to keep clean
  - Scoop and straps

- Tissues
- Vomit bags
- Box of gloves — replace every 2 months, they perish in the heat
- Alcohol-based hand rub or gel
- Small tarp to lay out equipment
- Body bags
- Goggles
- Reflective vests
- Torch and spare batteries
- Hazard triangles
- Plenty of water
- Fuel tanks full at all times
- Basic tools to change tyres and dig yourself out of sand/mud/snow
- Shade (eg tarp)

Remote areas use satellite phones, mobile phones, radios.

- Make sure all staff know how these work and that they can operate them in an emergency. Need to know about
  - Emergency button on HF radios
  - Signal on satellite phone
  - Always using area code on satellite phone
- Always do satellite phone/radio check with base when setting off

### In remote clinic

Every clinic needs dedicated emergency area set up and stocked to manage trauma and emergencies.

**Keep copy of local disaster plan in emergency room.** If you don't have one — contact your local police and ask for one.

- Well-lit room
- Freestanding emergency stretcher/bed with IV poles
- **3-drawer emergency trolley**
  - **Drawer 1 — Airway.** Include intubation kit, CO<sub>2</sub> detector (colourimetric capnograph), emergency medicines, scissors
  - **Drawer 2 — Breathing.** Include chest drain kit
  - **Drawer 3 — Circulation.** Include rapid infuser devices, IO device and needles, anaphylaxis kit, fit kit
  - **On top** — monitor and defibrillator, O<sub>2</sub> sats monitor, sharps container
  - **On bottom** — blood glucose meter, documentation charts and clipboard, suture kit, sandbags, haemoglobinometer, torch
- Clock with second hand on wall
- PPE in separate trolley or on wall
- Freestanding ECG
- Oxygen and suction equipment (including spanner for changing cylinders)

- Hands-free telephone
- Examination light
- Paediatric dosing and equipment sizes chart

For additional emergency room equipment — see *Extras* (p30).

### What you do

#### Responding to remote emergency call-out (overview)

##### Information

- When you are called to trauma or emergency situation, make sure you get all the information there is **before** you leave clinic
  - Exactly where incident is
  - Which road and how far away it is
  - Any identifying features nearby — ‘on Corrugated Highway, 1km past Mt Lonely turn-off’
  - How many vehicles and/or people involved
  - How many are hurt, any deaths
  - Dangers/hazards (eg chemical/fuel spills, power lines)
  - Who knows about this already

##### Tell everyone involved and get help

- Call nearest police
- Call local emergency services (eg RFDS, Medical Air Services, St John Ambulance) — or anyone else who can help. Ask them to tell on-call doctor so they are standing by
- Tell other staff and volunteers if needed — ask for
  - Someone to come with you
  - Someone to stand by clinic radio/phone, coordinate communications
  - Someone to get clinic ready if you are likely to bring people back

##### What to take with you

- Helper/s — never leave without someone with you, but leave room in ambulance for casualties
- Remote Emergency Kit (p28)
- Other items to ensure your safety and comfort
  - Water — at least 2L per person
  - Insect repellent, sunscreen
  - Hat, sturdy footwear, protective clothing — may be out in sun, cold, rugged conditions for hours
  - Torch and batteries
  - Tissues, toilet paper
  - Snack bar, fruit

## What to do before you go

Work carefully through this checklist with helper before you go.

- Is phone/radio working. Do test call/radio check before leaving
- Where are you going, do you know how to get there
- Double check you have told everyone where you are going, time you expect to arrive (ETA), when you will call again
- Check vehicle is ready to go — water, fuel, tools, spare tyres
  - Is all emergency equipment on board
  - Don't forget medicines, including scheduled drugs from safe/secured area
- Have you eaten recently. If not — take some food

On the way to scene decide who will lead operations.

## What you do when you get there

- Park as close as safely possible to protect you and accident scene
- Switch on hazard warning lights, put on reflective clothing
- Contact clinic/doctor — quickly tell them exactly where you are, what is happening. Ask them to pass on to others responding
- If on or near road — ask helper to manage traffic, put out hazard triangles to stop another accident
- Take very deep breath, have a good look, work out who is in charge, what has happened, what your priorities are
 

**Remember:** If police/rescue/SES/fire brigade present — they are in charge of accident scene. Wait for them to declare it safe for you to approach
- Work out which casualties to deal with first (triage). See *Assessing trauma — primary and secondary survey* (p35)
- Use people around you to help, and keep a record of what you do
- Ask others to
  - Clear up rubbish — except sharps, which go straight into container
  - Carry spare equipment back to make room in ambulance for patients

## Take CARE of your patient and yourself

Caution	with your own safety at accident scene. Watch out for hidden dangers (eg live electric wires, leaking fuel)
Carry	patient safely on stretchers/long boards. In ambulance, do up straps and make person comfortable for the bumpy ride ahead
Care	of your back when lifting
Animals	on roads when driving. Also mosquitoes, snakes, crocodiles
Road traffic management	In dust cloud, on corners of roads or crests of hills, ask someone to watch for other vehicles approaching accident scene. Use your hazard signs
Environment	around you. Watch temperature — is it too hot, too cold, are people burning on hot bitumen. Protect your patient and yourself from sun, wind, rain, cold

## Afterwards

- Record what you have done in each person's file notes
- Have a cup of tea, start to debrief with colleagues and emergency workers
- If you or your colleagues feel upset or traumatised by what you have seen or done — you must ask for help from your manager and/or use Bush Support Services — 1800 805 391
- Don't be too hard on yourself. You can only do your best in very difficult circumstances and learn from the experience
- Refuel and restock ambulance, restock Remote Emergency Kit

# Assessing trauma — primary and secondary survey



Although there seems a lot to read, each check only takes a few seconds.  
If no evidence of trauma — see *Life support — DRS ABC (CARPA STM p10)*.

## Trauma assessment has 2 main parts

- **Primary survey** — rapid examination to find and start managing life-threatening injuries
  - Look for most life-threatening injuries first
  - Keep rechecking person's condition as you go through examination
    - If they get worse — go back
    - If level of consciousness falls — see *A — Airway and cervical spine (p36)*
- **Secondary survey** — after life-threatening problems dealt with
  - If they get worse — go back to ABC D

## Primary survey — using DRS ABC DE

- If more than one of you — decide who is in charge (the boss) before you arrive at scene
- Check **top to bottom, front and back** so you don't miss life-threatening injury
- Make notes of what you find as you go, keep checking protocol manual

## D – Danger — make sure scene is safe

### To prevent more accidents or trauma and keep you safe

- Park your vehicle safely, put on fluoro vest or jacket
- If on road — have someone manage traffic and crowd, put out hazard signs
- Check surface person is lying on
  - If very hot — can cause burns (*CARPA STM p38*)
  - If very cold — can cause hypothermia (*CARPA STM p62*)
- Check for dangers — alcohol-fueled mob, car engine running, leaking petrol/chemicals/battery (anyone smoking), electricity cables, undeployed airbags

## Quickly survey scene

How was accident or trauma caused

- If vehicles involved —
  - How many, what state are they in — accidents at high speeds (over 60km) usually cause more serious injuries
  - Any casualties outside vehicles
    - Thrown from vehicle or taken out
    - Pedestrians
  - If deceased person — may be other people with serious injuries

- If drowning victim — risk of hypothermia (*CARPA STM p62*)
  - Remove wet clothing, dry and warm person as soon as possible — but don't delay CPR if needed
  - Hypothermia may mask signs of life. If this a possibility — continue CPR

## R – Response

- Your response to accident scene, person's response to you

## S – Send for help

- If you need help — send for it straight away
- If doctor on standby — call as soon as you arrive. Talk with them as much as you can

### Boss decides who to treat first (triages) using these priorities

1. Immediate life-threatening injuries (eg blocked airway)
2. Life or limb in danger
3. No serious injuries, can wait for evacuation or be managed later
4. Death or injuries incompatible with life. Don't spend time with these people at the expense of those who can be helped

### Start with person with most life-threatening injury

- If conscious and cooperative
  - If you can, kneel down with knees gently but firmly bracing either side of head — F 2.1. Protects spine by stopping them moving head and neck when you talk to them
  - Tell person to keep their head still — not to move or shake head to say 'yes' or 'no' to your questions
  - Check if person knows you are there — call to them, ask their name



2.1

## A – Airway and cervical spine

- Airway most important, but try to protect cervical spine, use manual in-line immobilisation (*p64*) until able to fit semi-rigid collar (*p66*)
- Check for face, jaw, neck injuries that may cause blocked airway

### If talking OK and breathing normally

- Airway probably clear
  - Give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
    - Non-rebreather mask 10–15L/min
  - See C — *Circulation and controlling bleeding* (*p39*)



2.2

### If unconscious or having trouble breathing

- **Open airway**
  - Adult or child

- Use chin lift. Grip chin and gently lift it up — F 2.2
- *OR* jaw thrust. Hold jaw at point under ears, push upward and forward until chin juts out and airway opens — F 2.3
- **Do not** tilt head backward. May be neck injuries
- Infant (under 1 year)
  - Also put folded towel or nappy under shoulders and back — F 2.4
- **Clear airway**
  - Remove visible solid material using 2 'hooked' fingers in downward sweeping motion
  - For liquid (blood, vomit, water) use suction if available *OR* log-roll onto side (*p68*), open mouth, turn downward to allow to drain using gravity
  - Drowning
    - If unconscious after drowning — expect vomit, put in recovery position to clear airway — F 2.5
    - Log-roll if risk of spinal injury (*p68*) — diving injury, explosion, dumped in heavy surf
  - To keep airway open, may need nasopharyngeal airway (*p46*) or oropharyngeal airway (*p45*) — F 2.6
- **If airway still not open** —
  - Consider LMA (*p49*), needle cricothyroidotomy (*p54*), intubation (*p51*) (only if more than one of you)
- **If airway open** —
  - **If not breathing** — go straight to B – breathing (*below*)
  - **If person starts to vomit** — log-roll into recovery position (*p68*) — F 2.5
  - **If breathing and no other obvious life-threatening problems** — put on semi-rigid collar (*p66*) — F 2.7. Put sandbags, rolled blankets, or helper's knees either side of head to stop it moving. Replace sandbags with lightweight cushioning for transport



2.3



2.4



2.5



2.6



2.7

## B – Breathing

### Look

- At person's bare chest — cut off clothing but keep warm
  - Are they breathing, how fast, how deeply, normal for age
  - Are both sides of chest moving the same, does one side suck in while other moves out
  - Do they look like they are working hard
- Is windpipe (trachea) straight (in midline)
  - If tension pneumothorax — may be pushed away from affected side

- For bulging/swollen neck veins. May be caused by tension pneumothorax
- For chest wounds. Log-roll onto side ([p68](#)) to check back of chest if looking for penetrating injury, unexplained breathing difficulty

### Listen

- Any unusual noises — grunting, gasping, snoring, wheezing, whistling

### Feel

- Is chest moving. One or both sides
- Is windpipe (trachea) in middle of throat — F 2.8
- For crackling feeling under skin (subcutaneous emphysema)
- For broken ribs. Gently squeeze chest from sides, from front and back. Feel ribs for deformity or breaks



2.8

### If breathing normally

- Give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
  - Non-rebreather mask 10–15L/min
- See *C – Circulation and controlling bleeding* ([p39](#))

### If not breathing and pulse not easily felt

- Start CPR. See *Life support — DRS ABC* ([CARPA STM p10](#))
- Look for and treat reversible causes — tension pneumothorax ([CARPA STM p68](#)), severe haemorrhage, hypoxia, hypothermia ([CARPA STM p62](#))
- If many casualties — leave and manage other seriously injured people first (triage as deceased)

### If unconscious with slowed/inadequate breathing but pulse easily felt

- Probably head injury
- Support breathing with bag-valve-mask — F 2.9, or mouth-to-mouth with mouth guard
  - 15 breaths/min child, 10 breaths/min adult

### If having trouble breathing

- Check airway still open
- Give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
  - Non-rebreather mask 10–15L/min
- Check again for serious chest injury
  - Tension pneumothorax ([CARPA STM p68](#))
  - Sucking chest wound ([CARPA STM p70](#))
  - Rib fractures, flail chest ([CARPA STM p70](#))
- These are all **emergencies**. Treat as needed
  - Needle decompression ([p57](#))
  - Seal sucking chest wound ([p57](#))
  - Chest drain ([p59](#))
  - Assist breathing (bag-valve-mask)



2.9

## C – Circulation and controlling bleeding (haemorrhage)

- **Look** for bleeding
- **Control** external bleeding
  - Put on firm pressure with hand or pad to stop bleeding — F 2.10
  - If bleeding artery/vein
    - Try putting on pressure first
    - If ongoing bleeding— use figure of 8 sutures (p296)
  - If amputation or uncontrollable arterial bleeding in limb — use BP cuff tourniquet (CARPA STM p67) or military tourniquet if available
- Check for signs of shock



2.10

### Signs of shock

- Restless, confused, drowsy, unconscious
  - Pale, cool, moist skin
  - Fast pulse for age (CARPA STM p422) or difficult to feel
  - Low BP for age (CARPA STM p422)
  - Fast breathing
  - Capillary refill longer than 2 seconds
- Consider hidden bleeding — chest, abdomen, pelvis, long bones, back
    - If cause of shock not identified — log-roll (p68) on to side to check back for penetrating injury, if not done before
  - If evidence of pelvic fracture (CARPA STM p64) — stabilise pelvis (p231)
  - Put in 2 IV cannula (p84), largest possible
    - If can't get big cannula in — start with small ones, put in bigger ones as soon as you can. Consider IO needle (p88)
  - Run fluids
    - Adult — **normal saline** as fast as possible
    - Child — **normal saline** bolus at 20mL/kg (doses CARPA STM p16)
    - Newborn — **normal saline** bolus at 10mL/kg (doses CARPA STM p16)
    - If you can't weigh child — check for recent weight in file notes *OR* use age
    - If drowning victim — use warm IV fluid

### If no pulse and unresponsive

- If many casualties — leave and manage other seriously injured people first (triage as deceased)
- If no other seriously injured people — start CPR. See *Life support — DRS ABC* (CARPA STM p10)

Check ABC under control before starting D. If not — go back and restart resuscitation steps.

## D – Disability — head and/or spinal injury

- Do rapid check for level of consciousness using **AVPU**. If only P or U — may need airway protection
  - **A** lert — eyes open, understanding, following commands, talking
  - Tell them not to move their head
  - **V** oice — not alert but responds to voice
  - **P** ain — responds only to pain
    - If only small response (eg low groan without opening eyes) — treat as unresponsive
  - **U** nresponsive — unconscious, not responding
- To test for pain response
  - Firmly squeeze muscle on top of shoulder with thumb and 2 fingers (trapezius squeeze) — F 2.11
  - *OR* press bony ridge along top of eye (supraorbital pressure) — F 2.12
    - **Do not** do this if they have facial fractures
- **Check**
  - Pupils (*CARPA STM p73*) — same size, do they react to light by getting smaller (constrict)
  - BGL
  - Temp, pulse, RR, BP, O<sub>2</sub> sats — work out REWS (*CARPA STM p6*)



2.11



2.12

## E – Expose and examine

- To check properly for significant injuries, take as much clothing off person as you can. Always protect dignity, respect culture, keep warm
- Start at top, work down and around, front then back. Look, feel, listen
  - Only examine back if no other cause for breathing difficulty or shock found. Is there penetrating injury
- By end of primary survey you will have checked face, neck, chest, abdomen, pelvis (including genitals), arms, legs, and back (if required) for immediate life-threatening injuries
- Cover with blanket or sheet

### Life-threatening injuries are more likely if

- Bad car crash — roll over, thrown from car, car badly damaged, someone killed, car going more than 60km/hr
- Motorcyclist
- Pedestrian hit by a vehicle
- Fall from more than 1m *OR* fall from horse, ladder, bicycle
- Explosion
- Pulse more than 100/min or less than 50/min (adult)
- More than 1 fractured bone, especially femur or humerus
- Coma scale score less than 14 (*CARPA STM p74*)

## Secondary survey

Check ABC D under control before starting secondary survey.

### Secondary survey is second!

- Don't start until ABC DE complete and no-one with more serious injuries
- In most remote and rural areas, secondary survey is done back in clinic

3 parts to secondary survey

- History
- Examination
- Treatment

### History using DeMIST, AMPLE, PQRST

- Can be done at same time as examination
- Record what you are told by witnesses, what you see for yourself, what person tells you

#### Document (DeMIST)

**D**escription of incident  
**M**echanism of injury  
**I**njuries sustained  
**S**igns and **S**ymptoms  
**T**reatment so far

#### Then ask questions (AMPLE)

**A**llergies  
**M**edicines or current illness  
**P**ast history of illnesses, injuries, surgical operations, times in hospital  
**L**ast time they ate or drank  
**E**vent — what happened to cause the injuries (eg vehicle accident, burns)

#### To find out how severe a symptom is ask (PQRST)

**P**rovoking/Palliating factors — what makes it worse or better  
**Q**uality — what is it like  
**R**egion and **R**adiation — where is it, does it spread or stay in one place  
**S**everity — how bad is it  
**T**iming — when did it start, is it there all the time

### Examination

- **Look** — use eyes, torch, auroscope, ophthalmoscope
- **Listen** — with ears, stethoscope
- **Feel** — with your hands for injuries, percuss chest ([p188](#))
- Start at top and work down — top-to-toe, front and back

## Head (scalp) and face

- Symmetry
- Wounds, deformities, bruising, bleeding, swelling, depressions in bones
- Blood or fluid draining from ears or nose
- Feel for tenderness. Ask about pain, numbness and tingling
- Eyes and lids
  - Pupil reactions (*CARPA STM p73*)
  - Bleeding or bruising
  - Check vision with fingers and hands
- Mouth opening, teeth, tongue, jaw clench, tenderness
- Coma scale score (*CARPA STM p74*)

## Neck

- Using in-line immobilisation (*p64*), open semi-rigid collar, inspect neck
- Hoarseness or stridor
- Check semi-rigid collar fitted properly. Leave on until spinal injury ruled out by x-ray
- Wounds, deformities, bruising, swelling
- Large swollen (distended) neck veins
- Position of trachea — in middle of throat or pushed to one side
- Tenderness, especially midline at back
- Air under the skin (subcutaneous emphysema)
- Refit cervical collar (*p66*)

## Chest

- Breathing — RR and effort
- Chest movement — same on both sides, symmetrical rise and fall
- Wounds, deformities, bruising, swelling, depressions in bones
- Listen to chest sounds with stethoscope — is air coming into lungs properly on both sides
- Do ECG to exclude heart trauma

## Abdomen

- Wounds, bruising or swellings on skin, swelling of whole abdomen (distension)
- Look for old scars
- Palpate for tenderness, rigidity, guarding (*p200*) — may be bleeding in abdomen

## Pelvis, rectum, genitals

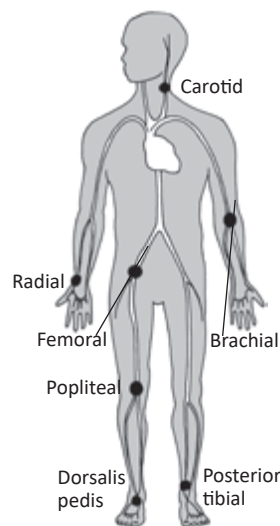
- Take care with person's privacy and dignity
- Wounds, deformities, bruising
- Bleeding from urethra
- Bleeding in or around scrotum, rectum, vagina
- Signs of pelvic fracture (*p221*)
- Man with erection (priapism) — could indicate spinal injury
- **Do not** do digital vaginal or rectal exam unless skilled, know what to look for

## Arms and legs

- Wounds, deformities, bruising, swelling
- Shortening or rotation of lower limbs — hip/pelvic fracture
- Tenderness
- Check peripheral pulses — F 2.13
- Temperature of limbs, hands and feet (hot or cold)
- Capillary refill
- Test dermatomes with cotton wool or ice

## Back — if helpers to log-roll

- Log-roll to check back ([p68](#)) — take off clothes to see properly
- Wounds, deformities, bruising, swelling, depressions in bones
- Tenderness
- Bleeding from anus



2.13

Check ABC D under control before treating. Keep checking.

## Treatment

- Give **pain relief** as needed ([CARPA STM p377](#))
- Check IV. Fill in fluid balance chart
- Put in nasogastric tube ([p81](#)) if
  - Severe multi-trauma
  - Severe abdominal injury
  - Quadriplegia, paraplegia
  - Head injury
  - Child with air swallowing and abdominal distention
  - **Do not** put in if facial injuries or suspected fracture at base of skull (black eyes, bruising behind the ear, or blood or fluid draining from the ears or nose). Use orogastric tube after intubation
- Put in indwelling urinary catheter – female ([WBM p281](#)), male ([p205](#)) *IF*
  - Fluid resuscitation needed
  - Immobilised or trouble voiding
  - Impaired level of consciousness
  - **Do not** put in if signs of urethral or bladder injury (eg blood in urethra, bruised scrotum)
- If needed — close wounds ([p292](#)), dress wounds ([p280](#)), splint injuries ([p229](#))
- Record findings including temp, pulse, RR, BP, O<sub>2</sub> sats, REWS, coma scale score, pupils, neurovascular observations. Get paperwork in order
- Monitor person. Use cardiac monitor and/or oximetry, if you have them
- Get person ready to send to hospital
  - Consider antiemetic for nausea, more pain relief

# Keeping airway open and assisting breathing



- **Emergency life-saving procedures** to keep person's airway open when unable to maintain it themselves (eg unconscious or semiconscious)
- **For newborn** — see *Newborn resuscitation* ([WBM p70](#))

**Remember ABC** — When **A**irway secure check **B**reathing, assist if needed. When breathing secure check **C**irculation.

See *Life support* — *DRS ABC* ([CARPA STM p10](#)) OR *Assessing trauma* — *primary and secondary survey* ([p35](#))

- If breathing normally and no risk of spinal injury — put unconscious person in recovery position to help protect airway — F 2.14. Rest person's head on extended arm to help neck alignment



2.14

## Open, clear and maintain airway

### What you need

- Suction equipment
- Oropharyngeal airway
- Nasopharyngeal airway
- Oxygen equipment with non-rebreather or ordinary face mask

**Remember: Open, then clear, then keep airway open.**

### Open airway

- Open airway if obstructed or not breathing easily
- In trauma don't tilt head back as this can damage spinal cord

#### Chin lift

- Grip the chin and gently lift it up — F 2.15

#### Jaw thrust

- Hold jaw at point under both ears, push upward and forward until chin juts out and airway opens — F 2.16



2.15

### Clear airway

#### Passive

- If person breathing normally — log-roll into recovery position ([p68](#)) — F 2.14, unless concerned about spinal injury



2.16

### Finger sweep

- Only do if
  - Person unconscious
  - Suction or long-nose or angled forceps not available
  - Debris obvious and close to opening of mouth
- With gloves on, use 2 fingers to gently clear person's mouth of dirt, vomit, broken teeth, dentures (leave well fitting ones in place), etc
  - Be careful not to push anything further back and block airway

### Suction

- If you have suction equipment — put Yankauer sucker at side of person's mouth, suck out any fluid
- Be careful not to damage teeth, tongue, back of throat
- **Do not** touch back of throat, this can make person vomit

## Keep airway open

### Attention

- Choose type of airway to use
  - Oropharyngeal airway only used for unconscious person
  - Nasopharyngeal airway better for semiconscious person

- **Do not** use nasopharyngeal airway if
  - Broken nose or cheekbones
  - Bruising behind ears, blood and/or clear fluid coming from ears or nose, any signs of skull fracture. Consider how they were injured

## What you do

### Oropharyngeal airway

- Choose right sized airway. Should reach from front teeth to angle of jaw — F 2.17, or corner of mouth to earlobe

### Inserting airway

- **For adults**
  - Open mouth and gently push airway in upside down with tip pointing up
  - Push airway back along roof of mouth, turn it over to slip the rest of the way over tongue — F 2.18
  - Use jaw thrust as you push in last 2cm to avoid pushing tongue back with device
- **For small child (under 2 years)**
  - Use wooden spatula to push tongue down, gently push airway straight in



2.17



2.18

## Nasopharyngeal airway

- Choose right sized airway. Measure from tip of nostril to angle of jaw (or front of ear lobe) — F 2.19
  - Approximate sizes
    - Average height woman/short man — size 6
    - Average height man/tall woman — size 7
    - Tall person — size 8



2.19

## Inserting airway

- **If needed put safety pin through flange** (or tie piece of long, thin string or tape under flange) to stop airway falling back into nose once in place
- Lubricate airway — can use person's saliva
- Gently push tip of airway straight back into biggest nostril
- Push along base of nose and into back of throat until flange and safety pin rest against nostril — F 2.20
  - If resistance — take out and try other nostril



2.20

**Remember ABC:** When Airway secure check Breathing, assist if needed.

## Assisting breathing

### Attention

- **Sniffing position** — F 2.21
  - Take care if cervical spine could be damaged
  - Extends head and flexes neck
  - Cushion from shoulder to back of head (occiput)
  - Ear canal level with sternal notch
  - Support the head by chin lift or finger against the chin



Ear canal in line with sternal notch

2.21

## Giving oxygen

### Attention

Give oxygen to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%. Take care not to give too much oxygen.

- Start with mask for all trauma and severely ill people
  - Choose right sized mask for person's face. Person will get less oxygen if mask doesn't fit well
- **Oxygen mask** — simple face mask, *Hudson* mask
  - Give **oxygen** at 5–10L/min

- **Non-rebreather mask** with reservoir bag
  - Keep adult and paediatric non-rebreather masks in emergency pack
  - Give **oxygen** at 15L/min adult, 10–15L/min child, 10L/min infant to fill bag. Mask won't work properly if rate lower
  - Reservoir bag must be filled before you put mask on face

**Remember:** Non-rebreather masks need higher flow rates — consider how much oxygen you have, how many people need it, how long it will last.

## Bag-valve-mask — manual ventilation

### Attention

**If not used properly,** bag-valve-mask will not give enough oxygen. If you are not confident about using this equipment — do mouth-to-mask or mouth-to-nose resuscitation at 15 breaths/min.

- Bags come in 3 sizes — adult, child, infant/newborn. Clinics need all 3
- Mask must
  - Fit firmly around nose, chin, sides
  - Not leak when bag squeezed
- Best with 2 operators — second person can get a better fit/seal with mask
- Reservoir bag will only fill up (inflate) with high-flow oxygen. Fill reservoir bag first
  - 12–15L/min for adult
  - 10L/min for child
  - 6L/min for infant

**Note:** All remote and rural practitioners should be trained to manage an airway in an emergency. Practise using bag-valve-mask on manikin as part of emergency training. Many different makes and models, read instruction manual.

### What you need

- Helper
- Oropharyngeal or nasopharyngeal airway in place
- Oxygen equipment with tubing connected
- Suction equipment with rigid nozzle (eg Yankauer sucker)
- Correct size mask and bag

### What you do

- **Clear and open airway**
  - If person unconscious — put in oropharyngeal (p45) or nasopharyngeal (p46) airway
- Select approximate sized mask
  - Adult 4 or 5, child 3, infant 00 or 01 or 2
- **Use only if person is not breathing well enough on their own**

### 1 operator

- If using **oxygen** — connect oxygen tubing to bag and turn on to 15L/min adult, 10L/min child, 6L/min infant
- Stand/sit/kneel at top of person's head
- Put head in sniffing position to open airway ([p46](#))
- Hold bag in main (dominant) hand, put mask over face with other hand
- Keep index finger and thumb on mask, hold under jaw with last 3 fingers — F 2.22
- Try to keep seal all around mask
- Squeeze bag — watch **to make sure person's chest rises with each squeeze**. If any problem — check airway, head position, equipment
- Ventilate at 15 breaths/min. Count slowly to get this right (eg 1 — and 2 — and 3 — etc). Don't go too fast, don't overfill lungs



2.22



2.23

### 2 operators

- As above, except 1 person uses both hands to hold mask on and keep airway open, and other squeezes bag — F 2.23

**Remember ABC** — When **B**reathing secure, check **C**irculation.

If further assistance needed *AND* person unconscious — see *Advanced airway management* ([p49](#)).

# Advanced airway management



Person must be **unconscious** for all these procedures. Advanced airway management skills are needed.

## Laryngeal mask airway (LMA)

For **unconscious** person, to make sure they have enough oxygen, or as alternative to endotracheal intubation.

### Attention

#### Risks of using LMA

- Doesn't fully protect against aspiration
- If person not completely unconscious — may cause gagging, vomiting, or spasm of larynx (rare)
- If tube in wrong place — fills stomach with air

- Inserting LMA should take 10–20 seconds, and no more than 30 seconds — about as long as you can hold your breath
- Person must be unconscious
- Can be done by 1 person

- If breathing not adequate, too laboured, too shallow, too slow — support with oxygen via bag-valve-mask and nasopharyngeal or oropharyngeal airway
  - Replace nasopharyngeal/oropharyngeal airway with LMA if
    - Unable to ventilate with bag-valve-mask
    - *OR* able to ventilate but remains in coma
  - Continue supporting ventilation with bag-valve-mask resuscitator
- Amount of air needed to inflate cuff written on side of tube or on small balloon — usually 10–20ml for LMA size 3–5

If cervical spine injuries suspected — take great care when positioning head.

- Helper must support head in neutral position as much as possible
- In trauma — once airway adequate/secure put on cervical collar ([p66](#))
- Minimise movement of head and neck — see *Manual in-line immobilisation* ([p64](#))

### What you need

- 1–2 helpers if available
- Suction equipment with rigid suction tip attached to tubing and flexible suction tubes
- Bag-valve-mask with oxygen connector
- Oxygen equipment with oxygen tubing connected

- Right size disposable LMA
- 20mL syringe
- Water-based lubricant
- Adhesive tape to secure LMA to face (eg 2.5cm brown *Elastoplast*)
- Stethoscope
- End tidal CO<sub>2</sub> detector if available

## What you do

- Select LMA. Suggested size guide
  - Size 5 — adult large (more than 70kg)
  - Size 4 — adult normal (51–70kg)
  - Size 3 — adult small (30–50kg)
  - Size 2 — child (5–29kg)
  - Size 1 — neonate (less than 5kg)
- Inflate cuff with syringe to check cuff airtight, not perished. Let down but leave small amount of air in cuff to help with insertion
- Lubricate underside of mask if needed, person's saliva may be enough
- Put head in neutral position — F 2.24
  - OR sniffing position — F 2.21 ([p46](#))
- Hold mask so opening faces tongue
- With index finger of main (dominant) hand on top rim of mask, put into person's mouth, keep firmly against hard palate — F 2.25
- Push down or forward using straight or rotating movement, hand in position as per F 2.25
- Tip of mask is now seated in upper oesophageal sphincter above the larynx — F 2.26
- Inflate cuff fully (approximately 20mL of air). LMA tube may move out a little
- Connect bag to tube with **oxygen** running at 12–15L/min
- Do first assisted breath
- Listen with stethoscope over lungs and epigastrium, watch chest wall to see if it expands on inflation
  - If stomach gurgles, chest doesn't expand — LMA is in wrong place
    - Deflate cuff and pull out
    - **Hyperventilate with oxygen by bag and mask for at least 1 minute before trying again**
- Secure to face with tape. Skilled operator must keep hands on LMA until securely taped
- Continue manual bag-valve-mask ventilation as per CPR schedule ([CARPA STM p12](#))



2.24



2.25



2.26

## Intubation — with endotracheal tube

- Only used when person **unconscious**, airway obstructed and can't be established by other methods, including simple airway opening manoeuvres or LMA
- Needs 2 or more trained practitioners
  - If not available — attempt lifesaving surgical airway, emergency cricothyroidotomy ([p54](#))

### Attention

- You need helper to do this procedure
- Putting in endotracheal tube **should take approximately 20 seconds but no more than 30 seconds** — about as long as you can hold your breath
- **Always double check that tube is in right place** — if it isn't person can quickly die

### Risks of intubation include

- Oesophageal intubation and death if not fixed early
  - Tube dislodgement and occlusion resulting in death if not fixed early
  - Right main bronchus intubation with left lung collapse and underventilation (hypoxia and hypercarbia)
  - Regurgitation and aspiration
  - Chipped or dislodged teeth
  - Bruised lips
- **Cricoid pressure** can be used to help prevent regurgitation of stomach contents. Only use if asked to by person doing procedure

If cervical spine injuries suspected — take great care when positioning head.

- Helper must support head in sniffing position ([p46](#))
- Limit movement of head and neck — see *Manual in-line immobilisation* ([p64](#))

### What you need

- 1–2 helpers if possible
- Suction equipment with rigid suction tip attached to tubing and flexible suction catheter
- Bag-valve-mask with oxygen connector
- Oxygen equipment with oxygen tubing connected
- Laryngoscope — usually a size 3 or 4 curved blade, sometimes straight blade for children. Check that light is bright
- Endotracheal tube of correct size

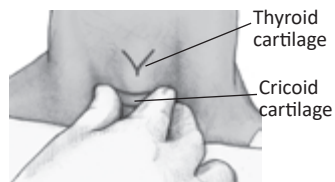
A quick way to choose size is to match to diameter of person's little finger.

- Women — 7.0–7.5mm id (id = internal diameter)
- Men — 8.0–8.5mm id
- Children —  $(\text{age} \div 4) + 4$

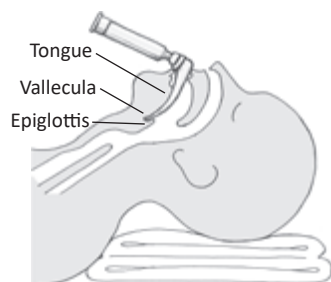
- Disposable introducer stylette to stiffen tube (recommended)
- 10mL syringe
- Long-nose forceps (may be needed)
- Water-based lubricant
- Cloth tape long enough to tie around tube then around base of head
- End tidal CO<sub>2</sub> detector if available
- Oropharyngeal airway (p45)
- Stethoscope

## What you do

- Put head in sniffing position (p46)
- Attach oximeter, rhythm monitor, BP cuff
- In trauma ask helper to support head — see *Manual in-line immobilisation* (p64)
- Pre-oxygenate for 2 minutes with firmly applied bag-valve-mask *OR* non-rebreather mask
- Position lightly lubricated stylette within ETT. Make sure that it is at least 15mm short of the leading edge of the ETT and not poking through. Can kink it over at top to stop it slipping in too far
- Put lubricant on tube, test cuff, then fully deflate it
- If using cricoid pressure ask skilled person to apply until cuff inflated — F 2.27
- Open person's mouth using fingers of right hand
- Hold laryngoscope in left hand, put blade into right side of mouth, push tongue to left
- Move blade to middle as you advance toward base of tongue, at the same time gently push lower lip away from blade with index finger
- Suction out secretions etc
- **Using curved blade**
  - Assess anatomy — most people are size 3 or 4
  - Slide tip of blade into groove between base of tongue and pharyngeal surface of epiglottis (vallecula) — F 2.28
- **Using straight blade** — cover the epiglottis with the blade
  - Maintain angle of 45° to horizontal, lift up laryngoscope handle to expose glottic opening. **Do not** use teeth for leverage



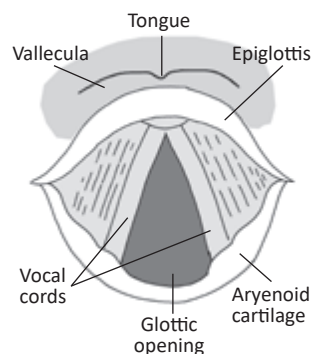
2.27



2.28

- Should be able to clearly see structures of epiglottis and vocal cords — F 2.29

- If you can't see vocal cords — try **BURP** (Backward Upward Rightward Pressure) on thyroid cartilage to improve laryngeal position
- If you still can't see vocal chords — **do not** try to insert tube
  - Stop procedure, continue bag-valve-mask ventilation, readjust patient positioning



2.29

- Insert endotracheal tube until you see cuff pass between vocal cords
  - Tip of tube will be about halfway between cords and where trachea divides into 2 (carina). In average-sized adult, depth marking on side of tube will be between 19–23cm at front teeth
- Remove laryngoscope while holding tube in place
- Remove introducer while holding tube in place
- Keep hold of tube until it is tied in
- Inflate tube cuff with enough air (5–10mL) to seal it within person's airway
- Insert CO<sub>2</sub> detector between ETT and bag resuscitator
- Connect bag to tube with **oxygen** running at 12–15L/min to fill reservoir bag and ventilate — F 2.30

- Start ventilation and

- Look for
  - Chest movement
  - Rectangular CO<sub>2</sub> trace
  - *OR* if using a colorimetric detector — cyclical colour changes from purple to yellow to purple with ventilation



2.30

- Listen for
  - Air entry over top of both lungs (apices)
  - Gurgling at epigastrium (tube in the oesophagus)
- Use enough **oxygen** to maintain O<sub>2</sub> sats at 94–98% *OR* if moderate/severe COPD 88–92%
- If stomach gurgles *OR* no CO<sub>2</sub> or colour change *OR* chest doesn't expand — tube is in wrong place
  - Use suction with large soft catheter through endotracheal tube to suction out air and fluids then deflate cuff and pull out
  - **Give oxygen by bag-valve-mask for at least 1 minute before trying again**
- If no gurgling and chest expands
  - Listen to top of both lungs to check for air entry
  - If only 1 side of chest inflating — release air from cuff, pull tube back 1–2cm and reinflate. Listen again
- Release cricoid pressure

- Recheck position of depth marker, tie tape around tube then around base of head to secure
- Continue manual ventilation with bag and mask as per CPR schedule (*CARPA STM p12*)

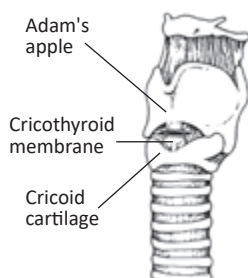
## Emergency cricothyroidotomy

### Finding the cricothyroid membrane

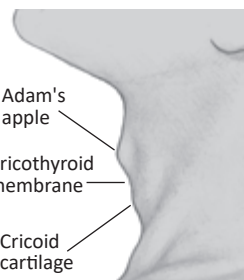
For Needle cricothyroidotomy with IV cannula needle (*below*)

OR Cricothyroidotomy with scalpel (*p56*).

- Cricothyroid membrane is below Adam's apple (thyroid cartilage) and above cricoid cartilage — F 2.31, F 2.32
- Practise on yourself
  - Put finger on Adam's apple and swallow to feel it go up and down
  - Now slide your finger down to just below Adam's apple — F 2.33
  - Small dip here indicates cricothyroid membrane. Pressure is uncomfortable and you may want to cough or gag



2.31



2.32



2.33

### Needle cricothyroidotomy with IV cannula needle

Use for children under 12 years.

Use when no other way of opening airway *AND* child is **unconscious**.

### Attention

- For children under 12 years only
- Provides oxygen. CO<sub>2</sub> will rise — but buys valuable time

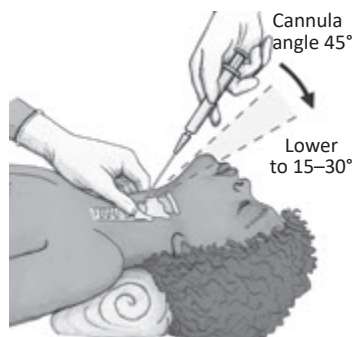
### What you need

- Essential
  - Gloves
  - Padding (eg towel)
  - 2 x large bore **non-retractable** IV cannula 12–14G
  - 2 x 5mL syringe
  - Oxygen tubing with small hole cut about 15cm from one end
  - Oxygen cylinder
  - Tape for holding cannula in place

- If time
  - Surgical disinfectant (eg povidone-iodine, chlorhexidine-alcohol, alcohol wipe)
  - Pulse oximeter

## What you do

- Prepare first syringe
  - Cut small hole in one side of oxygen tubing about 15cm from end
  - Jam end of tubing into barrel of a syringe
  - Connect other end of tubing to oxygen supply at 15L/min
- Clean site (if time)
- Put enough padding under child's shoulders to tip head back, make voice box (larynx) stand out
  - Neck is hyperextended — not a neutral position
- Put on gloves
- Connect cannula to second syringe, if cannula allows this
- Find cricothyroid membrane ([p54](#))
  - Hold still with firm steady pressure. **Do not** let go until cannula in place
- Put cannula needle at 45° angle to skin over cricothyroid membrane. Puncture skin and cricothyroid membrane while drawing back on syringe. Aim toward feet at 45° angle to skin — F 2.34
- As soon as air comes back into syringe (aspiration), lower the angle to 15–30° — F 2.34
- **Push cannula in another 5mm, check you can still pull air back into syringe**
- Push plastic cannula in fully, off the stylet (inner needle)
- Hold cannula in place with one hand, **do not** let it go
- With other hand connect first syringe with oxygen tubing to cannula
- Use jet ventilation
  - Thumb over hole cut in tubing for 1 second on – 4 seconds off — F 2.35
- Check O<sub>2</sub> sats with pulse oximeter
- If plastic cannula blocks — unhook. Can put in another cannula close to first
- **If it keeps blocking** — consider doing cricothyroidotomy with scalpel ([p56](#))



2.34



2.35

## Cricothyroidotomy with scalpel

Use for children 12 years and over and adults.

Use when no other way to keep airway open *AND* person **unconscious**.

### Attention

- **Do not** use if person under 12 years old — unless needle cricothyroidotomy ([p54](#)) and jet ventilation fails
- For **incision site** — see *Finding the cricoid membrane* ([p54](#))

### What you need

- Gloves
- Goggles
- Scalpel handle and blade *OR* disposable scalpel
- Airway device — tracheostomy tube *OR* *Mini Trach* tube *OR* size 6 ETT, *OR* prepared oxygen tubing or other firm tubing
  - Can use oxygen tubing as alternate airway by cutting the end off and cutting a small hole about 15cm from the end
- Padding to hyperextend neck
- Artery forceps
- Oxygen tubing and resuscitation bag



2.36

### What you do

- Prepare airway device
- Stand beside patient on same side as your dominant hand. If right handed — stand on person's right side
- Clean site, put padding under person's shoulders to tip head back (hyperextend neck) and make voice box (larynx) stand out
- Put on gloves and goggles
- Find cricothyroid membrane ([p54](#)). Use non-dominant hand to hold and **do not** let go until airway established
- Be ready for blood to be coughed in your face
- In one movement, with blade directed horizontally across trachea, stab cricothyroid membrane and drag (cut) toward you 20mm — F 2.36
- Widen opening with artery forceps — F 2.37, or gloved little finger
- Put in tube being used for airway
- Give **oxygen** at 15L/min
  - If using tracheostomy tube, ETT, *Mini Trach* tube — attach bag-valve
  - If using prepared oxygen tubing — attach to oxygen source
- Jet ventilation with oxygen tubing — F 2.35 ([p55](#))
  - Thumb over hole for 1 second on – 4 seconds off
- Check O<sub>2</sub> sats with pulse oximeter



2.37

**Remember ABC** — When **A**irway and **B**reathing secure, check **C**irculation.

## Chest procedures



### Sealing a 'sucking' chest wound

Emergency life-saving procedure to manage chest cavity with open wound.

#### Attention

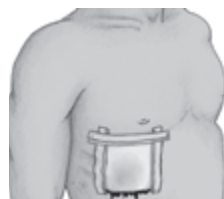
- Never take out object that is sticking into chest (eg knife, spear)
- Person will need
  - IV cannula
  - **Oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
    - Non-rebreather mask 10–15L/min
  - Probably a chest drain ([p59](#))
- **Do not** use gauze or combine to seal wound, may cause tension pneumothorax

#### What you need

- Sterile gloves
- Piece of thin, flexible, waterproof paper or material a bit bigger than wound (eg *Op-site* or defibrillator pad packet, thin strong paper)
- Tape

#### What you do

- Put on sterile gloves
- Cover wound with waterproof paper and seal well with tape on 3 sides, leaving bottom edge free — F 2.38
  - Forms vacuum seal around wound when person breathes in, but lets air in chest cavity escape when person breathes out
  - Allows blood to drain from wound
- If object sticking into chest — bandage ([p226](#)) to make firm and secure but still open on one side
- Watch for tension pneumothorax ([CARPA STM p68](#))



2.38

Return to *Assessing trauma — primary and secondary survey* ([p35](#)). When breathing problems treated, go to **C** — Circulation and controlling bleeding.

### Needle decompression of tension pneumothorax

Emergency life-saving procedure to let out air trapped in chest cavity, when lung collapsed. Makes breathing easier, improves BP.

- **Need to act very quickly**

## Attention

If/when plastic cannula blocks, tension pneumothorax can come back. Put in new cannula as needed, close to original position.

- If air doesn't whoosh out when you put needle in —
  - Make sure you are in injured side. See *Signs of injured side of chest (below)*
  - If confirmed in the injured side — try another location closer to armpit (laterally) in same rib space

## Look for

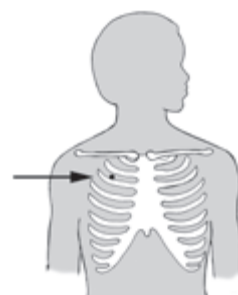
- **Signs of injured side of chest (localising signs)**
  - Tenderness, bruising, crepitus/crackling on palpation
  - Hollow sound when tapping
  - Reduced air entry, reduced movement
  - Windpipe (trachea) has moved away from this side (deviation). Often hard to see/feel
- **Generalised signs**
  - Severe shortness of breath
  - Person very frightened
  - Heavy sweating (diaphoretic)
  - Bulging of neck veins — late sign
  - Severe shock — pre-terminal sign
  - Cardiac arrest with pulseless electrical activity (PEA) — terminal sign

## What you need

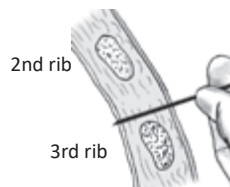
- Gloves (sterile not necessary — life-threatening problem)
- Alcohol wipes
- 14G non-retractable cannula (several)
- 20mL syringe (optional)

## What you do

- If person conscious — explain procedure
- Leave person in position they find most comfortable
- Give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
  - Non-rebreather mask 10–15L/min
- Find site for needle — space between second and third ribs (intercostal space) in mid-clavicular line — F 2.39
- Clean site with alcohol wipe
- Insert cannula to full length at 90° to chest wall and just above upper edge of third rib (to avoid neurovascular bundle) — F 2.40
  - Can use 20mL syringe attached to cannula needle. Allows release of air on entry to pleural space



2.39



2.40

- Remove metal needle, leaving plastic cannula in place — shouldn't need to be taped
- Check breathing regularly to make sure it is improving
- Put in proper chest drain as soon as possible — leave cannula in until then

Return to *Assessing trauma — primary and secondary survey* (p35). When breathing problems treated, see *C — Circulation and controlling bleeding*.

## Putting in chest drain

Intercostal chest drain lets out air or blood trapped in chest cavity, makes breathing easier.

- Use after doing needle decompression (p57)
- If person stable — can be delayed until help arrives

### Attention

- **Never** use big metal trocar that comes with chest drain to make hole in chest
- Always put drain into chest by going directly above **top** of lower rib. There are blood vessels and nerves along bottom of ribs
- If haemothorax (*CARPA STM p69*) — blood may come down drain tube, as well as air

### What you need

- Helper
- Marking pen
- Sterile dressing pack
- Sterile gloves
- Sterile gauze
- Povidone-iodine or chlorhexidine in alcohol antiseptic solution
- Sterile towels/drapes
- 2 ampoules (10mL) of lidocaine (lignocaine) 1% + adrenaline (epinephrine) (1:100,000)
- 10mL syringe and long 23G needle
- Sterile scalpel
- 2 long artery forceps (eg large *Kelly* haemostats)
- Intercostal drain
- Heimlich valve or underwater seal device
- Suture set with 3.0 silk/nylon/prolene for skin closure
- Strong suture for securing tube — size 1 mersilene or size 2 silk
- Vented urine/fluid collection bag/set and tubing
- 2 large clear dressings

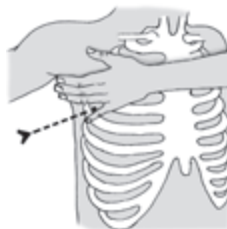
- **Intercostal catheter.** Size guide — use smaller size for draining air, larger size for draining blood/fluid
  - Newborn 8–12
  - Infant 12–16
  - Child 16–24
  - Adolescent 20–32
  - Adult 28–32



2.41

## What you do

- If person conscious — explain procedure
- Position person, supported by pillows, with hand behind head on injured side to expose as much of chest and underarm (axilla) as possible — F 2.41
- Attach available monitoring equipment (eg BP, ECG, O<sub>2</sub> sats), put in IV cannula ([p84](#))
- Give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
  - Non-rebreather mask 10–15L/min
- Painful procedure — give **morphine** IV as analgesic and sedative ([CARPA STM p381](#))
- Mark site with marking pen — F 2.42
  - Fourth or fifth intercostal space just in front (anterior) of mid-axillary line (lower middle of armpit)
- Count rib spaces at front and follow them backward to mid-axillary line with finger. Fourth space is about 3 finger widths below armpit, above level of nipple — F 2.42
- Lay out equipment (**not** metal trocar)
- Use forceps to clamp tube closed at far end
- Open Heimlich valve, check which end connects to intercostal drain (it is marked) — F 2.43 *OR* prepare underwater drain following manufacturer's instructions
- Clean site, drape with sterile towels if possible
- Infiltrate with 8mL (adult) **lidocaine (lignocaine) + adrenaline (epinephrine)** with needle and syringe. Aim to anaesthetise area in intercostal space about 4–6cm wide
  - Give in 2 lots, checking for withdrawal of blood each time
  - Give 4mL just under skin
  - *THEN* give 4mL along top edge of rib below (to avoid neurovascular bundle) — F 2.44, F 2.45
    - When air aspirated you have reached pleural cavity
    - Begin infiltrating as you withdraw needle slowly so anaesthesia includes pleura



2.42



2.43



2.44



2.45

**Remember:** Anaesthetic takes a few minutes to work.

### To put in drain

- Use scalpel to make 3–5cm incision through skin, above and parallel to rib below — F 2.46
- Use artery forceps to blunt dissect. Open and close against muscle to separate tissue down to pleura — F 2.47
  - Support forceps so you are not too forceful — F 2.48
  - Will feel a pop and change in resistance as you enter pleural cavity
  - Open forceps in all directions to enlarge hole
- Replace forceps with gloved finger — F 2.49
  - Sweep finger around gently in all directions to clear away any tissue — F 2.50
  - Make sure you are in chest cavity by feeling the inside surface of ribs with fingertip. You may or may not feel the lung against your finger
- Guide tip of tube in beside gloved finger, aim drain up toward top of lung. Use forceps to help — F 2.51
- Push drain **at least** 2cm past last hole seen in tube, more if person has more fat



2.46



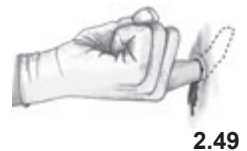
2.47



2.48

### To connect Heimlich valve or underwater seal

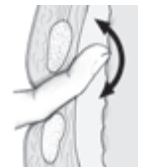
- Look for fogging in tube, a good sign
- Connect Heimlich valve *OR* underwater seal
- Release forceps clamping end of tube
- Check for valve flapping *OR* bubbling/swinging of water
- Collect blood or fluid in vented urine/fluid bag
  - Leave bag vent open to allow draining air to escape. If no vent — cut small hole at top



2.49

### To make drain secure

- Close wound each side of drain with interrupted sutures ([p294](#))
  - Tie long ends of suture material firmly around tube to hold in place. **Do not** use purse string suture
  - *OR* suture tube in place with separate 1.0/2.0 silk or polyester (eg *Mersilene*) stitch 1cm from wound edge. Tie knot compactly, tight enough to indent tube
- Cover with see-through dressing
- Make sure tube not kinked
- Check valve still flapping *OR* water still bubbling/swinging



2.50



2.51

Re-expanding lung is painful. Give extra **morphine** now ([CARPA STM p381](#)).

Return to *Assessing trauma — primary and secondary survey* ([p35](#)). When breathing problems treated, see *C — Circulation and controlling bleeding*.

# Choking

## Attention

- **Total blockage (obstruction)**
  - **Medical emergency.** Immediately life threatening event
  - Unable to cough, cry or talk. Holding throat
  - If unrelieved — unconsciousness and cardiorespiratory arrest soon follow
  - May be reason child with cardiorespiratory arrest can't be ventilated
- **Part blockage (incomplete obstruction)**
  - Coughing, stridor, choking and possibly vomiting

## What you do

### Total blockage (obstruction)

#### Infant

- Sit or kneel. Support infant across thigh or lap in head down, face down position — F 2.52
- Give up to 5 sharp blows with an open hand between the shoulder blades (interscapular)
- If this doesn't work — roll infant over to face up position with head in neutral position
- Give up to 5 chest thrusts — central sternum, sharper than CPR, every 2 seconds — F 2.53
- If this doesn't work and infant conscious — alternate between 5 back blows and 5 chest thrusts
- If consciousness lost or was unconscious when discovered —
  - Start CPR as for basic life support ([CARPA STM p12](#)) (15:2 if 2 operators) with head in neutral position
  - After 30 compressions, open mouth and check for/ remove foreign body. If skilled, use laryngoscope and angled forceps (eg Magills)
- If not improved after 1 minute of CPR — extend neck and perform needle cricothyroidotomy ([p54](#)) and jet ventilation of oxygen
  - **Do not** hyperinflate chest



2.52



2.53

#### Adult or child

- **If standing/sitting and conscious —**
  - Give up to 5 sharp blows with an open hand between shoulder blades (interscapular) — F 2.54



2.54

- If this doesn't work give up to 5 standing chest thrusts
  - Stand behind person with their arms raised, your chest pressed into area between shoulder blades. Place clenched fist on their chest covered by your other hand in same position as CPR — F 2.55
  - 1 thrust per second
- **If on the ground but still conscious** — give up to 5 chest thrusts. Compress central sternum as for CPR
- **If person loses consciousness** — lower to ground, face up, start CPR
  - After 30 compressions, open mouth and check for/remove foreign body. If skilled, use laryngoscope and angled forceps (eg Magills)
  - If unsuccessful — continue CPR
  - If not improved after 1 minute of CPR — extend neck and perform
    - Needle cricothyroidotomy (p54) if under 12 years
    - OR cricothyroidotomy with scalpel (p56) if 12 years or over
  - **Do not** hyperinflate chest



2.55

### Part blockage (obstruction)

#### Do not

- **Do not** give oxygen
- **Do not** force the person to lay down
- **Do not** finger sweep if you can't see cause of blockage (may push object further down)

#### Do

- Call for help
- Stay calm, be reassuring
- Leave person in position they find most comfortable
- Encourage to cough
- If a foreign body can be seen and easily reached — remove it
  - Take care not to push it further into airway
  - **Do no** other interventions
- Observe continuously
- Calmly prepare equipment for needle cricothyroidotomy if under 12 years (p54) OR cricothyroidotomy with scalpel if 12 years or over (p56)

# Immobilising the spine

---



Generally accepted that immobilising spine during treatment, movement or transfer will stop more damage to existing injuries (eg broken neck or spine) — but limited evidence that immobilisation alters outcomes.

If trying to immobilise spine gets in the way of other activities (eg maintaining airway) — delay immobilisation.

## • Immobilise spine

- Any time there is suspicion of spinal injury (*CARPA STM p88*)
- OR trauma and if any of the following —
  - Reduced coma scale score
  - Intoxication (unless person is resistant)
  - Mid-line cervical spine tenderness
  - Limb weakness, numbness, tingling (neurological concerns)
  - Painful injury that may mask (distract from) spinal injury
- No need to immobilise spine
  - For extraction from vehicle if no neurological symptoms and person able to get out by themselves — reassess once they are out
  - Stab or gunshot wounds to head or neck but no signs of spinal injury

## Manual in-line immobilisation

### Attention

- **Keep head and neck in-line with spine at all times**
- Ask helper to look after person and their head, even after collar on and/or immobilised by straps
  - Give reassurance
  - Monitor breathing and level of consciousness
  - Person may become unstable or vomit
- Make sure back pockets are empty, nothing caught under person
- Mind your back when lifting, bend your knees
- Read manufacturer's instructions, practise using boards and stretchers
  - Many types of stretchers
  - For scoop stretcher — know how to make leg support longer or shorter, take 2 halves apart, put back together

### What you need

- Helpers
- Light-weight cushioning or rolled towels to support head
- Folded blankets, sheets, towels etc for extra padding
- Semi-rigid collar (*p66*), measured for right size
- Scoop stretcher or immobilisation board

- Triangular bandages. Use ordinary ones if you have nothing else

### What you do

- Apply collar
- Log-roll onto side, check back, put board/stretcher under person, log-roll onto back on board/stretcher
- Put light-weight cushioning or rolled towels either side of head

- **Secure person so their body can't move in any direction**
- Straps secured to board/stretcher, firm but not tight
  - **Do not** stop breathing, cut off blood or nerve supply to hands or feet, flatten IV lines etc
- Strap body, with arms across chest, **before** strapping head
- Fix chin strap across collar's rigid frame and secure to board/stretcher — F 2.56
- Unstrap forehead **before** making any changes to torso position
- Always tie feet together before strapping rest of legs



2.56

- When board/stretcher picked up, check there is no movement of person or loosening of straps

### Taking off crash helmet

#### Attention

- Airway **always** takes priority. Need to remove helmet to fully assess and maintain airway, assess head and neck
- Some emergency services have a policy of not taking off helmets before person reaches hospital unless there is no airway

### What you need

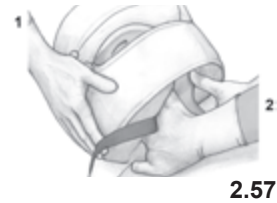
- Helper 1
- Helper 2

### What you do

- Lie person flat on back if you can
- Tell person what you are doing
- **Helper 1**
  - Keep head still with
    - Knees on either side of head
    - Hands on either side of helmet with fingers hooked lightly underneath — F 2.57

• **Helper 2**

- Cut or undo chin strap
- Put thumbs on upper jaw with fingers around back of lower head (not covered by helmet), stabilise head — F 2.57
- Be prepared for weight of head, don't let head drop back when helmet comes off



2.57

• **Helper 1**

- If person wearing glasses — let go of helmet and take glasses off
- Grip helmet under lower edge on either side, very gently expand it outward
- At same time tilt helmet forward slightly (to pass over back of skull) and use backward and forward movement to 'walk' helmet over nose and off head — F 2.58
- Be very gentle, it may take some minutes to remove helmet



2.58



2.59



2.60

• **Helper 1** takes over from **Helper 2** —

F 2.59, manually immobilises neck in in-line position — F 2.60

When helmet removed — return to *Assessing trauma — primary and secondary survey*, see *A – Airway and cervical spine (p36)*.

## Measuring and putting on semi-rigid collar

**Emergency procedure** to prevent further damage to neck (cervical spine) after trauma.

### Attention

- **Make sure you keep neck immobilised** while you measure and fit collar. Someone needs to keep hold of head until whole body fully immobilised
- At accident scene, if dangerous mechanism, and head, neck or spinal injury — put on collar, even if person is or has been walking around
- Use semi-rigid collar *OR* some jurisdictions currently recommend soft collars

- Putting on semi-rigid collar only the first step. To complete immobilisation see *Manual in-line immobilisation (p64)*
- **Semi-rigid collar must fit properly** — not too big or too small. Person must not be able to move head inside collar

**Note:** Collars are packaged flat, need to be made up into circular band. Can look confusing when you are stressed. Measure and put on semi-rigid collars as part of your routine emergency practice.

## What you do

### Measure person for collar

- Tell person what you are doing — even if unconscious
  - Ask them to stay very still, **not** try to help
- Take off any jewellery
- With head in neutral position, draw imaginary line from top of shoulders and another from tip of chin. Use your fingers (or measuring tool in pack) to measure space between top of shoulder and chin — F 2.61
- Choose right collar size by measuring same distance from lower edge of rigid plastic to black fastener on side — F 2.62 *OR* follow instructions in pack
- Make up collar into circular band (follow instructions)
- Fold in velcro band to prevent it sticking to hair, seat, glass, dirt etc
- **Ask helper to keep holding either side of head**



2.61



2.62

### THEN

- Slide chin piece up chest wall until chin supported properly, with head still in neutral position — F 2.63
- Keeping firm, gentle grip on collar around neck and under chin (to keep head still), slide back of collar band around/under neck and bring velcro band round to fasten
- *OR* if person obese or has lots of thick hair — may be easier to slide back of collar band around neck first — F 2.64, then position chin piece and fasten velcro band
- Tighten velcro until chin and neck fully supported — F 2.65
- Check position and fit



2.63



2.64



2.65

### Check

- Collar on straight — nose, chin, collar, umbilicus in straight line
- Collar holding person's head in neutral position
  - Neck not tilted backward (hyperextended)
- Chin resting securely on hard plastic chin support of collar
- Ears not trapped under collar
- Collar not pinching skin on shoulders or squeezing neck

If there are any problems — start again.

When cervical spine problems treated — return to *Assessing trauma* — *primary and secondary survey*, see *B – Breathing* (p37)

## Immobilising neck using semi-rigid collar

### Attention

- If person still in vehicle and unable to get themselves out or has weakness or sensory disturbance — use extrication device (p70)
- **Ideally neck should stay in neutral position.** If bent or rotated when found — move gently to neutral position and immobilise
- If airway not compromised — **do not** move head if
  - By doing so, their airway becomes blocked
  - It makes their neck spasm
  - It gives them more pain
  - It causes numbness or tingling of arms or legs
  - It causes loss of limb movement
- If any of above — support head in that position



2.66

### What you do

If person lying on back (supine) and head can be put in in-line neutral position —

- Put knees either side of head to stop it moving — F 2.66, check response and airway (p36)
- Put hands either side of head with index fingers in notch between upper teeth and lower jaw — F 2.67. Don't cover ears
- Gently bring head into line with spine and shoulders (neutral position)
- Measure and fit semi-rigid collar (p66)
- Support head with cushioning/rolled blankets or towels
  - Make sure cushioning secured/taped
- Have someone keep their knees or hands either side of head — F 2.68



2.67



2.68

When cervical spine problems treated — return to *Assessing trauma — primary and secondary survey*, see *B – Breathing* (p37).

## Log-rolling person

If person needs to be turned over (eg to check back or to put on back board) — use 'log-roll' technique.

### Attention

**Minimum of 3 people needed when log-rolling** to keep head, neck and body in straight line and protect spine from further injury. **Do not** try with less.

## What you do

### If person lying on back (supine) and head can be put in in-line neutral position

- Put on a semi-rigid collar ([p66](#))
- **Helper in charge** (the boss)
  - Supports head and neck throughout roll
  - Ensures helpers all roll person at the same time
- **Other helpers**
  - Put board/stretcher beside person, if using
  - Put person's arms by sides, palms turned inward or flexed over their chest
  - Kneel on one side of person, hold legs or part of body — F 2.69 (if only 2 helpers see hand positions F 2.71)
- **Boss** calls to roll person when everyone in position
- **Helpers** roll person onto side toward helpers, keeping head, neck, upper back, lower spine in straight line — F 2.70
- Roll back onto board/stretcher if needed



2.69



2.70

### If person lying on stomach (prone)

- **Helper in charge** (the boss)
  - Supports head and neck in position head is facing — F 2.71 throughout the roll
  - Ensures helpers all roll person at the same time
- **Other helpers**
  - Put board/stretcher beside person, if using
  - Put person's arms by sides, palms turned inward
  - Kneel beside person, hold legs or part of body — F 2.71
- **Boss** calls to roll person when everyone in position
- **Helpers** roll person onto side, **away** from direction head is facing, keeping head, neck, upper back, lower spine in straight line — F 2.72
- Keep rolling until person on back on board/stretcher, if using
- Put on semi-rigid collar ([p66](#))



2.71



2.72

Return to *Assessing trauma — primary and secondary survey* ([p35](#)).

## Using long boards — from lying position

Person lying on back, semi-rigid collar fitted.

### Attention

- Make sure back pockets empty, nothing caught between person and stretcher
- Make sure scoop stretcher is properly orientated — head at head end
- Scoop stretcher comes apart down centre of its length. Each half can be put under person lying on back without need to log-roll

### What you do

- Put padding (eg towels, clothing) on board where bottom, heels, elbows will go. Need padding for bumpy ride ahead
- If not using scoop stretcher — log-roll ([p68](#)) person onto side, put board underneath, roll onto board
- Secure body (torso) and arms with straps
- Secure head. Keep head and neck in-line with spine
  - **Do not** flex backward — F 2.73 or forward — F 2.74
- Padding may be needed to keep neck and spine in neutral position
  - Under head for adults and older children — F 2.75
  - From under shoulders to buttocks for child under 7 years — F 2.76
- Put light-weight cushioning or rolled towels either side of head
- Put more padding under elbows and heels
- Tie feet together
- Put rolled blankets either side of legs (if room) before strapping, to stop sideways movement
- Using 4–6 helpers, lift board evenly. Someone stays at head of board to watch for and prevent movement of head and neck during lift
  - **If movement** — fix strapping
- Put board evenly onto stretcher trolley



2.73



2.74



2.75



2.76

## Using extrication device — from sitting in vehicle

### What you need

- 3 people, more if you have them
  - Helper 1 = head supporter
  - Helper 2 = device fitter
  - Helper 3 = lifter
- Extra helpers to lift person out of vehicle

## What you do

- Work out best way to remove person after they have been strapped to device (eg side doors, back or front window) — depending on state of crashed vehicle



2.77

### Helper 1

- Get behind person (if possible)
- Put hands either side of head, with thumbs against back of head and fingers over each cheek in notch between upper teeth and lower jaw — F 2.77. Don't cover ears
- Bring head in-line with spine and shoulders (neutral position)
- Support head while Helper 2 fits semi-rigid collar (*p66*), then device (*below*)

### Helper 2

- Fit semi-rigid cervical collar, undo seat belt
- Release and position all straps on extrication device
- Put device into place down length of person's back
- Extra padding may be needed behind head and/or shoulders to support head and spine in neutral position
- Firmly strap person to device
  - Start with middle strap around torso
  - Then lower torso
  - Then straps under buttocks and between legs. Pull straps firmly. Take care not to include gear stick
  - Finish with forehead strap
- Check person firmly supported
- Take over supporting head from Helper 1

### Helper 1

- Come around to front of person, hold and support head from this position so Helper 2 can let go
- Keep holding person's head as they are taken out

### Helpers 2 and 3

- Prepare to remove person as worked out earlier
  - *Examples:* Take off vehicle door, bend door right back against side of frame, take glass out of back window

### THEN

- Put person straight onto ambulance/vehicle stretcher in device. Try not to move them any more than you have to
- Unclip straps around groin and hips, try to straighten legs. Check person's condition again — **ABC**
- Leave device in place if not needed for another person. Strap person to long board or stretcher before moving them again
- Have 2 helpers help guide head of stretcher as loaded into ambulance

# Immobilising a snake bite

Use for snake or funnel web spider bites, blue ringed octopus or cone shell stings.

## Attention

- Use this procedure for bite on limb
  - If bitten on head or torso — just bandage bite site
- Keep monitoring
- Keep person calm, reassured, lying or sitting still
- **Do not** wash, cut or drain wound, or apply suction
- Work quickly, don't bother to remove clothing



2.78

## What you need

- 3 or more 10–15cm tension/elastic compression bandages
  - If elasticised bandages not available — use crepe bandages
- Splint
- Tape
- Marker/pen, for marking bite site
- Stretcher



2.79

## What you do

- Wrap first bandage over bite site — F 2.78
- Start second bandage at fingers or toes, wrap bandage/s firmly up limb as far as possible — F 2.79
  - Include fingers/toes in bandaging, to stop them moving and moving muscles
  - Leave tips of fingers/toes visible to check circulation
  - Mark bite or sting site on bandage — F 2.79
- Bandage firmly as for sprain — hard to insert fingers under bandage, not tight enough to cut circulation
  - Aim is to prevent spread of venom by
    - Stopping muscle, limb, joint movement
    - Compressing lymphatic vessels
- Use last bandage/s to bind limb to splint — F 2.80, F 2.81
- Bites to arm or hand. Put arm in sling to stop movement — F 2.81
  - Have elbow bent
- Bites to leg or foot. If no splint handy — tie legs together — F 2.82
- Now immobilise whole person — use stretcher if available



2.80



2.81



2.82

# Sexual assault in adults

Sexual assault is any sexual act without consent. Legal definitions vary in different states/territories.

Sexual assault services will provide expert advice, even if not making a formal referral. Know your local sexual assault service contact numbers.

- If under 18 years — see *Child sexual abuse (CARPA STM p146)*
- You must know what is required under your state/territory legislation, including mandatory reporting requirements

## Do first

- **Contact doctor or sexual assault service for advice**

**Remember** — *Assessing trauma — primary and secondary survey (p35)*

- Look for and manage life-threatening and major injuries straight away
- Urgent medical treatment always takes priority over forensic matters
- If unconscious or has condition that impairs judgement (eg under influence of drugs, intellectual disability) — **medical consult**
- Make sure victim and you are safe. Arrange evacuation, call police if needed
- Use same gender staff, if possible
- Ask if they want friends or family with them
  - **Be aware:** Person may not have told partner, family, friends
  - Consider privacy and confidentiality, especially in small community

## Talk with person about assault

- Believe person, take allegation seriously, treat with dignity and respect. Acknowledge the courage it has taken to tell you about assault
  - Being believed is the single most important thing that contributes to a person's recovery
  - **Remember:** Offenders can give reasonable explanations and may be leaders or trusted people in community
- Help person be in control of how much they have to talk
  - Only ask for details that will guide initial examination and clinical care
  - Let them know they don't need to tell you all the details of assault
  - Ask open-ended questions where possible
  - Record answers so you don't have to ask again
- Listen and hear what person is saying
  - Acknowledge their pain but don't get caught up in your own responses and emotions
  - Reassure person their feelings and reactions are normal and OK, take care not to minimise or discount them
- Not your job to get detailed medico-legal statement or verify accuracy of information. But your notes may be used in legal proceedings, make sure they are accurate and legible

- **Do not** be judgemental or confrontational. **Do not** ask qualifying questions
  - *Examples:* “Why were you there?”, “Why did you do that?”
- **Do not** say anything that makes person feel responsible for or guilty about the assault
  - A good statement can be “It's not your fault that this happened. You might have been vulnerable but that doesn't make you responsible”
- Make sure person understands
  - Assault can be reported at any time but collection of evidence (forensic exam) must be done as soon as possible and **best within 72 hours**
  - State/territory legislation may mean you need to report assault to police or other agency (eg mandatory reporting of domestic/family violence in NT)
    - If no mandatory report needed — person decides whether or not to report to police
- Give clear, accurate information, including written information, about options for legal, medical, counselling support
- Assess safety — may be safety from alleged assailant or from self. Work with person to develop safety plan (*WBM p326*), if appropriate
- Promote concept of future recovery. They have survived the assault. Talk with person about what they need and how you can help them recover

### Ask

- Was strangulation (*p77*) involved, especially if intimate relationship assault
- Do they want to report assault to police
  - Can change their mind any time during clinical care
  - Contact sexual assault service if
    - Agree to have police involved
    - Undecided about involving police but agree to forensic exam
  - If sure they don't want legal action — forensic exam not needed, strongly encourage medical check (*p75*)

If person thinks they may take legal action, are seriously injured, or safety not assured — strongly encourage and help to contact police as soon as possible after injuries treated.

### Do

#### Arrange forensic examination if needed

- Forensic exam assists a criminal investigation by
  - Collecting physical evidence samples (eg traces of bodily fluids containing DNA) for the police
  - Thoroughly documenting injuries
- Staff without specific training in sexual assault assessment should **not** do forensic exam of sexual assault victim
- If no specifically trained staff available and travel declined — **specialist sexual assault service consult**

- Determine where examination will take place and who will do it
  - If going to hospital — forensic exam, assessment by sexual assault service may be offered at hospital
  - If not going to hospital — refer and support to attend sexual assault service in town. Doctor will arrange appointment with most appropriate service
- **Medical consult**, talk with police (if involved) to arrange transport
  - Best travel option (eg evacuation, mail plane, road) depends on urgency of referral and availability. Medical, social, safety factors all relevant

### Preserving forensic evidence

- If sending to town for forensic exam — get advice from sexual assault service about preserving evidence while waiting and during transfer
  - Depends on nature of assault, time delay, how much clinical care needed before appointment
- Wear gloves during any medical examinations and change frequently to prevent DNA contamination
- If wounds need treatment straight away — only clean areas needed for safe medical management. **Sexual assault service consult**
- Advise best not to shower. If not possible — try not to wash areas involved in assault (eg genitals, neck if suction mark, arm if fingertip bruising)
- Oral rape or injuries — ideally don't eat, drink, clean teeth, rinse mouth until after forensic exam. Can be very difficult for person, so talk with police or sexual assault service about collecting these samples if delay in transfer
- Get advice from sexual assault service on how to collect and store preliminary specimens if needed — could include specimens before or after using toilet or removing clothing
- Obtain consent before collecting any specimens

### Serious injuries

- Give urgent clinical care
  - Only clean wound areas as needed for urgent treatment (eg wound edges before suturing)
  - If need to do vaginal or rectal exam before forensic exam — look carefully and document any external genitoanal injury before speculum exam
    - Use warm water or only small amount of lubricant
    - If lubricant used — send name, sample in yellow top jar in with person for comparison
- Give **pain relief** as needed ([CARPA STM p377](#))
- **Medical consult**, send to hospital

### Medical check — if staying in community

- If person decides not to have forensic exam — **medical consult**
  - Doctor should talk with sexual assault service about management

- For social or emotional reasons, may be better for person to be referred to service outside home community
- Check temp, pulse, RR, BP, O<sub>2</sub> sats — work out REWS (*CARPA STM p6*)
- Examine whole body carefully. Document injuries
- Treat remaining injuries. Give **pain relief** if needed (*CARPA STM p377*)
  - If painful or bleeding genital or rectal injuries — **medical consult**
- Do full STI check – man (*CARPA STM p272*), woman (*WBM p238*), young person (*CARPA STM p276*)
  - Offer presumptive treatment for possible STIs. If you don't know protocol for your community — check with sexual health unit
  - If risk of HIV exposure — talk with sexual health unit urgently. Need to start preventive treatment as soon as possible, within 72 hours of assault
  - Consider and manage risk of hepatitis (*CARPA STM p363*)
- If vaginal rape and woman of childbearing age not using contraception — do urine pregnancy test (*WBM p279*), offer emergency contraceptive pill (*WBM p353*)
  - Best in first 24 hours but can give up to 5 days after
- Give information about available counselling services, offer to call phone counsellor to talk with person now
- Assess risk of self-harm/suicide (*CARPA STM p207*)
- Try to make sure person has safe place to stay — with relatives in same or another community, women's shelter — see *Domestic and family violence* (*CARPA STM p54*)
- Ask to come back in 2–3 days for review, or sooner if upset or worried
- Remind them that legal action is still possible, but more difficult, in the future

### Follow-up

- See again in a few days, or as soon as person wants
- Be gentle but thorough. Ask about and check
  - Physical complaints and symptoms
  - Injuries — oral, pelvic, genital, urinary, anorectal
  - Contraception, pregnancy
  - STIs. If positive test/s — see *STI management* (*CARPA STM p278*). If symptoms — see relevant protocol
  - Coping responses — counselling, medicines, alcohol or drug use, cigarette use (more/less)
  - Mood, emotional wellbeing. If anxious, depressed, not coping — see *Mental health assessment* (*p112*), offer referral to mental health service
  - Current and relevant past medical, surgical, psychiatric history
  - Social — relationships, housing, police investigation
- 2–3 weeks after assault
  - Consider repeat STI check – man (*CARPA STM p272*), woman (*WBM p238*), young person (*CARPA STM p276*)

- Offer urine pregnancy test (*WBM p279*)
  - If pregnancy test positive — talk with woman about options, including termination of pregnancy (*WBM p314*)
  - Consider forensic implications of pregnancy, talk with doctor from sexual assault service
- 3 months after assault
  - Repeat bloods for syphilis, HIV, hepatitis B
  - If treatment given for positive STI results — test for reinfection

### Long-term follow-up

- Emotional problems may continue or get worse after sexual assault
  - Anxiety, depression, post-traumatic stress common — can affect relationships, families, communities
- Promote concept of recovery, plan together how this will happen
  - Consider referral to counselling, mental health service, social and emotional wellbeing program

## Strangulation

**Always** ask about this, especially in intimate relationship assaults. Non-fatal strangulation in intimate partner violence a risk factor for later homicide.

### Ask

- What was used
- Loss of consciousness
- Memory difficulties
- Trouble swallowing
- Trouble breathing
- Voice change
- Loss of bladder or bowel control
- Headache
- Pregnancy status

### Check

- Temp, pulse, RR, BP, O<sub>2</sub> sats — work out REWS (*CARPA STM p6*)
- Coma scale score (*CARPA STM p74*)
- Shortness of breath, noisy breathing (stridor), hoarse voice
- Tender laryngeal/cricopharyngeal cartilage
- Crackles under skin (subcutaneous emphysema)
- Loss of laryngeal crepitus (clicking sensation when laryngeal cartilage moved to side). Loss can mean swelling between laryngeal cartilage and vocal cords
- Small red/purple spots (petechial bruising) on face, eye, roof of mouth (palate)
- Irritable, restless

## Do

- **Send to hospital urgently if**
  - Difficulty swallowing or breathing (dyspnoea)
  - Loud high pitched sound when breathing in (stridor)
  - Crackles under skin (subcutaneous emphysema)
  - Irritable and you suspect hypoxic brain injury
  - Any voice change or loss of consciousness
  - Lot of external swelling, bruising and/or tenderness
  - Loss of laryngeal crepitus
  - Also intoxicated
- Even if asymptomatic, delayed swelling (late onset oedema) can cause breathing obstruction up to 36 hours after strangulation
  - If person not going to hospital — review regularly, have someone trusted watch them for this time
- If no immediate signs — wait at least 6 hours after strangulation before deciding person doesn't need to go to hospital

### 3 Giving fluids (rehydration)

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# Making oral rehydration salts (ORS)

---



## Attention

- Ready-made standard ORS sachets are best
  - Only make up ORS if ready-made products not available
- Important to get **right measurements of salt, sugar and water**. Don't be tempted to think 'more is better'
- **Do not** use any fluid other than water when making up ORS solution
- **Do not** dilute ready-made ORS
  - Changes make-up of salts and sugars in solution, may not rehydrate well enough

## What you need

- Container with 1L clean drinking water
- Normal (standard) sized teaspoon
- Sugar
- Salt

## What you do

- Wash your hands
- Add to 1L of water in container
  - 8 teaspoons of sugar
  - ½ teaspoon of salt
- Mix well with spoon

# Putting in nasogastric tube (NGT)



## Used to

- Give fluids to dehydrated child
- Give medicines to child unable drink
- Remove air and fluid from stomach after trauma or obstructed bowel — to stop vomiting

## Attention

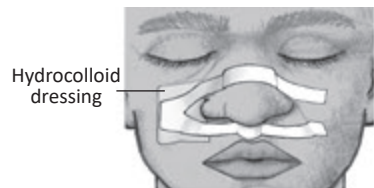
- Use the correct nasogastric tube
  - For feeding — single lumen (8–10Fr)
  - For emptying stomach
    - Single lumen feeding tube — infants and children under 5 years (8–10Fr)
    - Double lumen tube (eg *Salem Sump*) — children over 5 years (10–12Fr), children over 12 years and adults (12–16Fr)
- In hot weather, cool tube in freezer or ice water for 10–15 minutes to make it firm
- **Do not** use nasogastric tube if
  - Broken nose or cheekbones
  - Bruising behind ears, blood and/or clear fluid coming from ears or nose, any signs of skull fracture. Consider how they were injured

## What you need

- If child — helper to wrap and hold them
- Correct size nasogastric tube — see above
- Water-based lubricant
- Local anaesthetic spray *OR* lidocaine (lignocaine) 2% gel for adults
- Small strip of hydrocolloid dressing
- Cloth tape
- Pencil torch
- pH test strips
- 20mL syringe
- Vomit bowl, if person awake
- Marking pen
- Paper tape
- Drainage bag (if needed)

## What you do

- Stick small strip of hydrocolloid dressing on cheek on same side of nose as tube is going — F 3.1
- Cut cloth tapes long enough to tie around person's head plus a bit extra



3.1

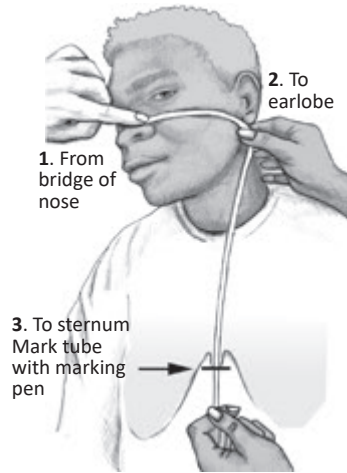
## Putting in nasogastric tube (NGT)

- Cut strip of paper tape long enough to go around tube and stick to person's nose and to hydrocolloid dressing on cheek — F 3.1

### Measure length of nasogastric tube needed

#### Adults

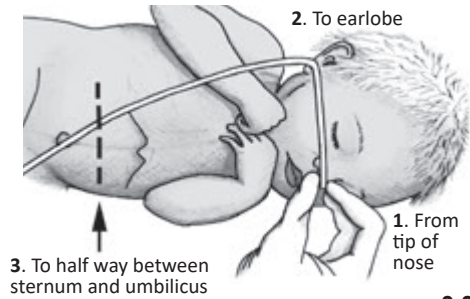
- Hold tube upside down. Measure from bridge of nose, to earlobe, to bottom of breastbone (sternum). Mark tube with marking pen — F 3.2



3.2

#### Infants and children

- Hold tube upside down. Measure from tip of nose, to earlobe, to halfway between bottom of breastbone and umbilicus. Mark tube with marking pen — F 3.3



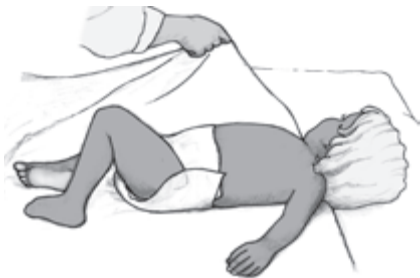
3.3

### Prepare child

- Wrap child as shown — F 3.4–F 3.7
- If child restless — put bandage mittens on, so when you unwrap them, they don't pull tube straight out

### Position head

- Infants — bend head forward a little
- Adults — keep head straight or tilted back slightly



3.4



3.5



3.6



3.7

### Put tube in

- Attach 20mL syringe to end of tube
- Lubricate tip of nasogastric tube or wet under tap
- Tell person it is normal to feel urge to gag, reassure them
- Keeping tube in straight line, gently push it back through chosen nostril — F 3.8, F 3.9
- Feed tube down back of throat, into food pipe (oesophagus) until pen mark reaches front of nose
  - If person awake — ask them to swallow a few times
- If person seems to be choking — take tube out straight away. Calm person/carer, try again
- Look in mouth with pencil torch as you push tube down. If tube coiled in back of mouth — take out and try again
- If small child — make sure they can't pull tube straight out
  - Put cloth tape around tube and tie behind head
  - *OR* put piece of tape around tube and stick to cheek or nose temporarily



3.8



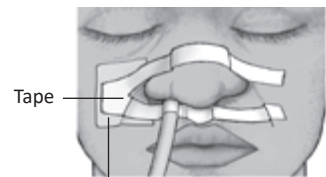
3.9

### Check tube in stomach

- Pull back (aspirate) small amount of fluid with 20mL syringe
- Check fluid acidity with pH test strip. Placement confirmed if pH 1.0–4.0
  - **Do not** use litmus paper for pH testing
- If unable to pull back fluid or if pH greater than 4.0 — advance tube 5cm and retest
- If pH still greater than 4.0 — either pull tube out and try again, or repeat testing in 30 minutes
- If you can't pull back fluid for testing — either pull tube out and start again, or x-ray
- If unable to confirm placement by pH testing — x-ray recommended before giving feeds/medicines by nasogastric tube

### Now

- Plug end of nasogastric tube with stopper
- If tube has 2 outlets — put blue vent valve in blue outlet
- If tube in right place — tape properly to hydrocolloid dressing — F 3.10
- If still not secure — leave cloth tape in place and/or use more paper tape to stick tube to forehead so end hangs over ear, and/or pin it onto their clothes (out of sight if child)
- When you unwrap infant, be ready to stop them pulling tube straight out



Hydrocolloid dressing

3.10

# Putting in IV cannula and starting a drip



Used to give IV fluids and/or medicines. IV cannula connected to

- Bung — if no fluids needed
- Drip — if fluids needed

## Attention

- **Make sure you are putting needle into vein**, not into artery or nerve
- Can use vein in side of neck (external jugular), but if you go too close to chest you can cause a pneumothorax
- Always lie person down in case they faint
- If person has had mastectomy or dialysis fistula — use other side
- If person critically unwell or in cardiac arrest and putting in IV cannula likely to be difficult or take too long — consider IO needle ([p88](#))

- Biggest veins usually found
  - On back of hand and side of wrist — F 3.11
  - On inside crease of elbow — F 3.12
  - Just in front of inside ankle bone — F 3.13
  - On inner forearm — common in men
  - In groin (femoral vein) — in emergency only
- Look at, then feel (palpate) and bounce vein. Big (prominent) veins sometimes not the best
- Lower arm/leg below level of the heart to help fill veins
- If cold — warm body part to help find vein
  - Put hand in bowl of warm (not hot) water for 5 minutes



3.11



3.12



3.13

## What you need

- Helper if possible
- Sterile dressing pack — to use as sterile area (optional)
- Bluey
- Tourniquet
- Alcohol wipes
- Tape
- 8cm x 6cm piece of see-through sticky dressing
- IV bag sticker and drip stand or somewhere to hang fluid bag, if needed
- Sterile bung or prepared intravenous giving set, short extension and IV fluids
- 10mL normal saline in syringe

- Intravenous cannula of right size
  - 22–24G infants and children
  - 20G adults
  - 16G adult trauma, resuscitation or shock — for rapid fluid resuscitation

## What you do

- If drip needed — write date and time on IV bag sticker with marker
  - Connect IV fluids to line, prime line with fluid, let out any air bubbles
- Choose vein you are going to use, put bluey underneath
- Lay out dressing pack and equipment. Wash hands, put on gloves
- Clean site with alcohol wipe, let dry
- Put on tourniquet, ask person to make a fist, hold it, then relax
  - *OR* if small child — ask helper to squeeze limb with their hands
- Wait for vein to swell
- Loosen plastic cannula from needle base by twisting 180° — F 3.14
- Pull person's skin down, to hold vein still — F 3.15
- Hold IV cannula with needle bevel facing upward, at 20–30° angle to skin. 20° for small vein, 30° for deep vein. Insert into vein and see flashback of blood
- Lower cannula to nearly level with skin, gently push 6–12mm into vein
- Slide teflon cannula fully up vein, while holding trocar still
  - Press firmly on skin above plastic cannula. Press with your thumb or arch made by your thumb and forefinger around limb — F 3.16
- Undo tourniquet **then** take out needle/trocar
- Use piece of tape to secure cannula
- Flush with 5–10mL **normal saline** to make sure you are in vein. Should be no swelling above cannula site
- Connect bung or IV line to cannula. Run IV fluids as needed
- Put on see-through dressing — can check site for redness or swelling
- Tape IV line to skin in a loop, bandage lightly over cannula and tubing
- May need to splint area to stop movement
- If person complains of pain or pressure — check cannula in vein, not in tissue (swelling)



3.14



3.15



3.16

## Putting in butterfly IV needle



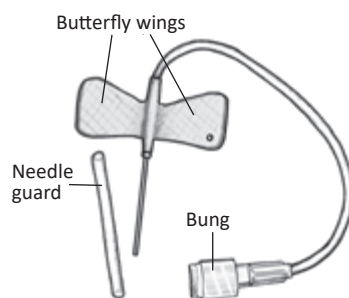
Good for giving one-off doses of IV medicines, taking blood from small children and people with small, thin veins, if you can't get IV cannula in.

### Attention

- **Make sure you put needle into vein**, not into artery or nerve
  - Always lie person down in case they faint
- If young child — consider wrapping them first (p82)
  - Can use same veins as for IV cannula (p84) and smaller veins in back of hands, feet, ankles, scalp
  - If butterfly needle to be left in place — remember that sharp point of needle can puncture vein, especially if person restless. Check site often for swelling, redness, pain

### What you need

- Helper if possible
- Sterile dressing pack — to use as sterile area (optional)
- Bluey
- Tourniquet
- Alcohol wipes
- Butterfly needle with plastic tubing and screw-down bung of right size — F 3.17
- Paper tape
- 8cm x 6cm piece of see-through sticky dressing, if needed
- 10mL normal saline in syringe if giving IV medicines or attaching IV infusion
- IV bag sticker and drip stand or somewhere to hang fluid bag, if needed



3.17

### What you do

- If drip needed — write date and time on IV bag sticker with marker
  - Connect IV fluids to line, prime line with fluid, let out any air bubbles
- Choose IV injection site, put bluey underneath
- Lay out dressing pack and equipment. Wash hands, put on gloves
- Clean site with alcohol wipe, let dry
- Put on tourniquet *OR* use helper's hands to squeeze child's limb
- Wait for vein to swell
- Unscrew bung  $\frac{1}{4}$  turn before inserting needle. Lets blood flow back into tubing during insertion so you know you are in vein
- Fold up wings of butterfly to get good grip — F 3.18

- Angle needle with bevel upward, parallel to skin, then down into vein — F 3.19
- Blood will flow back into needle and plastic tubing. Tighten bung



3.18

### If taking blood

- Take screw top off bung, connect syringe, or have syringe attached before starting. May need to tape butterfly wings to skin to stop movement
- Take enough blood to fill blood bottles needed

### If giving IV medicine or IV infusion

- Flush using 10mL syringe of **normal saline**
- Let blood flow most/all the way back to bung before connecting to drip
- Then take off tourniquet and tape butterfly 'wings' firmly to skin
- If leaving butterfly needle in place — check skin at site for signs of redness, swelling, pain



3.19

# Putting in intraosseous needle

---



**Emergency life-saving procedure.** Needle put into bone marrow space to give fluids, antibiotics and other medicines. Used when you can't get IV cannula in.

## Types of IO needles/devices

- Different types of IO needles and devices available
  - Spring-loaded devices use spring to insert IO needle (eg *FAST1, BIG*)
  - Drill devices use battery powered drill to insert IO needle (eg *EZ-IO*)
  - Traditional IO needles use trocar and IO needle (eg *Cook, Jamshidi*)
- All devices use same insertion sites and follow same basic principles
  - Spring-loaded and drill devices are easier and quicker to use

## Attention

- The following are basic principles only
  - **Always** check manufacturer's instructions for your device
- Manual IO needle should only be used if no other devices available
- Practise regularly with IO device on fresh chicken thighs or the barrel of a 5mL syringe so you know how to use in emergency
  - Keep one needle open for this purpose
- Can look frightening to parent/carer so explain what you need to do, reassure them it is standard procedure
- If small child — can use ordinary large 16–19G injection needle, but easier with proper sized, pre-packaged, sterile IO needle and handle
- If person very unwell — local anaesthetic not required
- If IV fluid leaks out of site you tried before — stop with firm direct pressure
- **Do not** tape over manufacturer's securing devices — follow the instructions

**Do not** put IO needle into broken bone, through burnt or badly infected skin.

## What you need

- Device
  - Spring-loaded IO (eg *BIG* or *EZIO*)
    - Adult — blue
    - Big babies and children — red
  - *OR* IO drill and appropriate size needle kit  
**Note:** Make sure you check inside packet for securing devices
  - *OR* IO needle in correct size
    - Adult 12G
    - Child 16G, or wide bore injection needle 16–19G
- Helper
- Clean towel

- Bluey
- Sterile dressing pack, optional
- Povidone-iodine antiseptic solution
- Sterile extra gauze swabs
- IV line primed with normal saline
- 5mL normal saline in syringe
- Local anaesthetic (lidocaine [lignocaine] 1%), syringe and needles, if needed
- Sterile gloves
- Splint
- See-through sticky dressing, if needed

## What you do

- Put rolled up towel under knee to help hold leg still
- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean site
- Put in local anaesthetic, if using
- Insert IO needle — see *Spring-loaded device (below)*, *Drill (p90)*, or *Manual IO (p90)*

## Locating proximal tibia insertion site

- Feel for bump on the shin under the kneecap (tibial tuberosity)
  - Adult — go 2cm across toward other leg (medially), then 1cm up
  - Child — go 1cm under bump, then 1cm across toward other leg (medially)

**Note:** You are trying to avoid the joint.

## Spring-loaded device

- Choose device
  - Blue for adults — use on proximal tibia, medial malleolus or humerus
  - Red for children — use on proximal tibia
- Remove device from package, face device (in direction of arrow) away from person and user
- Wind red device to select the correct age (0–3, 3–6, 6–12)
- Locate insertion point and stabilise leg
- Position gun on chosen location at 90° (right angle), hold coloured barrel firmly with non-dominant hand — F 3.20
- Remove safety latch — F 3.20, put somewhere safe
- Position dominate hand with fingers under wings, palm over barrel — F 3.21. Push down firmly, have arm straight to reduce kickback



3.20



3.21

- Lift device up and off site gently, then remove trocar by twisting and pulling upward. If tight — use artery forceps
- Stabilise cannula with safety latch — F 3.22



3.22

### If using drill

- Attach correct sized needle, remove safety cap — F 3.23
- Locate insertion point and stabilise limb
- Insert needle to 5mm mark — F 3.24, at 90° (right angle) to bone — F 3.25
- Operate drill until you hear the 'pop'
- Hold needle set and remove drill — F 3.26
- Unscrew trocar and remove from catheter
- Secure needle with stabiliser if provided or see *Secure needle* (p91)



3.23



3.24



3.25



3.26

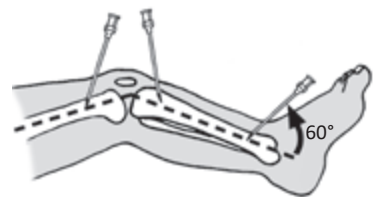
### Manual insertion

Always angle needle at 60° away from joint — F 3.27. Avoids damage to growth plates (epiphyses) in children's bones.

- Choose site — F 3.28
- Use non-dominant hand to stabilise limb — F 3.29. Keep bone stable, skin tight
- With handle of needle in palm of your dominant hand, hold shaft of needle about 1cm from point — F 3.29
- Start at 90° (right angle) to bone until needle 'bites', then angle needle at 60° away from joint. **Slowly** and firmly push and grind it in using clockwise and anti-clockwise screwing motion of wrist and hand
- You will feel a 'give' and a 'crunch' when needle goes through bone into marrow. Needle should now stand on its own
- Hold outer needle firmly while you take out inner needle (trocar)
- Aspirate and start bolus and medicine
- Secure needle (p91)



3.27



3.28



3.29

**Aspirate and start bolus and medicine**

- Aspirate blood sample if needed (often difficult)
- Flush needle with **normal saline** to clear any bits of bone or marrow
  - If conscious — use **lidocaine (lignocaine) 1%** then 5mL **normal saline**
    - 15–30kg — 1mL lidocaine (lignocaine) 1%
    - Over 30kg — 2mL lidocaine (lignocaine) 1%
- To give bolus to baby or child — use 20mL syringe to give 10–20mL as IV push
- Connect IV line — often difficult to get them to run freely
- When infusion running, carefully check above, below, behind needle site for swelling. Swelling may mean fluid going into tissues. Stop and start again at another site

**Secure needle**

- Use tool supplied with device — allows for checking needle and site
  - If no tool supplied or using manual insertion — secure by placing see-through dressing on either side of needle
- Splint leg



## 4 Clinical assessment and management

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# Clinical assessment of adults

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## Attention

- **If visitor to community** — get permission to call person's clinic/doctor for up to date medical information, or to access their PCEHR
- **Have clinic process for matching the person to the right file notes.** When person arrives check full name, age, date of birth (if able). If English a problem — use other identifying points (eg relatives' names, skin names)
- **Be systematic and thorough** (comprehensive)  
*Remember:* Person may have more than one thing wrong
- **Use holistic approach** — consider physical, emotional, social, spiritual wellbeing of person, in context of their family and community
- **Explain what you are doing as you go along.** Encourage, reassure, apologise for any discomfort you are causing, ask permission to continue
- **Use opportunity to talk to person about their health problems and risk factors.** Offer advice and education if they are interested — brief intervention ([p138](#)). If first time you have seen person — consider asking them back to talk about these issues

## What you need

### Paper work and admin

- Person's file notes
- Clinical protocol/procedures manuals
- Appointment cards

### Equipment

- Stethoscope
- BP machine
- Scales and stadiometer (height)
- Tape measure
- Thermometer
- Blood glucose meter, Hb, O<sub>2</sub> sats etc
- Blood collection equipment ([p370](#))
- Urine pots, urine dip sticks
- Education materials about condition and/or treatment (eg displays, models, pamphlets)

## What you do

### Before starting consult

- Consider cultural safety — who is right person to do consult, gender issues, how can person be made comfortable. Is an interpreter needed
- Consider your own safety and the safety of the person
- **Read file notes.** Don't duplicate work already done by colleagues

## Starting consult

- **Open consult** — greet person by name, introduce yourself
  - Check that file notes you have belong to the person
- **Start assessment as person walks through door.** Notice their general appearance, speech, gait, posture and body shape, skin, odour, personal details such as clothing
  - If clearly medical emergency or trauma situation — go straight to appropriate protocol/procedure
- Check have following information, ask if anything has changed
  - Allergies — to food, medicine, animals, other things
  - Medicines
    - Prescribed — how long, what, when, where, why, any problems
    - Over the counter, herbal, alternative, traditional/bush
    - Contraceptives
  - Immunisation status
  - Next of kin, address

## History taking

### Presenting complaint

- Why person has come today
- Listen, encourage, use silence (give person space to consider and talk). Listen for **OLD CARTS**

**O** nset — when did it start  
**L** ocation — where does it hurt, where is problem  
**D** uration — how long, had it before, what happened then  
**C** haracteristics — description of pain, problem  
**A** ggravating factors — what makes it worse  
**R** elieving factors — what makes it better  
**T** reatments — what have they tried, what they think it is, how it is impacting on them and others, anything else  
**S** igns and symptoms (other) — other problems, quick systems review, last menstrual period, anything else you need to know to look after them

- Have they had contact with someone different, been doing anything different lately (eg travel, work, activities)
- **If you can't work it out** — work backward. What were they doing, what did they eat/drink this morning, last night, yesterday

### Review

**If new to service or not yet recorded** — may take several visits to complete.

- Ongoing health problems
- Screening tests — last health check, pathology results, follow-up
- Current health status — SNAPE

**S** moking — how many, how long, quitting experience  
**N** utrition — appetite, weight gain/loss, diet  
**A** lcohol and Drugs — how much, how long, quitting experience  
**P** hysical activity — when, what, how often  
**E** motional wellbeing — motivation, enjoyment, more or less happy, more or less sleep, looking forward to anything, anxiety, self harm, domestic/family violence — ‘Do you ever feel unsafe’ (*CARPA STM p54*)

- **Past medical history** — from patient, relatives, other clinics, hospital records
  - Illnesses — as child/adult, psychological
  - Accidents, injuries, domestic/family violence (*CARPA STM p54*)
  - Chronic disease
  - Hospitalisation, operations
  - Gynaecological/obstetric — periods, number of pregnancies, number of live births, child spacing, contraception, sterilisation
- **Family medical history** — partner, children, parents, siblings, grandparents
- **Social history** — home situation, education, occupation, income source, marital/defacto status, mobility, environmental issues, cultural supports and responsibilities

### Clinical examination

- Use look, listen, feel, discuss
- Temp, pulse, BP, RR
- Other investigations as needed — U/A, pregnancy (*WBM p279*), BGL (*p381*), Hb (*p383*), O<sub>2</sub> sats, ECG, weight, BMI (*p108*), waist circumference (*p111*)
  - Offer appropriate screening tests — Adult Health Check (*p123*), STI check — man (*CARPA STM p272*), woman (*WBM p238*)
- Use history to determine examinations needed
  - Always examine systems associated with presenting complaint, and systems above and below
  - Hands can be non-threatening place to start physical examination

#### Examining hands

- Hold hands flat, look for deformity of nails
  - Clubbing — F 4.1, spooning — F 4.2
- Check capillary refill by pressing on nail bed and letting go. Pink colour should return in less than 2 seconds
- Ask person to squeeze your hands. Is pressure the same on both sides
- Gently move and rotate hands and elbows, check tone and strength



- Follow with the appropriate procedure for each system review needed
  - Skin exam (*p266*)
  - Eye assessment (*CARPA STM p343*)
  - Ear exam (*p158*)

- Mouth, throat, teeth and gums exam ([p172](#))
- Lungs and respiratory system exam ([p186](#))
- Abdominal exam ([p198](#))
- Rectal exam ([p203](#))
- Foot exam ([p259](#))

### Managing care

- **Talk about findings.** Summarise what person said, what you did/didn't find, explain what you think it is/isn't. Use diagrams
- **Consider**
  - Age/place risk — what's common or high risk in this age group, and/or this place
  - What you can't afford to miss — what's most likely, what is clinically important
  - What person is trying to tell you
- Use clinical guidelines to determine best treatment options
  - Consider patient preferences and limiting factors (eg pregnancy, allergies, location, travel needs)
- Talk with person about care options, management plan, further investigations, referrals to other services or specialists
- Offer due/overdue care for ongoing conditions
  - See *Combined checks for chronic diseases (CARPA STM p239)*
- Agree on follow-up, when to come back for review, results, next check
  - Offer follow-up even if person doesn't want treatment at this time
- Talk about risk factors and health promotion, record any strategies or changes that person says they will/won't try (eg diet, exercise, quitting smoking)
- Consider public health issues, health promotion, immunisation, screening

### Finish consult

#### Close consult

- Summarise management plan and follow-up for person
- Give appointment card, referrals, prescriptions/medicines as needed
- Check for final questions
- Encourage, reassure, give hand-out on condition and/or treatment

#### Document consult

- Record straight away
  - In file notes using local system (eg SOODA-F [p117](#))
  - In PCEHR
  - On clinic recall system
- Send letters/summaries to other services identified by person

#### Reflect on consult

- How did it go
- What did you notice about person, about yourself or your reactions

# Clinical assessment of children

---



## Attention

- A child's parent or guardian should always be present to provide legal consent, and help with communication and on-going care
- **Prepare for children**
  - Have toys or paper and pencils to occupy child, lets you watch them playing
  - Watch child during whole consultation. Do they look sick, are they in pain or lethargic, are they interacting with parent/carer
  - Keep hands off as long as possible, watch and observe as you listen
  - Keep child development chart on clinic wall for easy reference

**Remember:** Charter on Rights of Children and Young People in Health Care Settings in Australia.

## What you need

- See *Equipment list* (p94)

## What you do

### Starting consult

- **Open consult** — introduce yourself to child and parent/carer
  - Use child's name
  - Record name of parent/carer with child's name
  - Check who is legal guardian of child
- **Find out why child is there**
  - If new problem — start by taking a history
  - If review or follow-up — check file notes for earlier consult, follow-up plan
  - If child has chronic condition —
    - Check file notes for latest letter/s from specialist/s, management plans
    - Check recall register for scheduled follow-up
    - Take history, examine child with focus on chronic disease

### History taking

- Ask about problem. When did it start, where, how bad, what makes it worse, what makes it better
- Ask general questions about child. Feeding well, sleeping, waking and playing normally
- Background
  - All file notes — local, from hospitals, other clinics
  - Operations, hospitalisations, accidents, injuries
  - Mother's health in pregnancy, birth, neonatal problems
  - Other family health issues

- For specific questions — see
  - *Breathing problems in children* (CARPA STM p123)
  - *Babies under 2 months who are sick or have a fever* (CARPA STM p121)
  - *Diarrhoea* (CARPA STM p165)
  - *Ear and hearing problems* (CARPA STM p172)
  - *Child neglect, abuse, sexual abuse* (CARPA STM p143)
  - *Urine problems — 2 months to 12 years* (CARPA STM p184)
  - *Infant and child growth and nutrition* (CARPA STM p154)
- Immunisation status, medicines, allergies
- Child's diet, what they usually eat and drink
- Concerns about child's development (CARPA STM p151) including
  - At school — specific problems, interactions with peers
  - Behaviour — bladder control (enuresis), temper tantrum, thumb sucking, pica, nightmares
- Social issues — who is in the family, income, food supply, washing facilities for child, pets
- Environment — smoke exposure, domestic/family violence, child safety, can they swim, heating and cooling of home, refrigeration, insect screens, dust control

### Clinical examination

**Note:** To assess young child properly you must undress them. Young child may be more comfortable sitting on parent/carer's lap.

- Use a systematic approach
  - If not sure — ask senior colleague to check, or **medical consult**
- **Observe** — before touching
  - Behaviour
  - Conscious state
  - Interaction with parent/carer, with yourself
  - Colour, cough, respiratory distress, looks sick or well
  - If crying — character of cry (eg irritable, high pitched, whimpering)
  - Respiratory rate
- **Examine** from head to toe — do ENT exam last, likely to upset child
  - Fontanelle — sunken, bulging
  - Eyes — colour, discharge
  - Hair
  - Neck — look and feel for lymph nodes
  - Chest — remove shirt completely
    - Look at work of breathing (eg indrawing, nasal flaring)
    - Listen for heart sounds (eg murmur)
    - Listen for breath sounds (eg crackles, wheeze)
  - Abdomen — lie child down. Is it soft, check for tenderness, masses, guarding. Bowel sounds

- Genital area — nappy rash, lesions, testes descended in boys
- Hands and feet
- Skin — look all over for bruises, sores, other lesions
- Check hydration/dehydration
- Look in ears with otoscope ([p158](#))
- Look in mouth at teeth, tongue and throat
- **Measure**
  - Height/length
    - Babies, children under 2 years — lying down (length) with 2 people holding, using fixed board or measuring mat, without nappy
    - 2 years and over — standing up (height) using stadiometer, without shoes. Record to nearest 0.1cm
  - Weight
    - Babies, children under 2 years — on baby scales, naked (no nappy or singlet)
    - 2–3 years — on adult scales, wearing nappy/pull ups only
    - 3–5 years — on adult scales, wearing singlet and underpants/nappy only
  - Head circumference — under 1 year
    - Find and measure widest part of head (horizontally). Use a narrow, non-stretch, flexible tape
  - Temp ([p105](#)), pulse ([p105](#)), BP ([p106](#))
    - If BP at or above levels in Table 4.1 — needs investigation

### Managing care

- After determining the problem, get advice from doctor or more experienced member of health team if needed before making a final management plan
  - See protocols for specific problems
- When management plan decided
  - Talk with child and parent/carer about plan
  - If more than 1 thing — write plan down for parent/carer
  - If referral needed — talk with parent/carer about this
- If giving medicine ([p338](#)) — get medicine from drug room, show to parent
  - Give or watch parent/carer give first dose if possible. Explain how often and how long to give
  - Advise parent/carer where to store medicine, side effects, warnings

Table 4.1: BP levels that need further investigation, by age and sex

Age (years)	Systolic BP (mmHg) – male	Diastolic BP (mmHg) – male	Systolic BP (mmHg) – female	Diastolic BP (mmHg) – female
3	100	59	100	61
4	102	62	101	64
5	104	65	103	66
6	105	68	104	68
7	106	70	106	69
8	107	71	108	71
9	109	72	110	72
10	111	73	112	73
11	113	74	114	74
12	115	74	116	75
13	117	75	117	76
14	120	75	119	77
15	120	76	120	78
16	120	78	120	78
17	120	80	120	78
18 and over	120	80	120	80

## Finishing consult

### Close consult

- Summarise management plan and follow-up for child, parent/carer
- Give appointment card, referrals, prescriptions/medicines as needed
- Check for final questions
- Encourage, reassure, give handout on condition, if available

### After the consult

- Record straight away
  - In file notes using local system (eg SOODA-F [p117](#))
  - In PCEHR
  - On recall system
- Send letters/summaries to other services identified by parent/carer

# Providing care for young people

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- Key principles for providing care for all young people
  - Young people under 14 years should be accompanied by a parent or guardian
  - Young people 14–16 years may be able to access health care and give consent to treatment if they are assessed to be a ‘competent minor’
- Competency
  - For young person 14–16 years to be ‘competent’ they must understand
    - Health condition
    - Treatment options including side effects
    - What will happen (consequences) if no treatment is given
  - Also consider the type of health issue
    - Young person may be competent to provide consent for relatively minor issue (eg contraception) but not for life threatening issue (eg surgery)
  - If intellectual disability or severe mental illness (eg acute psychosis) — may not be competent, even if over 16 years
  - Young people who can't give consent should still be asked if they agree to treatment (provide assent)

## What you do

### Confidentiality

- Young people 14–16 years of age who are assessed to be competent should receive confidential health care
  - Builds trust between the adolescent and health care provider
  - Improves the quality of health care
- **Example of confidentiality statement.** “Everything we talk about will be confidential — that means it stays between you and me. But we will have to tell the right people if someone is hurting you, you are hurting yourself, or you are hurting someone else. If I have to break confidentiality, we will do it together”

### Mandatory reporting

- Important you understand laws regarding mandatory reporting in your state/territory
- Mandatory to report young person at risk of
  - Suicide, homicide, serious harm to self or others
  - Sexual, physical or emotional abuse, neglect, exposure to violence
    - In NT, mandatory to report 14–15 year old if sexually active with someone more than 2 years older, even if consent

### The HEADSS framework for Psychosocial Health Assessment

Use the HEADSS framework to help you engage with young people. Young people are more likely to talk about sensitive issues and seek help if asked directly, and confidentiality has been discussed.

**Table 4.2: HEADSS interview guide**

Home	<ul style="list-style-type: none"> <li>• Where do you live</li> <li>• Who do you live with</li> <li>• How do you get along with each member</li> <li>• Who could you go to if you needed help with a problem</li> <li>• Have there been any recent changes</li> </ul>
Education & employment Eating Exercise	<ul style="list-style-type: none"> <li>• What do you like about school/work</li> <li>• What are you good/not good at</li> <li>• How do you get along with teachers/your employer and other students/colleagues</li> <li>• Is there an adult you can talk to at school about how you feel</li> <li>• Have your grades changed recently</li> <li>• Many young people experience bullying at school/work, have you ever had to put up with this</li> <li>• What are your future plans</li> <li>• Do you have meals with your family? How often do you do so</li> <li>• Who cooks at home? What do you have</li> <li>• Is anyone worried about your weight? Are you happy with your weight</li> <li>• Do you worry about your weight</li> <li>• How do you get to school or work</li> <li>• Do you play a sport</li> <li>• How often do you do any form of physical activity</li> </ul>
Activities and peers	<ul style="list-style-type: none"> <li>• What do you like to do for fun</li> <li>• What sort of things do you do in your spare time out of school</li> <li>• Who do you hang out with</li> <li>• What sort of things do you like to do with friends</li> <li>• Tell me about parties</li> <li>• Do you belong to any clubs, groups etc</li> <li>• How much TV do you watch each night</li> <li>• Do you use the computer/tablet/ phone for talking to people</li> </ul>
Drugs	<ul style="list-style-type: none"> <li>• Are you on any regular medicine</li> <li>• Anybody in your family smoke cigarettes/cannabis or drink alcohol frequently</li> <li>• Many young people at your age are starting to experiment with cigarettes or alcohol</li> <li>• Have any of your friends tried these or maybe other drugs like cannabis, IV drugs, amphetamines and ecstasy</li> <li>• How about you, have you tried any</li> <li>• What effects do drug-taking, smoking or alcohol have on them/you</li> <li>• Do they/you have any regrets about taking drugs</li> <li>• How much are you taking and how often, and has your use increased recently</li> </ul>



Sexuality	<ul style="list-style-type: none"> <li>• Some young people are getting involved in sexual relationships, have you had a sexual experience with a guy or girl or both</li> <li>• Has anyone touched you in a way that has made you feel uncomfortable or forced you into a sexual relationship</li> <li>• How do you feel about relationships in general and about your own sexuality (sexual feelings toward others)</li> </ul>
Suicide	<ul style="list-style-type: none"> <li>• How do you feel in yourself at the moment on a scale of 1 to 10 — 1 being very bad and 10 being very good</li> <li>• What sort of things do you do if you are feeling sad/angry/hurt</li> <li>• Is there anyone you can talk to</li> <li>• Do you feel this way often</li> <li>• Some people who feel really down often feel like hurting themselves or even killing themselves. Have you ever felt this way</li> <li>• Have you ever tried to hurt yourself</li> <li>• What prevented you from doing so</li> <li>• Do you feel the same now</li> <li>• Do you have a plan</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Sometimes when young people are drunk or high, they do not think about what they are doing. Have you ever driven a car when you were drunk or high</li> <li>• Have you ever ridden in a car with a driver who was drunk or high</li> <li>• Have you ever felt that you needed to carry a knife or other weapon to protect yourself</li> </ul>
Strengths/ spirituality	<ul style="list-style-type: none"> <li>• How would you describe yourself</li> <li>• What are you best at</li> <li>• How would your best friend describe you</li> <li>• Does your family attend a place of worship? What do you think about that</li> <li>• Do you believe in something outside yourself</li> <li>• Who do you talk to when you feel upset about something/when you feel really happy about something</li> </ul>

# Clinical measurements

## Normal temperature range

- Do not use tympanic thermometer if person has hole in eardrum

Table 4.3: Normal temperature ranges

How taken	Normal temp (°C)
Mouth (oral)	36.5–37.5
Under arm (axillary)	36.0–37.0
Rectal	37.0–37.8
Ear (tympanic)	36.8–37.8

## Respiratory rate (RR) and heart rate (pulse)

- Listen to heart sounds in same places as you do an ECG
- If heart sounds unusual or different from other children or adults
  - Get colleague to check
  - Check notes to see if detected before. If new — refer for assessment

Table 4.4: Respiratory rate and pulse rate by age

Age of patient	Respiratory rate range (breaths/min)	Pulse rate range (beats/min)
Newborn	30–60	110–160
3 months	30–50	110–150
6 months	30–50	110–150
1 year	20–40	110–150
2 years	20–30	95–140
4 years	20–25	95–140
6 years	20–25	80–120
8 years	20–25	80–120
10 years	20–25	80–120
12 years	16–20	60–100 OR pregnant 80–110
14 years	16–20	60–100 OR pregnant 80–110
17 years and over	16–20	60–100 OR pregnant 80–110

## Taking BP reading — adults

### Attention

- To measure BP accurately, must use right sized cuff
  - Depends on length and width (circumference) of upper arm. Inflatable air bladder in cuff must have
    - Width at least 40% of arm circumference
    - Length at least 80% of arm circumference — almost long enough to go all the way around arm



- Diastolic (last sound you hear) reading is taken from time **sound disappears** — not when it becomes muffled
- Best if person
  - Has not smoked or drunk tea, coffee, caffeine soft drinks for 30 minutes
  - Has been sitting quietly for at least 10 minutes
- If part of cardiovascular examination or no previous recording — check BP on both arms. Note difference (if any) and then use the arm with the higher reading
- **Never** check BP on arm with AV fistula

Normal BP for an adult varies depending on gender, age, levels of fitness etc.

- As a general principle
  - Systolic pressure should be less than 130mmHg
  - Diastolic pressure should be less than 80mmHg

### What you do

- Choose right sized cuff for person's arm
- Sit person comfortably with arm resting on table or pillow, just above level of their waist
- Make sure air bladder is flat, fixed firmly, right over artery in upper arm
- Make sure stethoscope bell is put right over brachial artery in elbow crease
- Make sure manometer/mercury needle level on zero when you start to blow up cuff
- If you can't hear systolic or diastolic sounds the first time — make sure you let all the air out of cuff, **wait a minute** before trying again

### Taking BP reading — children

#### Attention

- Try to take BP when child content. If child upset — may need to repeat when settled
- Cuff needs to cover  $\frac{2}{3}$  of child's upper arm. If cuff too narrow or too wide — reading may be wrong

**Remember:** Diastolic reading taken at muffling of sounds — not when they disappear (as for adults).

### What you do

- Follow same general principles as for adults
- Diagnosis of high BP needs BP to be high on more than 1 occasion
- **BP depends on height** — Tables 4.5 and 4.6 assume child is on 50th percentile for height
  - Adjust target if child is very short or very tall
    - Subtract 5mmHg for children on the 5th percentile height-for-age
    - Add 5mmHg for children on 95th percentile height-for-age

Table 4.5: BP — girls under 18 years (percentiles)

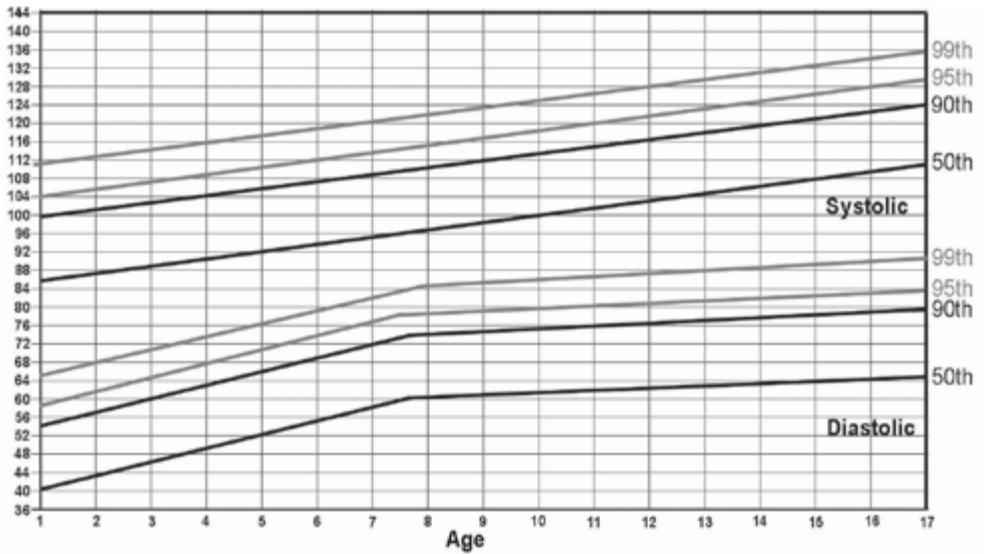
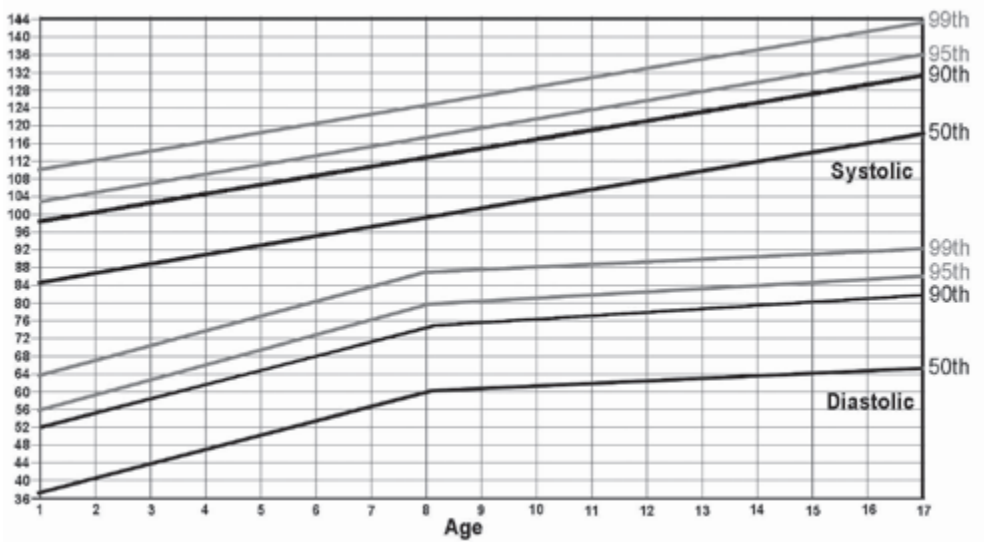


Table 4.6: BP — boys under 18 years (percentiles)



## Calculating Body Mass Index (BMI)

Use tables below to work out healthy weight range for adults, children and young people under 20 years.

### What you need

- Correctly calibrated standing scales
- Something to measure height accurately (eg stadiometer)

### What you do

#### Weight

- Measure and record weight in file notes at each visit
- Babies, children under 2 years — on baby scales, naked (no nappy or singlet)
- 2–3 years — on adult scales, wearing nappy/pull ups only
- 3–5 years — on adult scales, wearing singlet and underpants/nappy only

#### Length or height

- Measure and record height only once for adults
- Babies, children under 2 years — lying down (length) with 2 people holding, using fixed board or measuring mat, without nappy
- 2 years and over — standing up (height) using stadiometer, without shoes. Record to nearest 0.1cm

### BMI

#### Children

- Calculate BMI —  $\text{weight (kg)} \div \text{height}^2 \text{ (m)}$ 
  - For example —  $22\text{kg} \div (1.1 \times 1.1\text{m}) = 22 \div 1.22 = 18$
- Plot BMI on chart by age and gender
  - Below 3rd percentile for age and gender — underweight
  - Above 85th percentile for age and gender — overweight (5–19 years), risk of overweight (0–5 years)
  - Above 97th percentile for age and gender — obese (5–19 years), overweight or obese (0–5 years)

- Percentiles and z-scores
  - 3<sup>rd</sup> percentile = z-score of -2
  - 85<sup>th</sup> percentile = z-score of +1
  - 97<sup>th</sup> percentile = z-score of +2
- *OR* use WHO Anthro calculator to work out percentiles or z-scores [www.who.int/childgrowth/software/en](http://www.who.int/childgrowth/software/en)

#### Adults

- Calculate BMI —  $\text{weight (kg)} \div \text{height}^2 \text{ (m)}$ 
  - For example —  $82\text{kg} \div (1.63 \times 1.63\text{m}) = 82 \div 2.66 = 30.83$
  - *OR* see Table 4.11

Table 4.7: BMI-for-age — girls 0–5 years (percentiles)

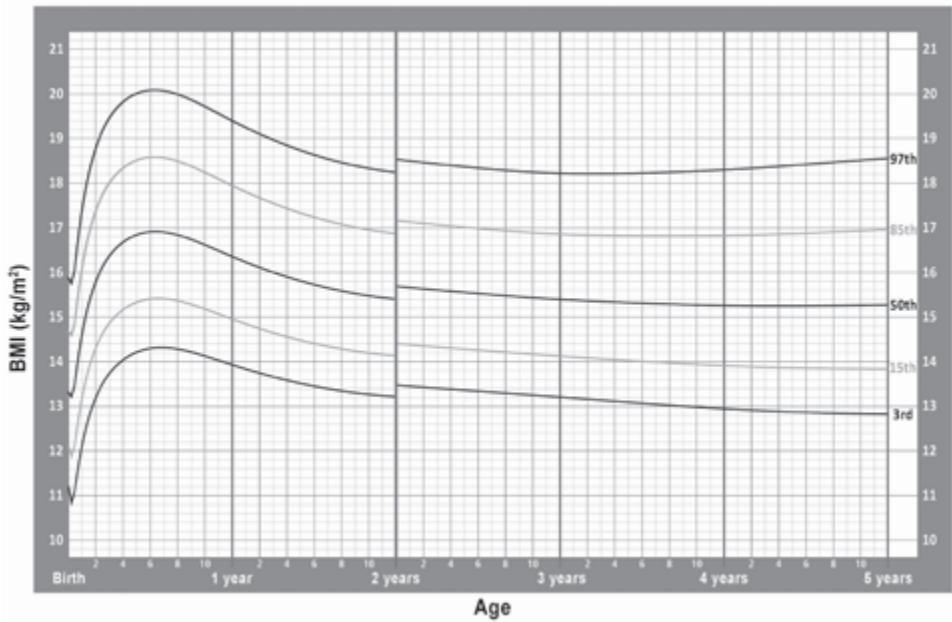


Table 4.8: BMI-for-age — boys 0–5 years (percentiles)

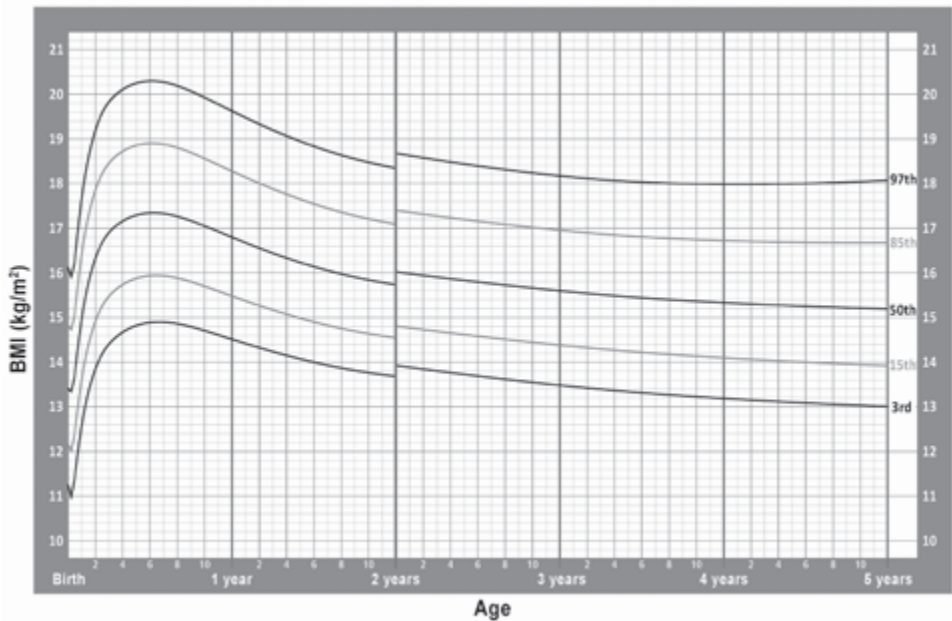


Table 4.9: BMI-for-age — girls 5–19 years (percentiles)

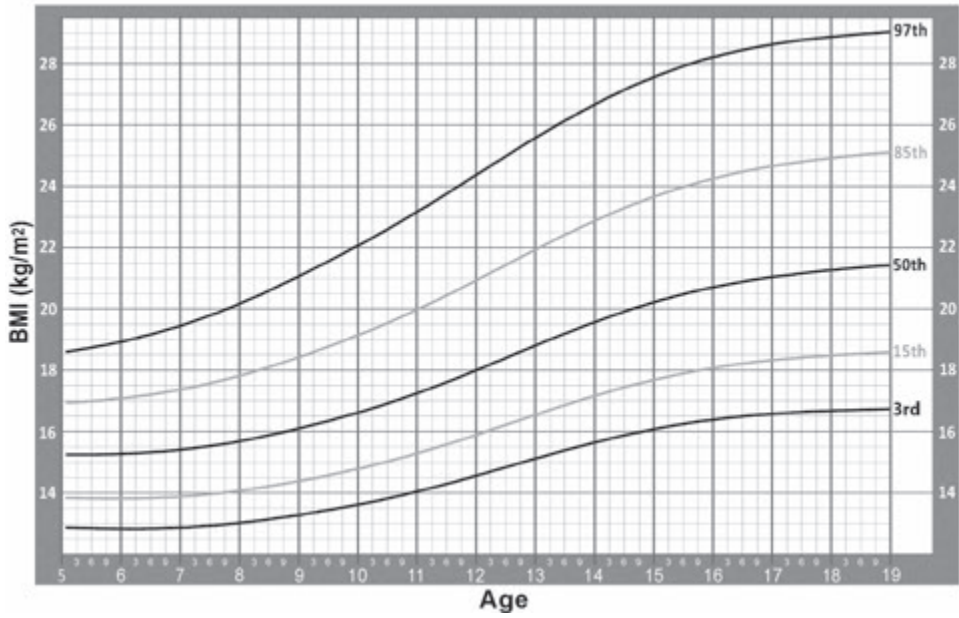


Table 4.10: BMI-for-age — boys 5–19 years (percentiles)

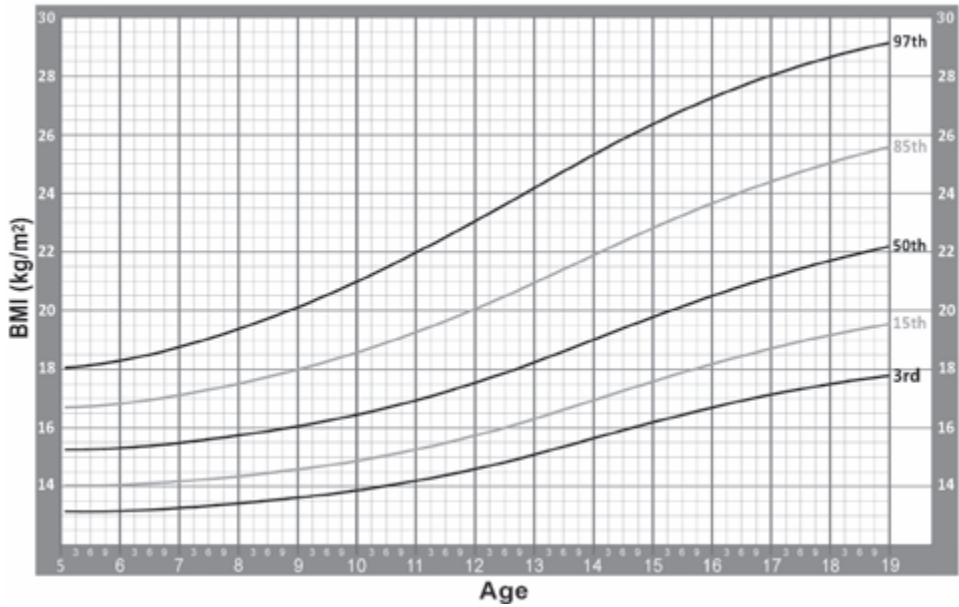
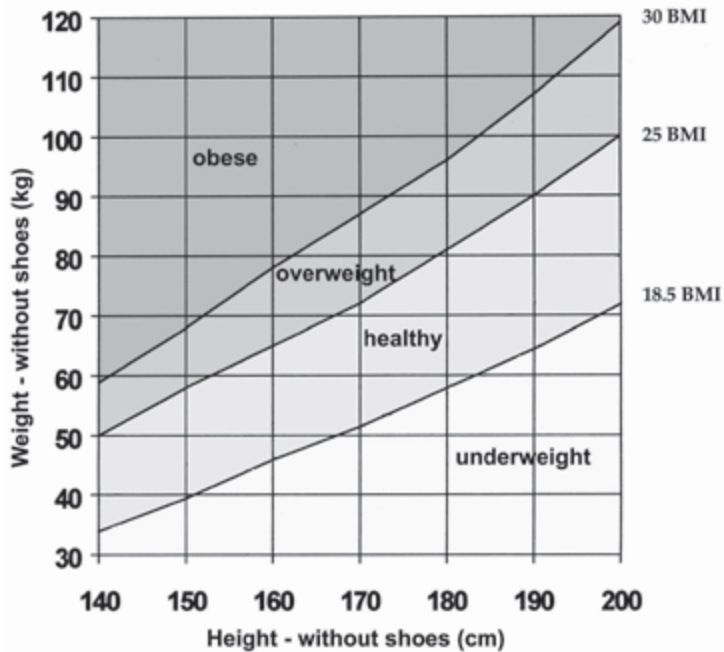


Table 4.11: BMI chart for men and women over 18 years



**Note:** Also measure waist (*below*). Person can have a normal BMI but still have an unhealthy pot belly (abdominal fat), or have a higher BMI because of muscular build. A higher BMI may be more acceptable for people over 65 years.

## Measuring waist

### Attention

- Large waist measurement associated with increased risk of some cancers, heart disease, type 2 diabetes

**Increased risk** — waist more than 94cm men, 80cm women.

**Greatly increased risk** — waist more than 102cm men, 88cm women.

- Waist measurement should be half (or less than half) of height measurement
  - Man who is 180cm tall should have waist measurement of 90cm or less
- Hips should be bigger than waist, but not always the case

### What you do

- Put tape between lowest rib and top of hipbone, roughly in line with belly button — F 4.3
- Make sure tape is snug, without pressing into skin. Keep it even, don't let it slope down on one side
- Ask person to breathe out normally, measure against skin



4.3

# Mental health assessment

Always consider drug or alcohol problems that may be present at same time as mental health issues.

Use this section to decide which *CARPA STM* mental health protocol to use for person you are assessing.

- Talk with family and ATSIHP about person, their behaviour, who is best person to sit with them while you talk with them
- If person violent or seriously disturbed — **first** see *Mental health emergency (CARPA STM p192)*
- If person talking about suicide — **first** see *Suicide risk (CARPA STM p207)*

## Children and young people

- Always consult with child and adolescent mental health team
- Before giving mental health medicines — **medical/child and adolescent mental health team consult**
- Make sure they have family or carers who can support them, check on their safety and wellbeing while care and management being arranged

## The interview

- **Consider your safety first (CARPA STM p192)**
  - In some circumstances you may need to involve police
- Talk with person in quiet place with lots of light — speak calmly and clearly, use simple language, listen carefully
  - Use interpreter if needed and available
  - May help to have another person of same culture present
  - Allow enough time for person to tell their story
- Be aware of non-verbal cues — be calm and non-threatening, with open relaxed body posture
- Develop relationship and trust by talking about familiar things (eg family, country) and person's strengths, before talking about problems
- Explain what you are doing, what is happening, that you need to ask a lot of questions to work out how to help and what to do
- Work with person to solve problems. Mental health problems are very common and most people recover — encourage positive outlook
- Work on strengths that you find in/around person's life
  - Stay Strong Plan — brief intervention style tool for talking about what keeps them strong, what takes away their strength, staying in balance. Can introduce goal setting
    - See AIMhi NT — [www.menzies.edu.au/page/Resources/](http://www.menzies.edu.au/page/Resources/)

## Ask — take full history

- Why they have come — ask person, family, other people for their parts of the story

- Personal, family, community problems
- Ask screening questions for anxiety (*CARPA STM p196*), psychosis (*CARPA STM p205*), depression (*CARPA STM p201*)
  - Don't forget to ask about sleep, appetite
- Any mental health problems or treatment in the past — what helped
- Any medical sickness, current treatments
- Alcohol (grog) or other drug use — see *Alcohol assessment (CARPA STM p209)*
- Is there a cultural reason/explanation
  - Is this presentation outside what is culturally appropriate now

## Check

- Do clinical assessment to exclude physical causes
  - Temp, pulse, RR, BP, O<sub>2</sub> sats, BGL, weight, waist measurement
  - U/A, send urine for drug screen
  - Consider head injury (*CARPA STM p72*), infection (eg chest [*CARPA STM p309*], ear [*CARPA STM p172*], UTI [*CARPA STM p411*]), epilepsy (fits), encephalitis, medicine toxicity, hearing impairment, electrolyte imbalance, thyroid dysfunction, anaemia
- **Mental status examination** (*below*)
  - How does person seem to you — use these prompts to help you to describe person's presentation
- **Cognitive assessment** — if worried that person is not thinking clearly. Screens for whether brain is working properly (cognition)
  - Kimberley Indigenous Cognitive Assessment – cognitive component (KICA-COG)
  - Mini Mental State Examination (MMSE)
- Risk assessment (*p114*)

## Mental status examination

Consider how person usually is (or ask someone who knows them) and cultural context, how are they different now. Most of this will be observed during consultation, rather than needing a separate assessment.

- Useful headings and examples to consider include
  - **Appearance** (as if looking at a photo) — facial expression, clothes, jewellery, make-up, sunglasses, personal care, skin condition, body size
  - **Behaviour** (as if looking at a video with sound off) — how are they acting — normal or bizarre, calm, agitated, cooperative, distracted, withdrawn, restless, overactive, posture, movements including walking
  - **Mood** (what person describes) — sad, worried, nervous, cranky, happy, angry/wild
  - **Affect** (what you describe) — flat, crying, irritable, mood swings, angry, too happy, frightened, unconcerned, excited, aroused. Comment on whether mood and affect match (are congruent)



- **Speech** (as if listening to tape recorder) — absent, faster or slower than usual, unstoppable, pressured, slurred, loud or soft
- **Thoughts**
  - Form — lose track of conversation, mixed up talk, not making sense
  - Content — suicide talk, talking about hurting self or others, overly suspicious (paranoia), excessively grand or believing things that are not true (delusions)
- **Perception** — does person hear (auditory), see (visual), taste, smell or feel (sensory) things that are not really present (hallucinations). Consider cultural context
- **Cognition** — can person remember things, recognise people. Are they confused about who they are, where they are, why they are there
- **Insight/judgement** — does person realise there is a problem, do they understand what the problem is, are they doing silly or dangerous things

### Risk assessment

Use to help decide if person can be safely managed in community or needs to be sent to hospital for further mental health assessment and treatment.

#### • Consider

- Risk to self
  - Suicide (*CARPA STM p207*) or self-harm
  - Vulnerability — financial or sexual exploitation, neglect, accidents, physical deterioration, victim of violence (eg domestic/family violence *CARPA STM p54*)
  - Absconding, wandering
  - Reputation, poor judgement, unrestrained spending, poor decisions (manic behaviour)
- Risk to others
  - Especially children — can't make themselves safe
  - Violence, intimidation, sexual risk
- Serious or unstable medical condition
- Protective factors (things that keep person safe in community)
  - Responsible person or carer they will respect, listen to
  - Level of insight, ability to accept help, support, treatment
  - No history of significant violence, self-harm, suicide attempts
  - Community capacity to support and care for person

**Remember:** If issue of public safety — police must be contacted.

Mental health crisis lines in each state/territory can help with risk assessment (eg NT Mental Health Access Team).

## Interpretation

- Talking about suicide or self harm — see *Suicide risk* (CARPA STM p207)
- Hallucinations, delusions (CARPA STM p198), bizarre behaviour — may have schizophrenia or drug induced psychosis. See *Psychosis* (CARPA STM p205)
- Withdrawn and sad, not eating or drinking, not talking, not getting out of bed, poor hygiene — may have depression (CARPA STM p201)
- Edgy, worried, restless — may have anxiety (CARPA STM p196)
- Recently confused, unable to concentrate, poor orientation — may have delirium (CARPA STM p198). **Potential medical emergency**
- Poor orientation, poor memory, slowly getting worse — may have dementia (CARPA STM p198)
- Overactive, grand ideas, not sleeping, pressured speech — may be manic phase of bipolar disorder. See *Psychosis* (CARPA STM p205)
- Consider effect of alcohol (CARPA STM p209), cannabis (CARPA STM p218), kava (CARPA STM p220), volatile substances (CARPA STM p226), amphetamines (CARPA STM p214), prescribed medicines

# Recording in the file notes

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These are principles only. Always check and use local documentation style and system already in place.

## Attention

- Patient file notes must always be clear and complete. Written documents must be signed and dated. Electronic records have inbuilt signatures.  
**Remember:** They are **legal documents** and may be needed later
- **Accurate records** make sure you and your colleagues can properly and safely care for patients. Encourage sharing of best practice within remote health care team, across settings and services
- Make sure you have **right file notes** for **right person**
- Always record information in file notes **as soon as you can** after seeing person. Work as if you may not be there in the next few minutes/hours
- Always record full name and title of practitioners you consult with
- If you make a mistake or put entry in wrong record — cross it out neatly with a single line (it should still be clear). Explain your error and sign
- **Do not** suggest a number of diagnoses and then treat only one of them. Record plan for each, including health promotion
- **Do not** create confusion by using medical symbols or shorthand terms (eg '0 wheeze' should be 'no wheeze')

## What you need

- Pen. Black ink is best — **do not** use pencil or red pen
- *OR* access to electronic system used by service

## What you do

- Use your clinical guidelines (record manual used)
- Record what you **do** and **don't** find, consultations, person's experiences, your decisions and actions

## Written file notes

- Record date and time of each consult
- Record notes in dot points, keep writing on page lines
- Use next empty line below last entry, **do not** leave any spaces
- If you need to add details later —
  - Use new entry. Relate back to previous relevant entry by date/time
  - **Do not** write between lines of previous entry
- Finish entry with signature, your name printed in capital letters, role title (designation — eg RAN, RN, RM, ATSIHP, Dr)

## Example of documentation format — SOODA-F

26 year old man with no previous major illnesses, accidents or injuries, no allergies, walks into clinic.

### S – Story (OLDCARTS *p95*): 13/6/2017, 4.30pm

- History of fever, cough, tight persistent dull pain on right side of chest when breathing in for past two days, made worse by exercise, not radiating anywhere else, sleeping on 2 pillows, had pneumonia (for 4 weeks) 6 months ago
- Coughing green sputum since this morning
- Appetite OK, walked to clinic slowly
- Relieved by paracetamol

### O – Ongoing health problems

- Type 2 diabetes, hypertension, taking prescription meds, no other drugs
- Non-smoker, occasional alcohol, works as mechanic, usually active
- Family history diabetes

### O – Observations/clinical examination

- Usually fit young man, looks unwell, sitting up
- No clinical signs of dehydration. Teeth and throat OK, no nodes, sputum green, no blood. Crackles on right side, no wheeze heard. Heart sounds normal. Chest dull to percussion right side. Talking in sentences. Abdo soft
- T = 37.9, P = 110, RR = 26, BP = 130/90, O<sub>2</sub> sats on air 98% (REWS = 2)
- BGL = 14.1, ECG normal, troponin normal

### D – Diagnosis

- Moderate pneumonia
- Diabetes, hypertension

### A – Actions/management plans

- CARPA STM treatment options discussed
- Decided 3 days of IM procaine 1.5g (3.3mL) — then review. 1st given 5.15pm
- Paracetamol 500mg x 2 tablets every 6 hours, if needed
- Bloods taken for chronic disease review
- Continue chronic medicines
- Family support good, advised rest and plenty of fluids

### F – Follow-up

- Asked to return at any time if no improvement, or gets worse
- Otherwise to return at same time tomorrow for 2nd procaine injection, review BP, BGL, repeat ECG. Appointment card given
- Path results due 1 week. For chronic disease review post results

## Child health check (0–5 years)

Encourage all parents/carers to bring children for regular health checks. At every session also check immunisations, ask parents/carers about child's health and development, if they have any worries.

- Examine whole child — especially ears, teeth and gums, skin
- Do age appropriate health promotion, education

If you or parents/carers concerned about child's development — refer to child health nurse, allied health, doctor or paediatrician.

If disability identified — ensure child has care plan or management plan ([p128](#)), refer to allied health.

**Note:** Care plans for child health checks may be available on your clinic patient information system.

**Table 4.15: Child health checks**

Visit	Check or Do	Promote
Birth	<ul style="list-style-type: none"> <li>• Newborn examination</li> <li>• Neonatal screening test (heel prick)</li> <li>• Neonatal hearing screening — must be done before 3 months</li> </ul>	<ul style="list-style-type: none"> <li>• Breastfeeding</li> <li>• SIDS prevention               <ul style="list-style-type: none"> <li>◦ Sleep baby on back</li> <li>◦ Sleep baby in carer's room in own safe sleeping place, not sharing a bed</li> <li>◦ <b>Do not</b> smoke near baby</li> <li>◦ <b>Do not</b> wrap baby too tightly</li> </ul> </li> <li>• Hygiene               <ul style="list-style-type: none"> <li>◦ Wash hands with soap</li> <li>◦ Keep face clean</li> <li>◦ Change nappies regularly and wipe skin well to avoid nappy rash</li> <li>◦ Bath baby at least every second day</li> </ul> </li> <li>• Safety               <ul style="list-style-type: none"> <li>◦ Car restraint</li> </ul> </li> <li>• Play with and talk to baby</li> </ul>
First visit on arrival home	<ul style="list-style-type: none"> <li>• Check antenatal and birth records. Note any medical problems, or history of smoking, alcohol or drug use, domestic/family violence</li> <li>• Feeding</li> <li>• Measure, plot, assess growth (<a href="#">CARPA STM p156</a>)</li> <li>• If no neonatal hearing test — arrange</li> </ul>	
6–8 weeks	<ul style="list-style-type: none"> <li>• 6–8 week postnatal check (<a href="#">WBM p231</a> or local protocol)</li> <li>• Mother's postnatal check (<a href="#">WBM p219</a>)</li> <li>• Measure, plot, assess growth (<a href="#">CARPA STM p156</a>)</li> <li>• Check skin, ears (<a href="#">CARPA STM p172</a>)</li> <li>• Interaction between mother and child</li> <li>• Development               <ul style="list-style-type: none"> <li>◦ Looking at mother</li> <li>◦ Starting to smile, vocalising</li> </ul> </li> </ul>	
4 months	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<a href="#">CARPA STM p156</a>)</li> <li>• Check skin, ears (<a href="#">CARPA STM p172</a>)</li> <li>• Interaction between carer and child</li> </ul>	

Visit	Check or Do	Promote
6 months	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)</li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Laughs, coos, squeals, coughs</li> <li>◦ Looks for adult who is talking</li> <li>◦ Reaches for objects</li> <li>◦ Sits with support</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Breastfeeding</li> <li>• Start food and offer water at around 6 months (<i>CARPA STM p154</i>)</li> <li>• Strong Teeth for Little Kids (<i>CARPA STM p164</i>)</li> <li>• Hygiene                             <ul style="list-style-type: none"> <li>◦ Wash hands with soap</li> <li>◦ Keep face clean</li> <li>◦ Change nappies regularly and wipe skin well to avoid nappy rash</li> <li>◦ Bath baby at least every second day</li> </ul> </li> <li>• Safety                             <ul style="list-style-type: none"> <li>◦ Car restraint</li> <li>◦ Fall risks</li> <li>◦ Poisoning risks</li> </ul> </li> <li>• Play with and talk to baby, read books</li> </ul>
9 months	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)                             <ul style="list-style-type: none"> <li>◦ Address growth faltering (<i>CARPA STM p158</i>) if present</li> </ul> </li> <li>• Check skin, ears (<i>CARPA STM p172</i>), for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> </ul>	
12 months	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)                             <ul style="list-style-type: none"> <li>◦ Address growth faltering if present</li> </ul> </li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Listens and understands simple words, starting to say some words</li> <li>◦ Interested in people</li> <li>◦ Points to and picks up objects</li> <li>◦ Moves around on own, starting to walk with support</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Age appropriate food and drinks (<i>CARPA STM p154</i>)</li> <li>• Strong Teeth for Little Kids (<i>CARPA STM p164</i>)</li> <li>• Hygiene                             <ul style="list-style-type: none"> <li>◦ Wash hands with soap</li> <li>◦ Keep face clean</li> <li>◦ Bath or shower at least every second day</li> <li>◦ Change nappies regularly and wipe skin well to avoid nappy rash</li> <li>◦ Brush all teeth</li> </ul> </li> <li>• Avoid exposure to smoke</li> <li>• Safety                             <ul style="list-style-type: none"> <li>◦ Car seats</li> <li>◦ Near water and fire</li> <li>◦ Poisoning risks</li> </ul> </li> <li>• Play and stimulation                             <ul style="list-style-type: none"> <li>◦ Stories, talking, singing in language and English</li> <li>◦ Looking at books and pictures</li> </ul> </li> </ul>
18 months	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)</li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Talking, saying several words. If not — refer for hearing test</li> <li>◦ Points to familiar items when asked</li> <li>◦ Holds cup and drinks from it</li> <li>◦ Starting to feed self with spoon</li> <li>◦ Walking. If not — medical review</li> </ul> </li> </ul>	

Visit	Check or Do	Promote
2 years	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)</li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Understands many words in language and English, uses 2 words together</li> <li>◦ Developing fine motor skills (eg helping to dress and undress)</li> </ul> </li> <li>• Very mobile — can run, jump, kick and catch a ball</li> </ul>	<ul style="list-style-type: none"> <li>• Age appropriate food and drinks (<i>CARPA STM p154</i>)</li> <li>• Strong Teeth for Little Kids (<i>CARPA STM p164</i>)</li> <li>• Hygiene                             <ul style="list-style-type: none"> <li>◦ Wash hands with soap</li> <li>◦ Keep face clean</li> <li>◦ Use toilet</li> <li>◦ Blow nose</li> <li>◦ Brush all teeth</li> </ul> </li> <li>• Avoid exposure to smoke</li> <li>• Safety                             <ul style="list-style-type: none"> <li>◦ Car seats, seat belts</li> <li>◦ Near water and fire</li> <li>◦ Poisons out of reach</li> </ul> </li> </ul>
3 years	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)</li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Understands a lot, asks questions, 3 word sentences, follows instructions</li> <li>◦ Plays with others</li> <li>◦ Copies a line and circle</li> <li>◦ Kicks ball</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Play and stimulation                             <ul style="list-style-type: none"> <li>◦ Stories, talking, singing in language and English</li> <li>◦ Looking at pictures, reading to child</li> <li>◦ Count and compare objects, colours</li> <li>◦ Encourage to attend child programs (eg playgroups)</li> </ul> </li> </ul>
4–5 years – before school	<ul style="list-style-type: none"> <li>• Measure, plot, assess growth (<i>CARPA STM p156</i>)</li> <li>• Check skin, ears (<i>CARPA STM p172</i>), Hb, for cough</li> <li>• Lift the lip to check teeth (<i>CARPA STM p164</i>)</li> <li>• Check vision (<i>p148</i>) — refer if                             <ul style="list-style-type: none"> <li>◦ Visual acuity worse than 6/9</li> <li>◦ Lazy eye (amblyopia) — best with Lea chart</li> </ul> </li> <li>• Interaction between carer and child</li> <li>• Development                             <ul style="list-style-type: none"> <li>◦ Speech can be understood, asks questions</li> <li>◦ Listens to and tells stories</li> <li>◦ Takes turns and plays with others</li> <li>◦ Dresses self</li> <li>◦ Plays ball games</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Give <i>Get Set 4 Life — habits for healthy kids</i> guide</li> <li>• Prepare for school</li> </ul>

## School-aged health check (6–14 years)

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- Do yearly or when you get the opportunity
  - Young people under 14 years should be accompanied by a parent or guardian
  - Young people 14–16 years may be able to access health care and give consent to treatment if they are assessed to be a competent minor ([p102](#))
- Make sure you understand issues of consent, child protection, mandatory reporting
  - Sexual activity in children under 14 years is always notifiable

### Do first

- Decide who is able to give consent, then obtain and document consent
- Ask about appropriate adult support even if competent minor
  - Helps identify responsible adult to talk with about their health — parent, other family member, ATSIHP, trusted adult in community
- Review previous history — medical including medicines, social issues
  - Hearing — audiology reports, surgery
  - Respiratory ([CARPA STM p131](#)) — persistent wet cough, repeated chest infections especially if admitted to hospital
  - Acute rheumatic fever, heart disease
- Allergies and immunisations
- See *HEADSS framework for Psychosocial Health Assessment* ([p102](#)) for examples of questions that will help you complete checklist

### Follow-up

- Arrange time for follow-up to talk about results, treatment, management
- If problems found — make sure person added to recall system
- If obese child 10–14 years (BMI for age and gender [[p108](#)] above 97th percentile) —
  - U/A for protein — if protein 1+ or more do ACR
  - BP — cuff needs to cover  $\frac{2}{3}$  of child's upper arm. If cuff too narrow or too wide — reading may be wrong
  - Take blood for random BGL, HbA1c, FBC, UEC, eGFR
    - Do POC test if available
  - Medical review
- Team approach needed to manage complex problems
  - Team could include the young person, family, clinic staff, doctor, paediatrician, dentist, physio, OT, speech therapist, hearing, eye team, nutritionist, mental health team, support services, council, housing associations, education system services

**Note:** Care plans for school-aged health checks may be available on your clinic patient information system.

Table: 4.14: School-aged health check — checklist

	6–9 years	10–14 years
<b>Ask</b>		
Home situation – carer, living arrangements, overcrowding	✓	✓
Hygiene – hand washing, clean face, tooth brushing	✓	✓ Menstruation
Sleep – how much, when (day/night)	✓	✓
Education – school attendance/problems	✓	✓
Nutrition – how much, what kind	✓	✓
Physical activity/sport/ screen time	✓	✓
Social group – friends/peers/bullying	✓	✓
Smoking, smoke exposure (including camp fires)	✓	✓
Alcohol	–	✓
Other drugs	–	✓
Safety – seat belts, water safety, bike helmets, domestic/family violence	✓	✓
Gambling – how much, owing money (debt), missing school, parents	–	✓
Talk about safe sex and contraception • If sexual activity identified – see Flowchart 2.4: <i>Guidelines for suspected sexual assault, abuse or maltreatment of any person under 18 years (CARPA STM p149)</i>	–	✓
Self harm, suicidal thoughts	–	✓
<b>Check</b>		
Weight, height	✓	✓
BMI for age	✓	✓
Hb	✓	✓
Teeth and gums (lift the lip)	✓	✓
Visual acuity	✓	✓
Ears	✓	✓
Skin exam	✓	✓
If sexually active — consider offering STI check. See <i>STI checks for young people first (CARPA STM p276)</i>	–	✓
<b>Do</b>		
Due or overdue immunisations	✓	✓

## Adult Health Check

Indigenous adults 15 years and over — aim for health check **every 2 years** to

- Find problems before they get serious
  - Get appropriate health education and brief interventions
  - Get care to promote a long healthy life
- Offer health check **every year** for individual assessment if
    - Women — diabetes in pregnancy (*WBM p118*), polycystic ovary syndrome (*WBM p307*)
    - First degree relative with diabetes or early onset (under 50 years) kidney failure or heart attack
    - Impaired glucose tolerance (IGT) (*CARPA STM p256*), microalbuminuria (*CARPA STM p237*)
    - Changes in BP or blood fats but low cardiovascular risk that don't need medicine but need regular review

### Doing an Adult Health Check

Screening health check — different recommendations for Indigenous and non-Indigenous people based on prevalence of common diseases.

**Remember:** Results need to be followed-up.

- **Risk factors and problems assessed**
  - Chronic diseases, cardiovascular risk, STIs
  - Lifestyle risk factors, issues for older people
  - Cancers — cervical, breast, bowel
  - Common conditions often missed in routine health care delivery

### Adult Health Checks can be provided 2 different ways

- Population health screen
  - Smaller number of strongly evidence based checks to find significant health problems. Allows maximum community coverage
  - Options to deliver this include
    - Community screening at health weeks
    - Opportunistic screening of individuals
    - Targeted screening of certain groups (eg by age group or disease)
- Population health screen plus individual assessment
  - Larger number of checks
  - Can then be claimed as Medicare Health Assessment
    - All Aboriginal or Torres Strait Islander patients – Item 715
    - Non-Indigenous adults meeting criteria – Item 701, 703, 705, 707

### Always check

- Does person have known chronic disease. Checks in usual management plan will cover chronic disease part of Adult Health Check

**Note:** Care plans for Adult Health Checks may be available on your clinic patient information system.



## Adult Health Check checklist — population health screening component

Aim to screen everyone who is eligible with this checklist.

POPULATION HEALTH SCREENING	Indigenous adult 15–35 years	Indigenous adult 36–54 years	Indigenous adult 55+ years	Non-Indigenous adult 45–74 years	Non-Indigenous adult 75+ years
<b>Ask</b>					
Safer sex ( <a href="#">CARPA STM p285</a> )	✓	✓	✓	✓	✓
Lifestyle risk factors – SNAPE† (check file notes – don't do if done recently)	✓	✓	✓	✓	✓
<b>Check</b>					
U/A (protein)	✓	✓	✓	✓	✓
Urine ACR	✓ 30+ years 15–29 years – if protein 1+ or more	✓	✓	✓ If protein 1+ or more	✓ If protein 1+ or more
BP	✓	✓	✓	✓	✓
HbA1c, BGL (random/fasting)	✓	✓	✓	✓	✓
Lipids (random/fasting)	✓	✓	✓	✓	✓
FBC, UEC, eGFR	✓	✓	✓	✓	✓
Full STI check – man ( <a href="#">CARPA STM p272</a> ), woman ( <a href="#">WBM p238</a> )	✓	–	–	–	–
Immunisation status	✓	✓	✓	✓	✓
Hepatitis B status ( <a href="#">CARPA STM p368</a> )	✓	✓	✓	–	–
Faecal occult blood test (FOBT) – every 2 years*	–	✓ 50+ years	✓	✓ 50+ years	✓
Cervical screening if due ( <a href="#">WBM p289</a> )	✓ 25+ years	✓	✓ Stop at 74 years	✓ Stop at 74 years	–
Mammogram – every 2 years ( <a href="#">WBM p285</a> )	–	✓ 50+ years	✓ Stop at 74 years	✓ 50–74 years	–
<b>Do</b>					
Cardiovascular risk assessment ( <a href="#">CARPA STM p230</a> )	✓ 20+ years	✓	✓	✓	✓
Brief interventions ( <a href="#">p138</a> )	✓	✓	✓	✓	✓

\* As part of the National Bowel Cancer Screening Program

## Adult Health Check checklist — individual assessment component

Extra assessment items if resources/capacity, or plan to claim Medicare item.

INDIVIDUAL ASSESSMENT Complete to claim Medicare health assessment	Indigenous adult 15–35 years	Indigenous adult 36–54 years	Indigenous adult 55+ years	Non- Indigenous adult 45–74 years	Non- Indigenous adult 75+ years
<b>Ask</b>					
General health	✓	✓	✓	✓	✓
Social situation	✓	✓	✓	✓	✓
Family health history	✓	✓	✓	✓	✓
Hearing – hearing aids	✓	✓	✓	✓	✓
Vision – glasses, contact lenses	✓	✓	✓	✓	✓
Dental and oral problems – pain ( <i>CARPA STM p335</i> )	✓	✓	✓	✓	✓
Menopause problems ( <i>WBM p321</i> )	–	✓ 45+ years	✓	✓	–
Contraception ( <i>WBM p334</i> )	✓	✓	–	–	–
Erectile dysfunction	✓	✓	✓	✓	✓
Osteoporosis risk factors <sup>††</sup>	–	–	✓	✓	✓
Physical function, falls, home accidents Social supports, nutrition Memory, dementia ( <i>CARPA STM p199</i> )	–	–	✓ If frail	–	✓ If frail
<b>Check</b>					
BMI ( <i>p108</i> ), waist circumference ( <i>p111</i> )	✓	✓	✓	✓	✓
Pulse	✓	✓	✓	✓	✓
PHQ2 <sup>‡</sup>	✓	✓	✓	✓	✓
Mouth, throat, teeth, gums ( <i>p172</i> )	✓	✓	✓	✓	✓
Vision ( <i>p148</i> )	✓	✓	✓	✓	✓
Trichiasis ( <i>CARPA STM p352</i> )	–	✓	✓	✓	–
Hearing – tuning forks ( <i>p162</i> )	✓	✓	✓	✓	✓
Ears – wax, perforations	–	–	✓	–	✓
Breast exam ( <i>WBM p270</i> )	–	✓ 50+ years	✓	✓ 50+ years	–
Skin exam ( <i>p266</i> ) – look for scabies ( <i>CARPA STM p394</i> ), sores, tinea	✓	✓	✓	✓	✓
<b>Do</b>					
Medical review	✓	✓	✓	✓	✓

## Follow-up

- Arrange time to talk about results, treatment, management
- Population screen
  - Review pathology results
    - Offer treatment if positive STI results
  - **Medical consult** if
    - Abnormal pathology result/s
    - Absolute cardiovascular risk more than 15%
- Individual assessment
  - **Medical consult** if any abnormal findings
  - **Dental consult** if oral or dental problems
  - Refer to other agencies as needed

### † Lifestyle risk factors (SNAPE)

- **S** moking — ask how much, how long, tried to stop, want to stop  
**Remember:** Quitting is the most important lifestyle change
- **N** utrition — ask about fruit and vegetables, takeaways, sugary/soft drinks. Give information on healthy diet
- **A** lcohol — work out how much alcohol (grog) person drinks, provide information on safe drinking and cutting down. Ask about other drugs — cannabis (gunja), inhalants/sniffing, kava, party drugs
- **P** hysical activity — ask how much physical activity/exercise they get, give advice on recommended levels of physical activity
- **E** motional and social wellbeing — ask how they are feeling, how they are coping with everyday activities, loss and grief issues

See *Tobacco (CARPA STM p223)*, *Healthy lifestyle choices (p143)*, *Brief interventions (p138)*.

Do a full review at least once a year. At other visits make relevant to person's behaviour — focus on agreed changes or highest risk.

### †† Osteoporosis risk factors

- Bones — fracture with minimal trauma, poor bone density on x-ray
- Long-term use of glucocorticoid therapy (eg prednisolone)
- Early menopause (before 45 years)
- Too much caffeine — more than 4 cups of coffee, tea, cola most days
- Too much alcohol — more than 2 standard drinks most days
- Low calcium intake
- Not enough sunlight (vitamin D)
- Not enough weight bearing exercise

### ‡ Patient Health Questionnaire 2 (PHQ2)

Over the past 2 weeks how often have you been feeling the following?	None (Score 0)	A little bit (Score 1)	Most of the time (Score 2)	All of the time (Score 3)
Have you been feeling slack, not wanting to do anything?				
Have you been feeling unhappy, depressed, really no good, that your spirit was bad?				
Total score (0–6)				

#### Interpreting scores

- 0–2 — likely to be well
- 3 or more — complete Patient Health Questionnaire 9 (PHQ9) ([CARPA STM p202](#))

# Management plan

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These are general principles. Individualise plan to person's needs and circumstances.

- Ensure person or guardian consents to plan
- Needs to be reviewed regularly and updated as needs are met or change
- If you need help making plan — consult with and refer to multiprofessional team for advice as needed
  - OT, physio, speech therapist, social worker, psychologist, rehabilitation services, disability liaison officer, paediatrician, dietician, mental health team, alcohol and other drugs
- Consider access to non-government and Aboriginal organisations — disability services, respite services, childcare, domestic/family violence support service
- Record all services and carers in person's file notes

## Check file notes

- Previous management plan
- Specialist letters

## Ask

- What person thinks might help
- About person's own resources — family, community, clinic, other services (eg mental health, drug and alcohol)
- About triggers for distress, dysfunction (eg relationship, money problems)

## Do

- Make management plan. Consider
  - Physical health (*below*), psychological health ([p129](#)), social and environmental health ([p129](#))
  - Support for carers ([p130](#))
  - Legal considerations ([p130](#))
- Provide education about condition
- Set achievable goals ([p129](#)), provide brief interventions ([p138](#))
- Relapse prevention strategies
  - Identify early warning signs of illness returning and plan for what to do
  - Help person and family lessen possible triggers — smoking, cannabis, volatile substance misuse, stress and worries. See *Brief interventions* ([p138](#))

## Physical health

- Check person is on appropriate recall registers
  - Adult Health Check ([p123](#)), school-aged health check ([p121](#)), child health check ([p118](#))
  - Combined check for chronic disease ([CARPA STM p239](#))

- Current treatments (eg prescription medicines, over the counter)
  - Check they are working, monitor side effects
  - Give tips for helping to remember to take medicines — take at same time of day, use dose aid, identify support people

## Psychological health

- Supportive therapy
  - Develop supportive caring relationship with person
  - Allow them to talk about their worries/distress
- Problem solving and goal setting
  - Work toward some resolution of their immediate concern
  - Break down all the pressures the person is feeling
    - Address each one, start with ones that are easily resolved
  - Listen to what person has to say — take them seriously, respect them
  - Give them power over their situation — focus on their strengths
  - Encourage them to find things to do, people who can help
  - Talk about the future
- Consider involving traditional healers. Family can advise and arrange
- Healthy sleep — cool wash before bed, regular sleep times, no smoking or drinks with caffeine (eg coffee, tea, cola) before bed
- Self-help strategies — use family/friends for support and rest, cultural activities (eg hunting, painting, spending time on country, bush medicines)
- Regular exercise and healthy diet
- Mental status examination ([p113](#)), as needed
- Psychotherapy (eg CBT, narrative, interpersonal) — psychologist if needed
- Consider specialised programs if available — anger management, alcohol/drug rehabilitation, problem gambling

## Social and environmental health

- Make sure person is getting money (eg Centrelink)
- Access to transport
- Safe place to sleep, enough food
- Home assistance
  - Access to required equipment (eg wheelchair, shower chair)
  - Personal care and laundry
  - Home modifications
- Identify family support — partner, significant others
- If carer needed — make sure enough carers to keep person safe, see what support they can provide (eg housing, food, childcare, time on country)
- What community programs would they benefit from — art centre, school, sport and recreation program, home care services (eg HACC)
- Encourage employment, further training, school — identify barriers



### **Support for carers**

- Record carers' contact details in patient file notes
- Consider Centrelink (eg carer pension)
- Plan respite for person and/or carers in town or other community

### **Legal considerations**

- Advocacy — Children's Commissioner, Ombudsman, domestic/family violence support service
- Guardianship, power of attorney
- Advance care planning, will, accessing superannuation
- Legal advice

### **Follow-up**

- Address issues identified
- Review management plan schedule
  - Time of next review should be based on individual needs
  - Record progress, any problems

## Disability

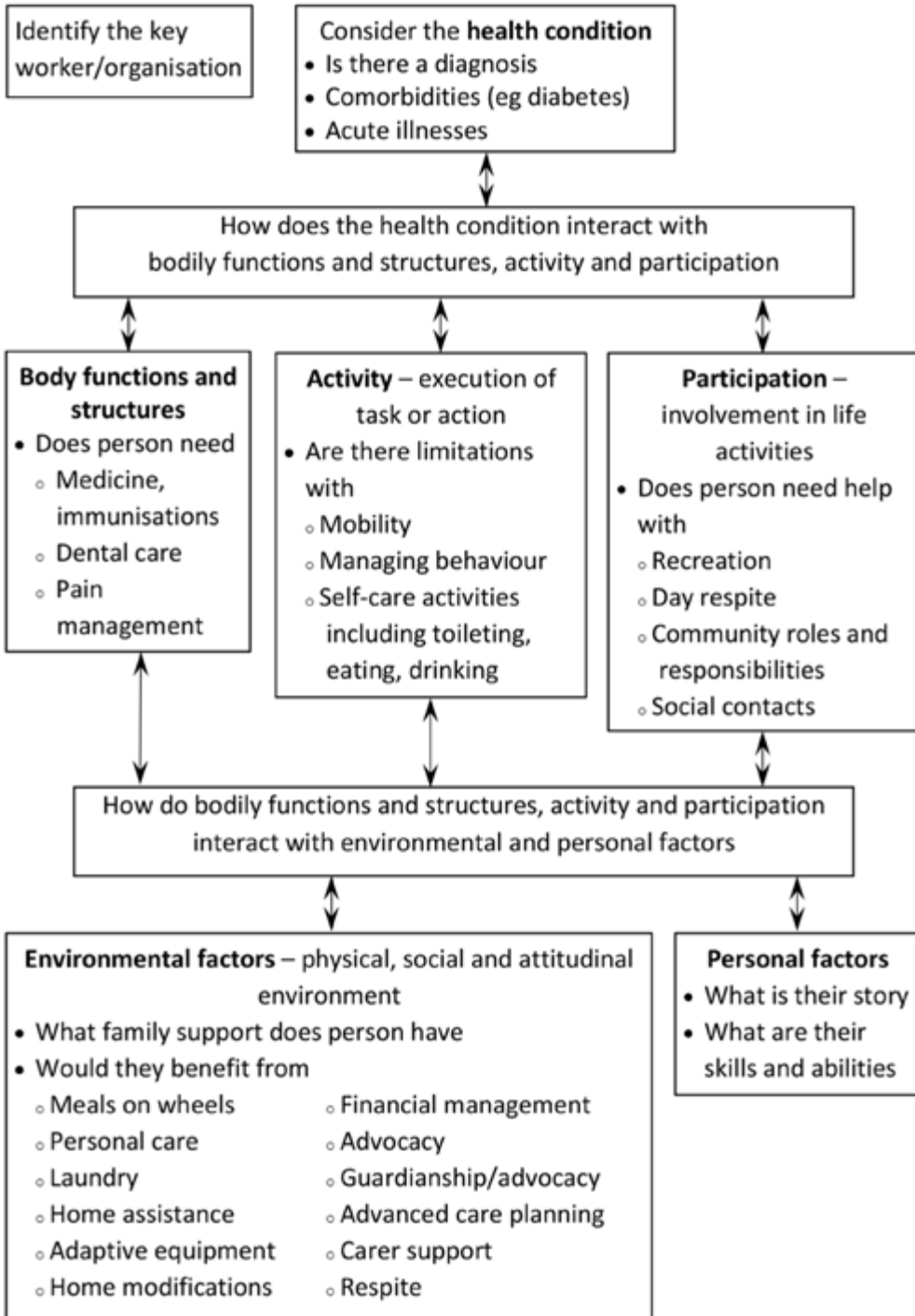
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- People with a disability can get better or worse over time
- Help is best when given early — but it is never too late to start
- Problems can include
  - Communication, getting on with others
  - Mobility, looking after themselves
  - Home, school, work, community activities
  - ‘Shame’, depression
- May be eligible for individualised disability funding (eg NDIS)
- If you suspect a child has a disability — do age-appropriate developmental assessment. If under 5 — see *Child health check (0-5 years)* (p118)

### Do

- Check file notes for previous management plan and specialist letters
- Encourage person to bring family member, friend, carer with them to clinic
  - Consent may be needed from parent, guardian, adult guardian
- Refer to multiprofessional team as needed for treatment or advice — OT, physio, speech therapist, social worker, psychologist, rehabilitation services, disability liaison officer, paediatrician, dietician, mental health team. Consider telehealth
- Develop management plan (p128) — include issues in Flowchart 4.1 (p132)
  - Consider local conditions, services and support available
  - Support people to do as much as they can for themselves
  - Goals — find out what person would like to work on, who can help
    - Activities will change as person gets better or worse
- Arrange more than 1 appointment if visiting regional centre
- If returning from hospital, rehabilitation unit, respite — start discharge planning early
  - Family meeting and updated management plan (p128)

Flowchart 4.1: Developing a community-based management plan for person with disability or older person living in Indigenous community



## Palliative care

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Palliative care in the remote setting is delivered by primary health care providers, community organisations, and family. Palliative care team (telehealth) can support person to die on country. Early care planning important.

### Communication and planning

- **Family meetings important.** Consider
  - Cultural advice from ATSIHPs — taboos around death
  - Is interpreter needed
  - Are the right people involved — key family members or decision makers
  - What do person and family want to know. Allow enough time to tell whole story, family may not fully understand diagnosis, past treatment
  - Tell person and family about changes and what to expect, especially toward the end — person will get sicker, condition can change quickly
- Talk to local palliative care team/specialist about
  - Advance Care Plan or Advance Health Directive records person's decisions about where they want to finish up, care and treatment — what they do or don't want
  - Many very sick people don't want lots of tests or extra trips to hospital — only do if needed to make decisions about care and treatment
- Plan ahead
  - Coordinated primary and specialist care, dedicated family carers, home care supports, medicines and equipment (local delivery options)
  - A plan to get home again if they are in hospital
  - Respite
  - Needs of carer/s — respite, appropriate Centrelink income
- Review management plans often, change as needed

### Whole person care

#### Spiritual

- Cultural business and religious needs

#### Social

- Respite options. Supports for person, family, community
- Housing and equipment needs. Referral to OT for modifications and aids
- Centrelink, superannuation entitlements, wills
- If not culturally appropriate for person to die at home — other shelter will be needed. Talk with ATSIHP, family elder

#### Emotional/Psychological

- Allow time and space to talk to person and family about worries
- Deal with problems identified — may not be what you think problems are

## Physical

- Consider medical and non-medical methods for managing symptoms
- Non-medicine treatments can help — massage, music, listening, company
- Involve other health professionals to improve comfort for person and family — traditional healers, physio for mobility, OT for daily activities, speech pathologist for swallowing, nutritionist for dietary advice
- Check medicines for side effects or interactions, if still needed
  - Only give medicines most important for palliative care

## Pain management

- Assess pain by asking how bad it is, how they look, how they move around, what they can or can't do
- Chronic pain needs regular medicines at same time each day, and extra for when pain breaks through usual pain control. Palliative care team will advise
- Information for carer/family
  - Record what medicine person takes daily and how well it helps
  - Person and carer/family need to know how to use both regular and rescue/breakthrough pain medicines
  - Keep strong medicine safe in home, out of reach of children (eg locked tucker box)

## Medicines

- Don't use repeated IM injections — they hurt
  - Put in butterfly needle ([p86](#)) or subcut cannula ([p348](#)), preferably in upper part of arm. Can be used for injections and continuous medicines with syringe and battery-driven pump
  - In most cases, several medicines can be mixed together in same syringe — check if unsure

## Pain relief

- May start with simple medicines (eg paracetamol, codeine)
- Talk to palliative care team about dose for stronger pain medicines
  - Give regular **short-acting opioids** (eg 4 hourly morphine mixture) and extra 'rescue' doses for 'breakthrough' pain for 1–2 days to work out total amount of pain relief needed
  - Starting dose for **morphine** oral mixture for adults is 2.5mg every 4 hours, if not already using opioids
  - Convert amount of pain relief needed to equivalent doses of **long-acting opioids** (eg *Kapanol* – once or twice a day, *MS Contin* or oxycodone – twice a day, fentanyl patches – every 3 days)
- Always have extra short-acting rescue medicine available for breakthrough pain (eg morphine mixture or oxycodone tablets)
  - If person needs more than 3 times a day — review doses of regular medicines

- Pain medicine can cause constipation — always give regular bowel medicines (eg docusate and senna)

### Other medicines

- Medical/palliative care team consult about other medicines to ease symptoms — see Table 4.12

**Table 4.12: Treating common symptoms at the end of life**

Symptom	Medicine — as directed
Respiratory secretions	<ul style="list-style-type: none"> <li>• Hyoscine hydrobromide subcut</li> <li>• Glycopyrrolate subcut</li> </ul>
Confusion	<ul style="list-style-type: none"> <li>• Haloperidol subcut hourly</li> <li>• Midazolam subcut</li> <li>• Olanzapine wafers</li> <li>• Clonazepam drops</li> </ul>
Nausea or vomiting	<ul style="list-style-type: none"> <li>• Metoclopramide subcut</li> <li>• Haloperidol subcut</li> </ul>

### At the end — practical matters

- Important to prepare family — see *Loss and grief* (p136)
- Toward the end person gets weaker, stays in bed, stops eating and drinking, passes less urine. This is a natural process
  - Usually no need to give IV fluids or feed through nasogastric tube
  - May have same level or increase in pain. If person can't speak — look for physical signs they are in pain, talk with family
  - Will get new symptoms (eg confusion, noisy breathing, sleeping more)
  - May see or hear deceased relatives — sign that person close to the end
- Physical comfort is important (eg mouth care, pressure care)
- If can't swallow — can give medicines subcut or under tongue
- If family very distressed — someone else or clinician can give medicines
- Check with doctor and family about plans for death certificate, before person dies
- Consider removal of body — refer to local community protocol

# Loss and grief

---

Grief is a normal response to loss. Loss may be a death or other things such as someone going/being away, loss of culture or identity, job or home. Can be a series of large or small losses over time.

Indigenous communities have high levels of grief because of many deaths from illness and injury. Deaths that are sudden, violent, or involve young people often cause worse grief reactions. People at greater risk of grief reactions if also other stressors or worries, socially isolated, problems with depression, drug or alcohol misuse.

Be sensitive to local culture. All communities are different. Aboriginal communities may follow some or all of these practices after a death

- Deceased person's name should not be spoken
- Deceased person's house is smoked, painted or vacated
- Special rituals undertaken
- Certain relatives of deceased have to be silent
- Relatives of the deceased may live outside the community to mourn. May need special clinic visits
- In some communities 'sorry business' (grieving) involves self-inflicted injury (sorry cuts) and family fighting
- Payback may be part of grieving/healing process

## Cultural way

Hearing voice or spirit of deceased person is not evidence of psychosis or mental illness unless family or cultural informant tells you it is outside normal cultural grief experience.
---

## Do not

- **Do not** interfere in 'sorry business' unless asked
- **Do not** tell person to 'get over it', 'get on with it' or things like that

## Do

- Explain that grief is normal, but time frame different for different people and situations
- Allow person to express their grief. Listen, be caring
- Talk with people involved in sorry business about using clean tools (eg rocks, razors) to reduce risk of infection
- Get advice from senior Indigenous person, ATSIHP about how to behave in culturally appropriate way
- Respect person's own way of deciding blame and cause of death — even if very different from your own
- Help explain health information if needed (eg from hospital, coronial reports)
- Ask person what would help them feel better (eg smoking clinic)

## Clinical

- Grief may result in physical symptoms including
  - Trouble concentrating
  - Trouble sleeping
  - Not feeling hungry, losing weight
  - Constipation, diarrhoea
  - Sometimes bereaved person feels pain or other symptoms where a deceased relative had their illness
- Symptoms usually settle by themselves, don't need medicine
  - Talking about issue may help
- Sleeping tablets for short period (up to 3–4 nights) may help — **medical consult**
- If person remains very upset for a long time, can't function — see *Mental health assessment* (p112)

## Remember

- Look after yourself — you might also be grieving for person, or memories of an old grief might be restarted for you
- Attending funeral of person you looked after can be sign of respect, help you to heal
- Talk with someone about your feelings — trusted senior worker, outside counsellor, Bush Support Services — 1800 805 391

## Brief interventions

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Every time a person is at the clinic, talk with them about issues or concerns they have about healthy lifestyle, or other health business. These short chances (as little as a couple of minutes) are 'brief interventions'.

- Brief interventions work — people are more likely to consider changing if health care workers talk with them about their issues and concerns
- Talk about any behaviour (good or bad) that affects health
  - Eating well, being more active
  - Drug use (eg smoking, marijuana, alcohol)
  - Looking after a chronic disease
  - Home problems (eg domestic/family violence)
- Can't force people to change — person needs to want to change before any steps will be taken. But you can raise awareness, share information, get person thinking about making changes, and support good choices and attempts to change
- Type of brief intervention depends on how ready person is to change (p140)
- Have printed material to support what you talked about — they may look at this at home as well
- If problem is severe — probably need more than a brief intervention, may need specialist services (eg counselling)

**Remember:** The way that practitioners communicate with their clients is an important part of brief interventions and helping people change behaviour.

- Try to gain the person's trust and establish a relationship. Particularly important when working with pregnant women as this is a very sensitive time
- Conversational approach is best as lecturing and telling people what to do will not help to get the message across
- Important not to judge person — makes it harder to talk with them

## Stages of change

### Determining stage of change

4 steps to use when doing a brief intervention about any issue.

- **Step 1** — Raise issue you want to talk about
- **Step 2** — Ask if they have thought about changing
- **Step 3** — Decide on their stage of change based on what they tell you in step 2 — do brief intervention to suit. Record in file notes — stage of change and advice given
- **Step 4** — Next time you see them, ask how they are doing. Reinforce positive changes, do another brief intervention if you think stage of change different

## Using alcohol as example

### Step 1

- Ask questions like
  - How do you feel about your drinking
  - How do your family/friends feel about your drinking
  - Do you get hassled about your drinking
  - Does your drinking make it hard to get to work or other activities

### Step 2

- Ask questions like
  - Do you want to change or cut down your drinking

### Step 3

- Decide on person's stage of change and strategy to try — see Table 4.13

### Step 4

- Each time you see person
  - Ask how they are going — check file notes for other discussions, activities
  - Assess stage of change — may be different from last time
  - Offer ongoing support based on stage of change
- If not enough time that day — organise follow-up for another time

### Relapse

- Going back to drinking (relapse) is common
- Help person not to be down on themselves, not to see this as a big failure
- Encourage person to learn from setback and get back to not drinking again

### Special groups

- Some people are more important to talk to about their alcohol (grog) use
  - People sick because of alcohol — they are more likely to listen to message
  - Young women who are pregnant — to stop babies from being born with damage from alcohol. See *Fetal alcohol spectrum disorder (CARPA STM p152)*
  - Families of young women who might get pregnant. Family drinking patterns can affect whether young women drink in pregnancy

Table 4.13: Stages of change and brief interventions to suit

Stage of change	Type of brief intervention
Not ready to change <i>OR</i> Not worried	Strategies to try <ul style="list-style-type: none"> <li>• I won't hassle you, but if you want to talk about it, I'm here</li> <li>• Can we talk about making sure you're safe when you drink</li> </ul>
Thinking about changing	Strategies to try <ul style="list-style-type: none"> <li>• Talk with person about <ul style="list-style-type: none"> <li>◦ What they see as good things about drinking</li> <li>◦ What they see as 'not so good' things about drinking</li> <li>◦ What happens when they drink, when they don't drink</li> </ul> </li> <li>• While they think about it some more, maybe they could try cutting down a bit, or drinking light beer</li> </ul>
Ready to change <i>OR</i> Doing it	Strategies to try <ul style="list-style-type: none"> <li>• So you've decided to give up/cut down on alcohol (grog) — can we talk about your ideas <ul style="list-style-type: none"> <li>◦ Reinforce small steps</li> </ul> </li> <li>• Talk about choices, support available <ul style="list-style-type: none"> <li>◦ Promote local groups (eg quit smoking, walking, exercise)</li> </ul> </li> <li>• Help develop a plan. Find out about concerns, give information and any support you can</li> <li>• Invite them to come back</li> </ul>
Sticking to it	Strategies to try <ul style="list-style-type: none"> <li>• Ask how they are going. Check file notes for earlier discussions and activities</li> <li>• Find out what is going well</li> <li>• How are they avoiding triggers</li> <li>• Talk about benefits of change — congratulate</li> <li>• Offer support, invite them back</li> </ul>

## FRAMES

FRAMES is a set of 6 elements shown to make brief interventions more effective. FRAMES provides a useful checklist for planning how to do brief interventions better. Elements are

- **F**eedback — provide assessment results to person in positive way
- **R**esponsibility — talk about person's responsibility for making changes
- **A**dvice — give clear relevant advice about reducing harm, improving health and wellbeing
- **M**enu — work with person to create range of alternatives, options
- **E**mpathy — use empathy as a counselling style
- **S**upport self-efficacy — encourage person to be optimistic, and to believe that they can change

### Other important ways of supporting change

- **Goal setting** — need to set realistic goals for changing problem behaviour
- **Follow-up** — reinforce behaviour change, make sure strategies are appropriate
- **Timing** — very important. Motivation is there when person thinking about change. People make changes when time is right for them

## 5As approach — Ask, Assess, Advise, Assist, Arrange

### Using smoking as example

#### Ask

- About smoking
  - If smokes or ever smoked — ask how many, how long
  - If ex-smoker — when they stopped
- If smoker — ask about quitting
  - Tried to stop, want to stop, quitting now, thinking about it, previous attempts

**Remember:** Check file notes to see what has been talked about or happened recently so you know what to ask. Record what you ask, are told, offer them materials.

- If non-smoker — remind them about passive smoking and the need to keep smoke away from children, adults and pregnant women

#### Assess

- Readiness to quit. See *Stages of change* (p138)
- Level of nicotine dependence
  - Ask
    - How long after waking do you have your first cigarette
    - How many cigarettes do you smoke a day
    - If tried to quit — did you have cravings or withdrawal symptoms
  - Smoking within 30 minutes of waking, smoking more than 10 cigarettes a day, history of withdrawal symptoms in previous quit attempts are all markers of nicotine dependence
    - If first cigarette less than 30 minutes after waking — moderate to high dependence
    - If first cigarette 30 minutes or more after waking — low to moderate dependence

#### Advise

- Give advice in a positive way to all people who smoke
  - “Stopping smoking is the most important thing you can do to protect your health now and in the future — I know it's hard to quit, but if you want to, I can help”



- Give advice that means something to person — talk about how it makes their health problems worse, how it affects their children
- Use additional information such as flip charts, pamphlets, other written or pictorial materials
- Let person know that giving up smoking may cause cravings or nicotine withdrawal symptoms — but that these usually stop in a couple of weeks
  - Symptoms can include feeling anxious, edgy, restless, down, hungry, trouble concentrating or sleeping
  - Tell them to drink more water as it helps to lessen withdrawal symptoms
- Talk about what symptoms they had last time and then brainstorm ways to address these if they happen again

**Remember:** People often try to quit a few times before stopping for good.

### Assist

- Offer support and treatment based on readiness to quit and level of nicotine dependence
- Offer all people trying to quit
  - Quit plan
  - Counselling and support (eg Quitline)
- If dependent — also offer medicine to help quit
  - Nicotine replacement therapy (NRT) ([CARPA STM p223](#))
  - Urge reduction medicines (eg varenicline) ([CARPA STM p225](#))

### Arrange follow-up

- Congratulate and be positive about decision to quit, remind them of good things about not smoking
- Review progress, problems, medicine use, and encourage them continue to be smoke free
- Talk about strategies to deal with situations where there would be pressure to smoke
- If they do have a cigarette, don't treat it as a failure. Talk about reasons and what they can learn from it. Encourage them to keep trying

## Getting messages across in other ways

- Display information about healthy lifestyles in clinic. Try to use local language in displays
- Keep and display useful phone numbers and/or addresses for people to find help for themselves
- Consider clinic policies that promote healthy lifestyle — smoke-free areas, dog-free clinics
- Consider example you set for people you work with and in community

# Healthy lifestyle choices

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Counselling at-risk individuals in the primary care setting is very effective. See *Brief interventions* (p138).

## Healthy food choices

### Ask

- How much fruit and vegetables they eat each day
- How food is cooked
- How often they buy food from the take-away
- How much soft drink they have in a day
- How often they have bush tucker
- Do they know how to read labels on packaged food — nutritionists can help

### Do

Encourage people to

- **Eat more bush foods and locally grown food**
  - Plant and animal bush foods are fresh and have plenty of nutrients
  - Most are low in fat, salt and sugar
  - Fruit and vegetables grown in the community are often cheaper, fresher
- **Eat fruit and lots of different types and colours of vegetables every day**
  - Add mixed vegetables to meals when cooking
  - Vegetables can be fresh, frozen, canned, dried
  - Try different types and colours of vegetables, as they provide different nutrients that help prevent some cancers and heart disease
  - Eat legumes — baked beans, bean mix, soup mix, lentils
  - Choose fruit and raw vegetables as a snack
- **Eat wholegrain and wholemeal breads, cereals, rice, pasta**
  - Eat some of these foods with each meal
- **Choose water when thirsty**
- **Eat less fatty food and fried food**
  - Eating too much fatty or fried food can make people put on too much weight, increases risk of diseases like diabetes, heart disease
  - Eat more lean meat and bush foods
  - Eat up to 2–3 serves of fish a week. Use fresh or canned in water (not in oil or brine)
  - Eat less fatty foods like fatty meat, tinned corned beef, sausages, pizzas, pies
  - Eat less fried foods like chips, fried chicken or meat, hamburgers
  - Eat less snack food like potato crisps, ice cream, chocolate, cakes
  - Choose low fat snacks like fruit, vegetables, boiled eggs, yoghurt
  - If buying take away food — choose salad, sandwich/roll, meat and vegetable dish
  - Cut all fat off meat before cooking, take skin off chicken

- Adults should choose reduced fat milk, cheese, yoghurt
- Use canola or olive oil, polyunsaturated/monounsaturated oils or margarine. These are better fats, but still fats — only use small amounts
- **Eat and drink less sugar**
  - A lot of sugar is hidden in foods and drinks
  - Too much sugar can cause tooth decay, weight gain
  - Brown sugar, raw sugar, honey, golden syrup — same as white sugar
  - Drink plain water instead of soft drink, cordial, other sweet drinks
  - Choose diet drinks instead of ordinary soft drinks, flavoured mineral water, high energy drinks, sports drinks, cordial
  - Add less sugar to tea or coffee
  - Choose fruit juice with ‘no added sugar’ — only 1 small glass, small bottle or popper (125mL), not every day
  - Eat less biscuits, cakes, chocolate, lollies, ice cream
  - Choose low sugar breakfast cereals (eg porridge, wheat biscuits)
- **Eat less salt and salty foods**
  - Australians consume around 9 times more salt than needed
  - Too much salt can cause high BP, increase risk of stroke and heart attack
  - Up to 80% of salt we eat is already in our food — read food labels to buy better foods when shopping
  - Choose ‘low salt’ options when available — 120mg or less of sodium per 100g of food is low salt food
  - Avoid foods with lots of salt added — tinned meats, sausages, hams, sauces, gravies, pies, sausage rolls, crisps, instant noodles
  - Try not to add salt to your food

## Regular physical activity

### Ask

- How often they exercise or are physically active, and for how long
- What sort of physical activity they enjoy. How can they do it more often
- Who they could exercise/be active with on a regular basis

### Do

Explain

- **Doing any physical activity is better than doing none**
  - If not doing anything now — start by doing a little bit, build up over time to recommended amount
- Be active on **most, preferably all, days** to reduce risk of diabetes, stroke, heart disease and some cancers. Can also help with emotional wellbeing
  - To reduce risk of diabetes, heart disease or stroke — do at least **30 minutes** of moderate activity (like walking) **5 days a week**
    - “That’s like walking to [place 1 in community] and back”
    - Moderate means you can talk but not sing while exercising

- To prevent weight gain and avoid some cancers — increase moderate activity to **1 hour a day**
  - “That’s like walking to [place 2 in community] and back”
- For best results do a mixture of moderate and vigorous activity
  - Vigorous means you can only say a few words while exercising
- Also do some activity to **keep your muscles strong, at least twice a week** (eg weights, push-ups, carrying heavy loads)
- Exercise helps control blood glucose. People with diabetes or IGT should
  - Exercise for 30 minutes a day at least 3 days a week, with no more than 2 days in a row without aerobic physical activity (eg walking)
  - Also do some resistance training (eg with weights), if possible
- Lots of ways to keep physically active — walking, dancing, hunting, gardening, swimming, cleaning
  - Pick something that they like doing
  - Keep playing sport, if possible
- Set achievable goals with person for more daily physical activity
  - Consider using an action plan, review at next health check

### Sitting less

- Sitting down for a long time (eg for painting, storytelling, playing cards, watching TV) can lead to increased risk of diabetes and other diseases
  - Break up long periods of sitting as often as possible
  - Stand up and walk around at least every 20 minutes

### Healthy weight

- Advise people with healthy weight to avoid weight gain by
  - Staying active — aim to exercise at moderate intensity for about 1 hour a day
  - Eating well

### Losing weight

- For overweight or obese adults, even a small weight loss (3–5kg) can have health benefits. It can
  - Prevent, delay progression, or improve management of Type 2 diabetes
  - Reduce risk of high blood pressure, heart disease, stroke
  - Improve sleep apnoea, kidney disease, quality of life, self-esteem, depression
- The best way to lose weight is to reduce energy intake **and** exercise more. Advise to
  - Cut back on food and drinks that have no nutrients (eg soft drinks) or high energy foods (eg deep fried foods)
  - Start some moderate intensity exercise (eg walking). Progressively increase to about 1 hour a day, at least five days a week
  - Sit less



- Refer overweight/obese adults with a chronic disease to visiting dietician to help with nutrition information and develop a weight management plan
  - Include weight management in self-management plans
  - Set realistic targets for weight loss — if target too hard to reach the person may not try
- Weight loss can be quite slow — 0.5kg/week is good progress. Even stopping more weight gain is a step in the right direction
- Overweight pregnant women should exercise and eat healthy foods, but not try to lose weight until after the baby is born

## 5 Eyes, ears, nose, mouth

### Eyes

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### Ears

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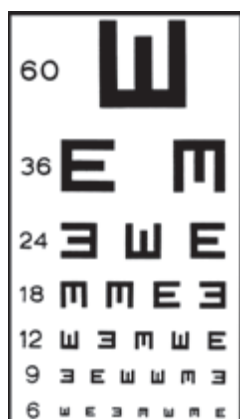
# Checking near and distance vision

## Attention

- Aim to find and record best vision (visual acuity) person can manage
- Report any loss of vision to specialist

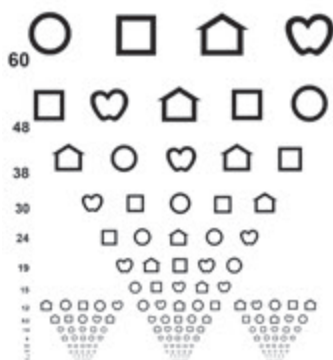
## What you need

- Near-point chart for reading vision *OR* chart at Table 5.1— printed *CPM* only
- Chart for distance vision
  - Tumbling E — F 5.1
  - Lea — F 5.2
  - Snellen (letters) — F 5.3
- Pinhole occluder — F 5.4



5.1

## What you do



5.2



5.3

## Check NEAR vision (visual acuity) first

- If person normally wears glasses for near tasks — do test with glasses on
- Ask person to keep both eyes open
- Have them hold near-point chart at distance they would normally hold things to read or do near tasks — usually 30–40cm
  - If you don't have a chart and are using a printed *CPM* — see Table 5.1
- Record in file notes — N point score of smallest sized print they can read correctly, and whether wearing glasses/contact lenses (aided) or not (unaided)
  - *Example:* Near vision = N8 unaided

Table 5.1: Near point scores using text in common use

N point	Text type	Example
N4	Medicine bottle label	85943
N5	Footnotes	14725
N6	Telephone directory	25986
N8	Newsprint	82479
N10	Paperback book	10578
N16	Children's book	69312
N24	Large print book	13527
N60	Newspaper headline	25891

**Note:** Table 5.1 only for use in printed *CPM*. It can't be used online, or printed out as text size may be inconsistent.

### Check DISTANCE vision (visual acuity) next

- Put chart against a well-lit wall at eye level
- Position person correct distance from chart — 6m or 3m depending on chart design
- If person normally wears glasses for distance — test with their glasses on
- Ask person to cover 1 eye with palm of their hand or piece of thick card while you test the other eye. Make sure they are not peeping or pressing their fingers against the eyeball
  - Cover right eye and check left eye *THEN* cover left eye and check right eye
- If using lettered chart —
  - Ask person to read the first letter from each line, continue down until it becomes difficult, then read along the whole line
  - Continue down until they get more than half the line wrong
  - Line awarded is the last line they got at least half right
- If using tumbling E chart — ask person to show, with fingers of their spare hand, which way 'legs' of the 'E' are pointing
- Record vision as a fraction

#### Distance vision is recorded as a fraction (eg 6/5, 6/6, 6/12, 6/60)

- First number is the testing distance — this is a 6 even when using a 3m chart
- Last number is **smallest line** of text or symbols that person can read at least half correctly (lines are numbered next to characters)
- Record whether wearing glasses/contact lenses (aided) or not (unaided)
  - *Example:* Distance VA: Aided R 6/9, L 6/18



- **If person can't see top line of eye chart (6/60)**
  - Ask person to count fingers on your hand, while you gradually move closer to them, from 6m away to 1m away
  - Note greatest distance at which they can count fingers as 'CF at (number of) metres'
  - *Example:* If able to CF at 4m with left eye and no glasses — Distance VA: Unaided L CF 4m
- **If person can't count fingers**
  - Ask person if they can see hand movement, while you gradually move closer to them, from 6m away to 1m away
  - Note greatest distance at which they can see hand movement as 'HM at (number of) metres'
  - *Example:* If able to see HM at 1m with right eye wearing glasses — Distance VA: Aided R HM 1m
- **If person can't see hand movement**
  - Check if they can see any light at all by shining penlight torch in eye
  - Note whether 'LP' (light perception) or 'NLP' (no light perception)
  - *Example:* If able to see light with right eye but not with left — Distance VA: Unaided R LP, L NLP
- **If vision worse than 6/6 (normal vision) — test again with pinhole occluder**
  - If you don't have made-up pinhole occluder — F 5.4 —
    - Pierce a sheet of paper with 19G needle
    - *OR* use otoscope earpiece with an opening of about 1mm
  - Ask person to hold pinhole occluder in front of eye to be tested and cover other eye. Tape pad over eye if needed
  - Repeat distance (visual acuity) test through pinhole
  - Do this again for other eye, if needed
  - Record as for distance vision indicating 'with pinhole' (PH)
  - *Example:* Distance VA: PH R 6/6, L 6/18



5.4

- When using pinhole occluder
  - If distance vision improves — person has some refractive error. New glasses will help
  - If distance vision doesn't improve at all — probably another cause for reduced vision. New glasses won't help

## Eye procedures



### Putting in eye drops and ointments

#### Attention

- Make sure tip of bottle/tube kept clean and doesn't touch eyelid, eye or lashes

#### What you do

- Ask person to lift chin and look up
- Pull down lower lid so pouch forms, put drops — F 5.5, or ointment — F 5.6 in pouch
- Write date opened on bottle or tube. Throw away when treatment finished or after manufacturer's recommended time (usually on bottle or tube)



5.5



5.6

### Washing (irrigating) eye — to remove burning chemical

#### Attention

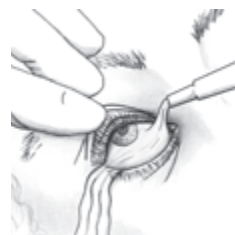
- **Do not** try to neutralise alkali or acid burn with chemical antidote. Always use water or normal saline
- **Watch for breathing problems** (respiratory distress) from soft tissue swelling in upper airways after chemical burn to eye
- **Do not** give person local anaesthetic eye drops to take away and use. Will not be able to feel further injury or damage

#### What you need

- Helper to hold the eyelid open or to irrigate
- Normal saline connected to IV giving set *OR* tap water in bottle, cup, syringe
- U/A test strip (showing pH) or litmus paper
- Anaesthetic eye drops (eg oxybuprocaine, tetracaine [amethocaine])
- Sterile cotton bud
- Fluorescein stain

#### What you do

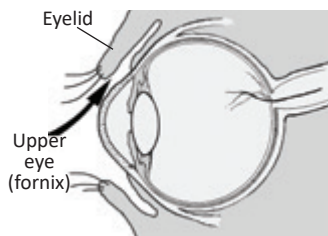
- Start washing (irrigating) affected eye/s **immediately**
- Tell person to blink. Gets chemical out from under eyelid
- **If outside clinic** — hold eyelids apart, use gentle flow of water over eye from inside to outside — F 5.7
- **If in clinic** —
  - Give person or helper water to start irrigating eye. Tell them to keep doing this until you are ready
  - Put in anaesthetic drops



5.7



- Set up IV giving set with 1L warmed **normal saline**
- Hold eyelids apart, use gentle flow of **normal saline** over eye from inside to outside — F 5.7
- **Do not** poke or touch anaesthetised eye. No blink reflex
- Do single eversion of eyelid (*below*), then double eversion ([p153](#)) if you can. Wash under eyelid (tarsal plate) to reach upper eye (fornix) — F 5.8
- Gently pull down lower lid and wash white of eye
- Use moist cotton bud to take off any specks on eye surface, or matter in corners of eye
- For alkali burns (eg lime, bleach, cement) or acid burns (eg battery fluid, toilet cleaner, rust remover)
  - Will keep burning until completely removed
  - Wash out (irrigate) eye for at least 30 minutes
  - 5 minutes after stopping wash out, test pH of eyeball (conjunctiva) with litmus paper or pH pad on urine dipstick
    - If pH is not 7 — keep washing out until pH is 7 or same as unaffected eye. Recheck after each 1L fluid
    - Stop irrigation when pH is 7 in all parts of eye, including under eyelid
  - If pH testing not available — keep irrigating
  - Alkalis may need to be washed out for 2–3 hours
  - When finished irrigating, do full eye assessment ([CARPA STM p343](#))
- **Specialist review as soon as possible**



5.8

## Single eversion of eyelid

### Attention

- Use with every chemical injury, possible foreign body, trachoma check
- Very important to tell person what you are going to do, some people very sensitive to having eyelid everted. You will need their help

### What you need

- Wooden applicator stick or cotton bud

### What you do

- Person can sit or lie down. You sit or stand in front of them
- Ask person to tilt head back, **keep looking down**, try not to blink
- With one hand, take hold of eyelashes and gently pull eyelid forward. This breaks the suction between upper lid and eyeball — F 5.9
- With other hand, hold applicator stick across upper lid **above** lid fold — F 5.10



5.9



5.10

- Push down slightly on applicator stick and at same time pull upper eyelid out and up and back over stick
- When lid has been everted take applicator stick away and keep lid everted by holding lashes against eyebrow — F 5.11
- When finished
  - Ask person to blink eyelid back to normal
  - *OR* tell person to keep looking down while you gently fold eyelid down



5.11

## Double eversion of upper eyelid

Used when very top of eyeball needs to be seen or irrigated — chemical burns or objects on eye surface that can't be seen with single eversion.

### Attention

If emergency (eg chemical burn) — keep irrigating until you put in drops, then do procedure as quickly as possible so you can start irrigating again.

- Procedure very painful — always use anaesthetic drops. Take about 2 minutes to work properly



5.12

### What you need

- 2 sterile cotton buds
- Anaesthetic eye drops (eg oxybuprocaine, tetracaine [amethocaine])

### What you do

- Put in **anaesthetic eye drops** and wait 2 minutes, if not an emergency
- Do single eversion of eyelid ([p152](#)) — F 5.12
- Take second cotton bud and lift lower edge of inverted inner eyelid — F 5.13 so you can see very top of eyeball — F 5.14
- Lid will not stay in place on its own. Hold it up with cotton bud as you irrigate or take out foreign body



5.13



5.14

## Making emergency eyelid retractor

### Attention

- Safely made from standard sized paper clip
- Gives good view of cornea and eye ball, unless serious swelling
- Surface of eye not sterile, so retractor unlikely to introduce contaminants

### What you need

- Standard sized paper clip — F 5.15



## What you do

- Fold out ends of paper clip — F 5.16
- Turn up curved end — F 5.17
- Wipe clip with sterile wipe, let dry
- Use clip to hook up eyelid — F 5.18



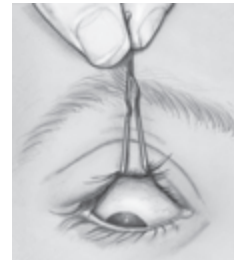
## Using fluorescein stain

### Attention

- Store fluorescein drops in refrigerator. Warm to room temperature before use

### What you need

- 10–20mL normal saline in 20mL syringe
- Ophthalmoscope. Blue filter is best, then green
  - *OR* other bright light source (eg pencil torch)
- Fluorescein sodium 2% drops
  - *OR* fluorescein sodium ophthalmic strips (eg *Fluorets*)
- Sterile gauze swabs



5.18

## What you do

- If pus or watery discharge — wash eye with **normal saline**
- Warn person that fluorescein may sting eye
- Put 1–2 **fluorescein drops** in small ‘pouch’ made in lower lid. **Do not** put straight onto cornea
- *OR* use **fluorescein strip**. Add drop of normal saline or anaesthetic to tip then touch to inner side of lower lid
- Ask person to blink
- Look at cornea with blue or green light from ophthalmoscope or slit lamp, or bright light
- **If new corneal injury or defect** — will see pooling of bright, lime green colour (staining) in that area

Penetrating eye injury will show fluid leak washing away fluorescein stain (waterfall effect). **Medical consult** straight away

- Old corneal injury scars look opaque (whitish-grey), usually do not stain
- Record in file notes. Draw size, shape, position of injury
- Gently wash out **fluorescein stain** with **normal saline**

## Taking object off eye surface with irrigation or cotton bud

### Attention

- **Do not** give person local anaesthetic eye drops to take away and use. Will not be able to feel further injury or damage

- If foreign body on cornea is central and over pupil — needs to be removed in hospital

### What you need

- 2.5 magnification head loupe (fits around head and used to see small objects in eye)
- Bright light
- Normal saline in 20ml syringe or IV giving set. Use tap water in an emergency
- Sterile cotton bud, wet with normal saline or anaesthetic eye drops
- Anaesthetic eye drops (eg oxybuprocaine, tetracaine [amethocaine])
- Antibiotic eye ointment, if needed
- Eye pad, tape

### What you do

- Eye assessment (*CARPA STM p343*)
  - Check vision (*p148*)
  - Look for other signs of injury, make sure object isn't sticking into eye
- Lie person down comfortably. Stabilise head. Use foam head ring, if available
- Use magnification loupe to magnify area
- Angle bright light at 45° to surface of eye
- Evert upper eyelid (*p152*), look for foreign body/s
- Pull down lower eyelid, hold upper and lower eyelids apart
- Wash out (irrigate) eye (*p151*) to remove small objects not stuck to eye (non-adherent)
- Lift off objects sticking to eye surface with moist cotton bud
- If this doesn't work — put in 2 drops of **anaesthetic eye drops** and wait a few minutes for them to work
  - Do single (*p152*) or double eversion (*p153*) of eyelid
  - Sweep around under lid with wet cotton bud
- If you remove object —
  - Check vision (*p148*) again
  - Use fluorescein stain (*p154*), check for surface (corneal) damage. Will usually be small area
  - Put in **antibiotic eye ointment**, if needed
  - Put on eye pad (*p156*)
  - Ask person to come back next day for check
- If you can't remove object —
  - Talk with specialist
  - *OR* if you are trained — see *Taking object off eye surface with needle* (*p156*)



## Taking object off eye surface with needle

### Attention

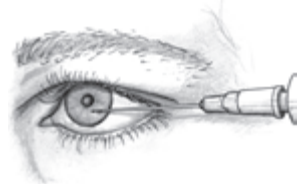
- **Do this only when other methods have not worked**
- If object within 4mm of pupil — needs to be removed in hospital
- Cornea is tough. You will need firm steady approach to remove foreign body
- Make sure you lift out all of foreign body not just a small piece

### What you need

- 2.5 magnification head loupe (fits around head, used to see small objects)
- Anaesthetic eye drops (eg oxybuprocaine, tetracaine [amethocaine])
- 23G needle on 2mL syringe (to use as handle)
- Antibiotic eye ointment or drops (eg chloramphenicol)

### What you do

- Check vision ([p148](#))
- Put in **anaesthetic eye drops**, wait 2 minutes
- Put on magnification loupe
- Put needle firmly onto 2mL syringe
- Ask person to stare into distance, try to keep other eye open. This lessens eye movement
- Hold eyelids apart to stop blinking
- Brace hand holding syringe against side of head
- Put needle flat on cornea with **bevel facing away from eye surface** (cornea) to stop it scratching or sticking in
- Scrape an area slightly larger than object
- Gently lift under edge of object with bevel, then lift up and off eye surface — F 5.19
- Check vision ([p148](#)) again
- Use fluorescein stain ([below](#)), look for eye surface (cornea) damage. Some is expected
- Give **antibiotic eye ointment or drops** to prevent secondary ulceration. Use whether or not you were able to remove foreign body
- Put on eye pad ([below](#)) until local anaesthetic drops have worn off — try to leave on for 1–2 hours, but at least 20 minutes
- Ask person to come back next day for check
- **If you can't remove object — specialist consult**



5.19

### Putting on eye pads or shields

- Use eye pad to
  - Keep eyelids from moving over injured area and causing pain and friction
  - Protect eye after using anaesthetic drops
  - Keep light out of pupil dilated with drops

- Use eye shield to
  - Protect eye from compression

### Attention

- **Always** use pad on anaesthetised eye
- Eye pad needs to be comfortable but firm enough to stop eyelid movement
  - Tape pad on securely
  - Make sure skin around eye clean and dry before using tape
- **Do not** use pad on eye with bacterial or viral infection (eg ulcer, iritis, conjunctivitis)
- Use eye shield **without** eye pad if
  - Penetrating eye injury
  - You suspect perforation



5.20



5.21

### What you need

- 2 clean/sterile gauze eye pads, or 2 ordinary gauze swabs folded in half
- *OR* 1 gauze eye pad/gauze swab and 1 plastic eye shield (pressure patch) with elastic strap
- *OR* 1 plastic eye shield with no eye pad
- 25mm paper tape



5.22

### What you do

- If using ordinary gauze swabs — fold 1 in half
- Ask person to keep both eyes closed
- Put eye pad or folded swab over injured eye — F 5.20
  - Hold pad/swab in place (person can do this)
- Put second pad over top of first — F 5.21
  - Tape pad from forehead to top of cheek as tightly as possible with enough tape to cover whole pad. Check it is comfortable
- *OR* cover first pad with plastic shield and tape in place — F 5.22
  - Shield needs to sit on brow and cheek, avoid pressure on the eye itself
  - Make sure it isn't too tight
- Change pad/s every 24 hours
- If penetrating eye injury or suspected perforation — apply eye shield **without** eye pad/gauze



5.23

**Note:** If you don't have eye shield — make one by cutting bottom off polystyrene cup — F 5.23, F 5.24.



5.24

# Ear examination

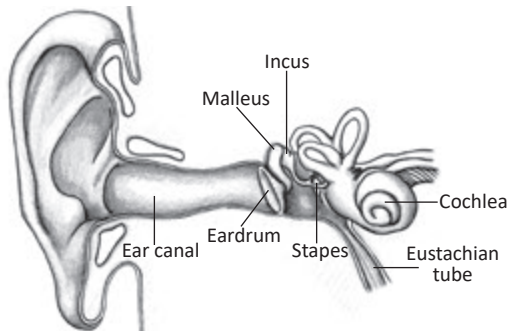


- Check infants and children's ears whenever they come to the clinic
- Always look at 'good' ear first
- If you find anything abnormal or worrying — **medical/specialist consult**

## Anatomy of the ear



5.25



5.26

## Position person

### • Infants/toddlers

- Put infant/toddler on carer's lap. Have ear you want to check first facing outward
- Ask carer to stop any movement by
  - Tucking the child's arm under their armpit and holding the child's head firmly against their chest
  - With their other hand firmly hold child's body and other arm — F 5.27
- If child kicking — carer puts child's legs between their thighs and holds tight



5.27

### • Bigger children/adults

- Ask child to stand or adult to sit comfortably and tilt their head slightly away from you — F 5.28



5.28

## Check outside of ear

- Look at bone behind ear (mastoid) and area under ear crease for signs of infection and surgical scars
  - Gently run hand over area — feel for heat, sponginess, swelling

## Check ear canal

### Attention

- Use new clean earpiece for each ear
- Dry mop ([p164](#)) any pus (discharge) before examining inside ear

If eardrum chronically stretched, sucked in (retracted), thinned — can look like a large hole (perforation) or defect.

## What you need

- Otoscope with right sized earpiece. Use largest size (adult or child) that fits comfortably in ear canal

## What you do

- To straighten ear canal
  - Infants and toddlers — hold edge of ear (pinna) and pull gently down — F 5.29
  - Young children — pull pinna straight back — F 5.30
  - Older children and adults — hold top of ear and gently pull back and up — F 5.31



5.29



5.30

- Look at entrance to ear canal for pus (discharge), swelling, redness
- Hold otoscope like a pen — hold in left hand to examine left ear, right hand to examine right ear
- Otoscope handle can be pointing up or down
- Must brace otoscope to stop injury if person moves suddenly
  - Brace by putting your fist against cheek or head — F 5.32, F 5.33
- Gently put earpiece into ear canal — never force
- Look through earpiece as you go so you can see where you are putting it, and see behind any pus (discharge) or objects/foreign bodies



5.31

- Look
  - Walls of ear canal — check for swelling, sores, scratches, injuries, etc
  - For debris, wax or pus, objects/foreign bodies (eg flies, beads, old tissue, cotton wool)
  - Condition of eardrum
    - Colour — grey, yellow, white
    - Dull or shiny
    - Bulging outward or inward
    - Bubbles/fluid behind eardrum
- See *Ear examination chart* (p160)

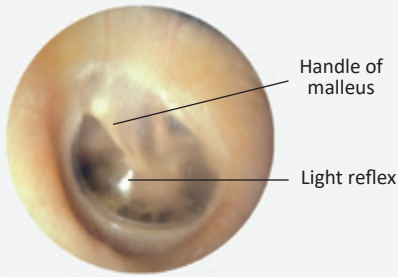


5.32

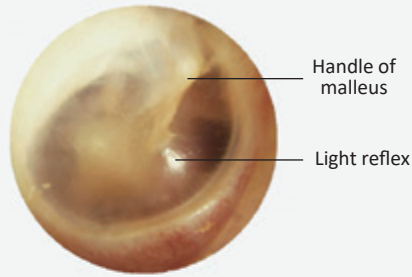


5.33

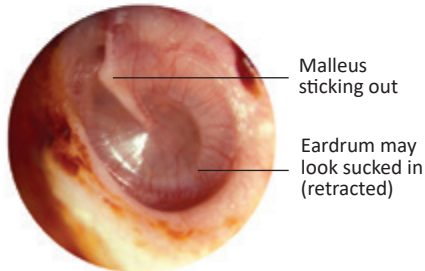
Ear examination chart



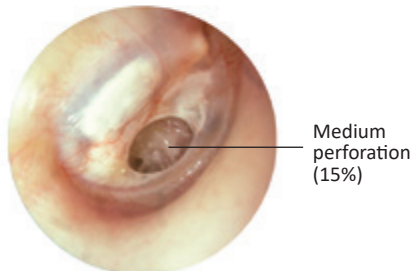
Normal eardrum L



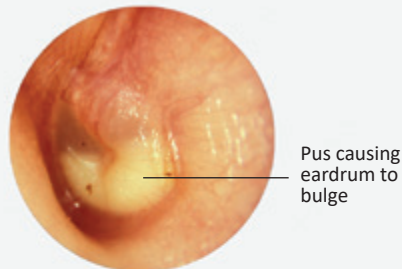
Normal eardrum R



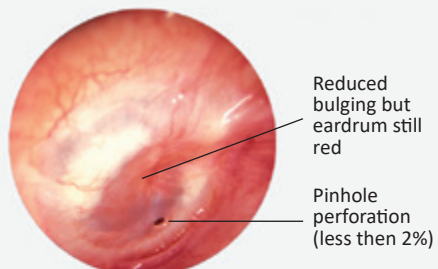
Otitis media with effusion (OME) L



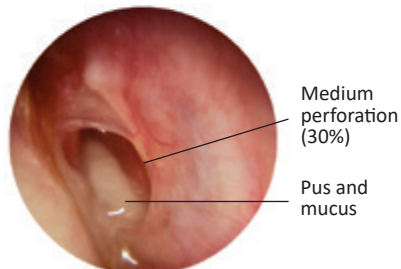
Dry perforation R



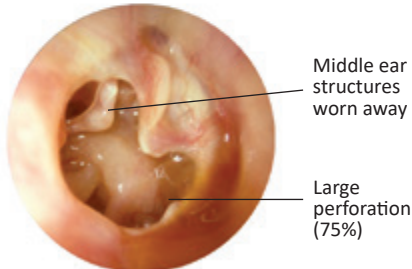
Acute otitis media (AOM) L



Acute otitis media with small perforation (AOMwiP) R



Chronic suppurative otitis media (CSOM) L



Chronic suppurative otitis media (CSOM) R

## Test eardrum for movement

### Attention

- **Do not** test eardrum for movement if ear too painful
- Only test eardrum you can see clearly
- If eardrum doesn't move — usually fluid in middle ear (effusion)
- Can be difficult to get a good seal with otoscope earpiece in young children
- Tympanometry can be used to test eardrum mobility and middle ear — if available and practitioner has training
  - **Do not** use on children under 6 months

### What you need

- Otoscope with right sized earpiece
  - Use largest size (adult or child) that fits comfortably in ear canal
- Puffer (insufflation) bulb that connects to otoscope

### What you do

#### Using puffer bulb

- Attach puffer bulb to otoscope
- Explain that they will feel pressure in ear but it shouldn't hurt
- Slightly compress the puffer bulb
- Gently push earpiece into outer canal as far as it will comfortably go, to make an airtight fit
- Release the puff bulb — F 5.34
- Watch for fast movement of eardrum
- If none — do it again with a little bit more pressure on bulb until there is movement or you are certain it will not move. **Stop if it causes pain**
- Gently take out earpiece and throw it away



5.34

#### Popping ears — Valsalva manoeuvre

- Get person to hold fleshy end of nose to block it, at the same time try to blow out through their nose with their mouth closed — F 5.35
- If eardrum intact and normal — it will move. Ask person if one or both ears 'popped'



5.35

## Testing hearing

### Attention

- **Do not** use tuning fork tests to assess children's hearing. Children with ear disease or hearing impairments must be referred for audiology
- Tuning fork tests not as accurate as audiometers but provide useful information, can be used by all health practitioners
  - Tuning fork tests easier to interpret if hearing problem only on one side

### Weber test

Tests for one-sided conductive loss (loss of sound travelling through outer or middle ear) or sensorineural loss (nerve or hair cell damage in inner ear).

- Do Weber test before Rinne test

### What you need

- A middle C (512Hz) tuning fork, best with wide base

### What you do

- Strike tuning fork lightly against your hand or knee
- Keeping single bar of tuning fork up straight, put it against middle of person's forehead — F 5.36
- Ask person if tone sounds the same in both ears
  - If it does — record 'normal' in file notes
  - If it doesn't this is 'not normal' — record which ear heard loudest sound
- If one ear known to have hearing loss
  - If sound louder in problem ear — **conductive** loss in problem ear
  - If sound louder in good ear — **sensorineural** loss in problem ear



5.36

### Rinne test

Compares air-conduction and bone-conduction hearing.

- Do Rinne test after Weber test

### What you need

- A middle C (512Hz) tuning fork, best with wide base

### What to do

- Strike tuning fork against your hand or knee
- On left ear, put single bar on base of bone behind ear (mastoid process) — F 5.37
  - Count in seconds and ask person to tell you when sound stops. Remember how many seconds it took (bone conduction)
- Move tuning fork next to ear opening but **do not** touch ear — F 5.38



5.37

- Count in seconds and ask person to tell you when sound stops again (air-conduction)
- Record both times
  - Number of seconds **against bone**
  - Number of seconds **next to ear opening**
- Do again for right ear
- **Normal** hearing if
  - Sound louder next to ear
  - Sound next to ear lasts twice as long as sound against bone
- **Conductive** hearing loss if
  - Sound louder against bone
  - Sound against bone lasts the same time or longer than sound next to ear



5.38

## Ear procedures

### Dry mopping ears with tissue spears

Removes pus, dries middle ear. Allows topical medicines to reach inflamed surfaces, makes ear conditions much less favourable for bacteria.

#### Attention

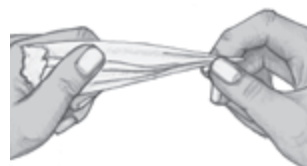
- If discharging ears — get child to blow nose before and during procedure
- **Must** push tissue spears well into ear canal, near eardrum — about 2.5cm
- Don't worry about pushing spear in too far, tissue is soft and won't do any damage



5.39

#### What you need

- Toilet paper — keep new roll in plastic bag just for making spears — F 5.39
- Waste bin close by
- Ear drops — as needed under guideline or prescription



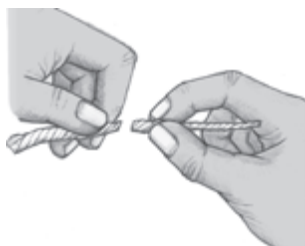
5.40

#### What you do

- Take piece of toilet tissue, hold in one hand and twist from corner — F 5.40
- Use thumb and first finger of both hands to **twist** until spear is tight — F 5.41
  - **Do not roll** — rolled tissue is too thick and can't be put far enough into ear canal



5.41

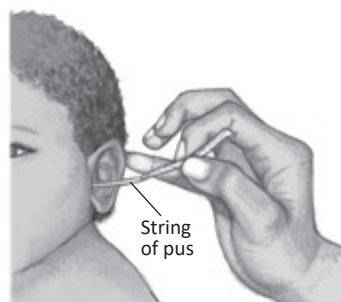


5.42



5.43

- Break off tip (too floppy to use) and other end of spear. Spear should be about as long as your thumb — F 5.42
- Straighten ear canal ([p159](#))
- Push tissue spear into ear with slight twist — F 5.43
- Stop pushing when tissue stops going in **OR** child cries, coughs or blinks (about 2.5cm)
- If time leave spear in place for a few minutes to soak up pus



5.44

- Remove slowly, throw away. String of pus often connected to spear — F 5.44
- Do again with new spears until spear comes out dry. At first this may take some time but will get quicker as ear improves
- When ear is dry, put in ear drops (p166)
- Teach child's carer and older children to make and use tissue spears
- Pus re-forms in middle ear cavity within hours — do
  - At least 4 times a day to begin with
  - Then twice a day for 1 week
  - Then once a day for 1 month

## Syringing ear



Used to remove softened wax, foreign bodies, pus/debris from ear canal.

### Attention

- **Do not** syringe ear if pain in ear or recent trauma
- Always look in ear before syringing. If any pain — stop and look again
- If CSOM — syringe with diluted povidone-iodine 10%
- **Soften wax with softeners before syringing**
- Can drown and float out insects with oil or tetracaine (amethocaine) 1% instead
- If foreign body doesn't come out — may need to see specialist
- **Do not** use forceps to remove foreign body — may damage eardrum

### What you need

- Otoscope and earpieces
- Bluey
- Gloves
- Kidney dish or similar (eg ice cream container) to collect run off
- Ear syringe *OR* 20mL plastic sterile syringe +/- tubing from scalp vein needle
- 20–50mL fresh warm water (body temperature)
- Dilute **povidone-iodine 10%**, if needed — mix 5mL (one teaspoon) in 100mL of fresh warm water



5.45

### What you do

- Look in person's ear to find material to be removed
- Protect person's clothing with bluey, ask them to hold kidney dish under ear — F 5.45
- Fill syringe with warm water or dilute **povidone-iodine 10%**. Make sure all air is removed



- Straighten ear canal ([p159](#)) then put tip of syringe or plastic tubing into ear canal
- Aim up and back so water will run along roof of ear canal
- Push water/**povidone-iodine** into ear with smooth, firm pressure on plunger. Water/**povidone-iodine** will spiral around canal, flush out foreign bodies
- Repeat until canal clean
- If one angle of 'squirt' doesn't get object out — try another, but be gentle
- Dry mop ear when finished

**Note:** After syringing, eardrum often looks pink, blood vessels dilated.

## Putting in ear drops



### Attention

- Always clean pus and foreign bodies out of ear first, so drops can reach middle ear — dry mop ([p164](#)) or syringe ([p165](#))
- **Do not** put tip of bottle into ear canal — keep end clean

### What you need

- Ear drops
- Gloves

### What you do

- Sit person in comfortable chair
- Ask them to tilt head away from you
- Straighten ear canal ([p159](#))
- Hold dropper just above ear canal, squeeze in right number of drops
- Pump or gently rub on skin flap in front of ear canal (tragus) to make drops run down into canal
- To help medicine stay in contact with ear canal, ask person to lie on their side or keep head tilted for 3–5 minutes
  - Can also put cotton ball in ear canal
- Do other ear, if needed

## Putting in ear wick — to give drops



### Attention

- Always clean pus and foreign bodies out of ear first, so drops can reach middle ear — dry mop (p164) or syringe (p165)
- If ear very swollen ear wick may hurt when first put in

### What you need

- Ear wick (eg *Meroceal Ear Wicks*, *Pope Otowick*)
- Ear drops
- Gloves
- Alligator forceps or tweezers

### What you do

- Lie or sit person comfortably
- Open ear wick packet — keep ear wick clean and inside packaging
- Pick up wick with forceps
- Straighten ear canal (p159) with your other hand, if needed
- Gently put wick into ear canal — leave end of the wick level with entrance to ear canal
- Ask person to tilt their head away from you, put drops on end of the wick
- Wick will swell up, fit more snugly and be comfortable
- Reapply drops as needed
- Change wick after 2 days — can be left in place for up to a week if drops are applied regularly
  - May fall out itself if swelling goes down
- To remove — moisten wick with ear drops and gently pull out with forceps

## Putting gauze wick into ear — to apply ointment

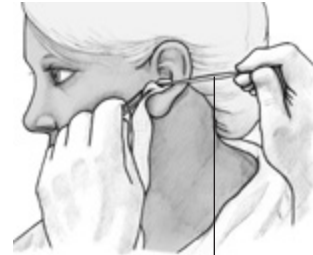


### What you need

- Dressing pack
- Scissors
- Ribbon gauze — about 10cm
- Ointment to go on wick
- Gloves
- Clean probe or orange stick
- Ear-packing (angled) forceps

## What you do

- Lie or sit person comfortably
- Lay out dressing pack and equipment
- Drape site with towels
- Cut about 10cm of ribbon gauze
- Put drops/ointment onto gauze, rub in with forceps
- Ask helper or person to straighten ear canal ([p159](#))
- Pick up gauze at one end with dressing forceps and about 1cm in from other end with packing forceps
- With packing forceps, gently put gauze along line of canal as far as it will comfortably go
- Ask helper/person to let go of ear. Gently hold gauze in place with probe or orange stick so it doesn't fall out — F 5.46
- Pick up gauze again with packing forceps — about 2cm further along. Push gauze gently into ear canal to lay against gauze already there
- Repeat until ear canal comfortably filled with gauze to level of canal opening
- Cut off any leftover gauze
- Leave 1–2 days then take out packing. Dry mop ([p164](#)) canal, repack if needed



Orange stick

5.46

## If ear very tender and/or swollen

- Try putting nozzle of ointment tube straight onto 18G or 19G plastic IV cannula (without needle)
  - OR put ointment into 2mL syringe, connect to plastic cannula
- Looking with otoscope, guide cannula very gently to near eardrum, squeeze in ointment (this avoids air bubbles)
- After 2 days syringe with warm water
- Repeat if needed

## Nasal packing



Use if nose bleed won't stop with simpler treatments.

### Anterior nasal packing

#### Attention

- **Do not** pack both nostrils without **medical consult** — can cause fatal arrhythmias
  - Monitor person closely during and after nasal packing — see *Nose bleeds (epistaxis)* (*CARPA STM p110*)
- Ask person to look straight ahead — tilting head back will make nasal cavity harder to see

### *Meroce*l nasal packing

Can use for both anterior and posterior epistaxis.

#### What you need

- *Meroce*l nasal tampons pack
  - Anterior epistaxis — 8cm pack or 10cm pack trimmed to size with scissors
  - Posterior epistaxis — 10cm pack
- Scissors
- **White petrolatum** (eg *Vaseline*) or **triamcinolone-neomycin-gramicidin-nystatin** ointment
- Normal saline

#### What you do

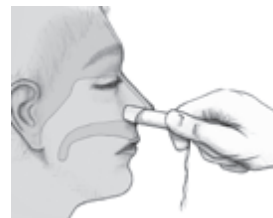
- Lubricate *Meroce*l tampon with white petrolatum or ointment
- Insert right to back of nasal cavity
  - Direct first 2cm 45° upward — F 5.47
  - Then straight along floor of nasal cavity — F 5.48
- If pack doesn't fully swell with blood — drip **normal saline** onto it so it swells and packs nose



5.47

#### To remove

- *Meroce*l nasal packing should be removed after 24–72 hours
- Wet end of pack with 10mL of **normal saline** or water
- Leave for 5 minutes
- Gently pull out with forceps



5.48



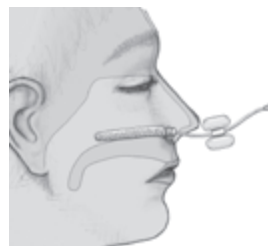
## RapidRhino nasal packing

### What you need

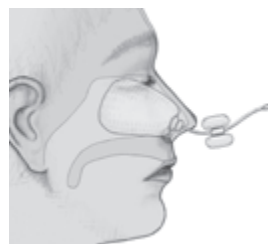
- *RapidRhino* nasal tamponade-balloon device
- Sterile water in sterile bowl
- 20mL syringe
- Tape

### What you do

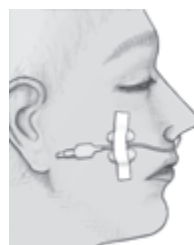
- Soak *RapidRhino* device in sterile water (**not** saline) for at least 30 seconds to saturate it
- Insert device into nostril in horizontal plane level with palate (as if you were putting in a nasogastric tube), **not** up the nose. If resistance — remove and reinsert
- Gently insert device until blue indicator ring is just inside nostril opening — F 5.49
- Slowly inflate balloon with 20mL of air. Balloon will conform to shape of nose — F 5.50
- Pilot cuff (outside nose) allows monitoring of pressure inside nose. Should be taut but not hard
- Observe for 20 minutes. As nasal tissue adapts, might need to reinflate
- Tape plastic butterfly to person's face — F 5.51



5.49



5.50



5.51

### To remove

- *RapidRhino* should be removed after 24–72 hours
- Deflate cuff and gently remove. Watch for rebleeding for 30 minutes

## Gauze anterior nasal packing

### Attention

- Hard to do properly — get help if you are not sure

### What you need

- Prepared nasal pack (if available)

OR

- **10% local anaesthetic spray** or **phenylephrine-lidocaine** (phenylephrine-lidocaine) spray
- 1cm x 20cm sterile gauze soaked in **white petrolatum** (eg *Vaseline*) or **triamcinolone-neomycin-gramicidin-nystatin** ointment
- Nasal-packing forceps
- Clean scissors — for cutting gauze
- Paper tape

## What you do

- Spray local anaesthetic up nose
- Leave end of gauze outside nostril
- Use forceps to gently put soaked gauze as far as possible into nasal cavity and layer it back and forth until nostril completely packed — F 5.52
- Leave at least last 3cms of gauze outside nose
- Cut off any extra gauze and tape both ends to face
- Check in mouth for blood trickling down back of throat
- If bleeding still won't stop — consider doing posterior nasal packing, **but only if experienced**
- Remove after 24–72 hours



5.52

## Posterior nasal packing

### Balloon catheter

#### Attention

- If person having trouble breathing — give **oxygen** to target O<sub>2</sub> sats 94–98%  
OR if moderate/severe COPD — 88–92%
  - Mask 5–10L/min
- Person will need sedation before this procedure

#### What you need

- Water based lubricant
- Small retaining catheter — no. 12 or 14 with 30mL balloon
- 5mL syringe
- 1cm gauze — *Vaseline* or vas-gauze pack
- Clean scissors (for cutting gauze)

#### What you do

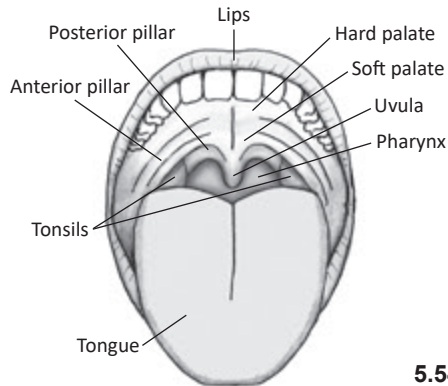
- Lubricate catheter tip and push gently along floor of nose until resistance felt
- Use syringe to inflate balloon with 5mL of air
- Gently pull catheter until resistance felt
- Inject another 5mL of air — F 5.53
- Put in gauze nasal pack ([p170](#))
- Hold ends of gauze and catheter in place just outside nostril with tape or clamp (eg umbilical cord clamp). Cut off extra gauze
- Put piece of gauze between nose and clamp to keep catheter taut
- If bleeding continues — take out catheter, try in other nostril
- Remove after 24–72 hours



5.53

# Mouth, throat, teeth and gums examination

## Anatomy of the mouth and throat



5.54

### Attention

- When you examine mouth and throat don't forget teeth and gums
- If you find anything abnormal or worrying — **medical consult**

### What you need

- Torch or bright lamp
- Disposable wooden spatula

### What you do

- Sit person in comfortable chair with good back support

### Check

- Is voice hoarse
- Can you smell bad breath (halitosis)
- Ask person to stick out tongue. Does it lie straight, even on both sides

### Look

- At lips, all around inside of mouth, tongue — colour, lumps, swellings, ulcers, growths, white patches
- At gums for swellings, ulcers, growths, pain or redness (inflammation), and/or exposed, sensitive tooth roots (gingivitis)
- Teeth — stained or rotten (dental caries), chipped or loose
  - Tap any tooth that looks decayed to see if this causes pain
- Back of throat
  - Ask person to open mouth, with tongue in normal position, say 'aaghhh'
  - If you can't see the back — press spatula firmly down on centre of tongue
  - Look at soft palate, posterior pillars, uvula, tonsils, pharynx
  - Check for colour, any white patches, redness, lumps, ulcers, growths

### Feel

- For swollen lymph nodes ([p267](#))

## Protective dental procedures



### Applying fluoride varnish to children's teeth

Effective fluoride varnish strategy needs coordinated, long-term, well documented approach

- Start at 18 months, do every 6 months until adulthood
- Helps reduce cavities/decay

Can only be applied by dentists, dental/oral health therapists, dental hygienists, general practitioners, nurses, and ATSIHPs who have received accredited training. Fluoride varnish is an S4 poison.

### Attention

- There must be at least 3 months between applications of varnish
- **Do not** apply varnish if child has
  - Been treated for asthma in past week
  - Not taken their asthma medicine on the day
  - Been hospitalised for any allergic reaction in the past 12 months
    - Reactions to fluoride varnish such as swelling and breathing difficulties are very rare but can happen
- **Do not** use more than recommended amount of varnish
- Try to clean and varnish **all** surfaces of teeth. If not possible (eg young child too restless) — give priority to **front upper teeth**
- Child will need to feel safe and comfortable. Take time to gain child's trust
- Provide written information about the procedure if available

### What you need

- 2–4 cotton rolls, for older children if tolerated
- Toothbrush, or use gauze wipes
- Gauze wipes
- Fluoride varnish and dosage pads if available
- **Fluoride varnish**
  - 0.25mL for children 18 months to 6 years
    - About the size of a pea, smaller than paracetamol tablet — F 5.55
  - Up to 0.4mL for 7 years and over
- Mini plastic (dappen) dish — F 5.55
- Blue handled applicator *OR* microbrush applicator — F 5.56



5.55



5.56



## What you do

### Position person

- Young child
  - Sit child on parent/carer's lap facing you — F 5.57
  - *OR* sit child on parent/carer's lap facing them. Sit knee to knee with parent/carer and lie child back onto your lap — F 5.58
- Older child
  - Have child sitting or lying with head tilted back — F 5.59



5.57



5.58

### Clean teeth

- Gently brush teeth using wet toothbrush only — **no** toothpaste
  - Clean all surfaces of teeth using circular motion — F 5.60
- If no toothbrush available — use gauze to wipe teeth clean



5.59

### Dry teeth and apply varnish

- Most important step. Try to get child to keep mouth open and tongue off teeth
- Keep wet cheeks, lips and tongue away from teeth —
  - Put fingers or a finger and a thumb on either side of teeth
  - *OR* if tolerated put cotton roll between teeth and cheek/lip
- Dry 2–3 teeth at a time using gauze wipe — F 5.61
  - Start with upper front teeth, then upper back. Lower front and lower back teeth last
- Paint varnish onto dried teeth straight away using applicator — F 5.62
  - Apply to outside, inside and biting surfaces
- Check the tongue at intervals for any varnish — wipe away with gauze
- If using cotton roll — change when it becomes too wet
- Continue drying and painting 2–3 teeth at a time until all teeth have been varnished
- Finish by checking the tongue and wiping away any varnish



5.60



5.61



5.62

**Tell parent/carer**

- Varnish will help to protect teeth and prevent cavities
- Child can drink but mustn't eat for half an hour, then soft foods for the rest of the day
- **Do not** brush child's teeth for 24 hours
- **Do not** pick at varnish
- Varnishes may be barely visible but will have a rough feel
  - *OR* may have a yellow colour that will last for the rest of the day
- Older children and teenagers may be put off by appearance, so make sure they understand it won't last long
- Works best if left on for as long as possible, but will come off over next 1–2 days
- Reapply varnish in 6 months

# Dental materials and equipment

---

## Ideal emergency dental kit

### Instruments

- Sterile No. 4 dental mirrors (pack of 12) and handles (single use/disposable)
- Sterile dental tweezers (single use/disposable)
- Sterile cheek and tongue retractors
- Large syringes for irrigation
- Sterile suturing equipment
  - 3.0 plain resorbable suture (eg *Vicryl*, plain gut)

### Medicines and remedies

- Dry socket dressing (eg *Alvogyl*)\*
- Temporary filling material (*below*) (eg *Cavit*)\*
- Oil of cloves (eugenol), small glass container to tip oil into
- Topical anaesthetic (eg prilocaine + lidnocaine [lignocaine] cream)
- Dental pain relief ([CARPA STM p337](#))
- Normal saline, sterile

\* Important for clinics to keep in stock

### Dressings

- Cotton pellets, or small pieces of cotton wool rolled in gloved fingers to same size as hole in tooth
- Sterile cotton gauze
- Cotton buds
- Gelatine sponge (eg *Gelfoam*)

### Other

- Suction equipment *OR* cup and tissues for spitting
- Aluminium foil
- Sterile specimen jar (tooth or fragment storage)
- Milk

### Personal protection

- Gloves, mask, goggles/glasses

### Temporary filling material

- Used if hole in tooth sensitive, to replace lost filling for a short time
- Consistency of plasticine, hardens in presence of water
- Will not last more than a few weeks or stay in chipped front tooth
- Will not help with toothache

## Dental care procedures



### Putting on a protective cover

Used to treat toothache from hole in tooth.

#### Attention

- Pain most likely due to dental pulp (nerve) inflammation if
  - Open hole in tooth
  - Pain made worse by hot or cold foods, drinks, air
  - No swelling or fever

#### What you need

- Dental pain relief ([CARPA STM p337](#)), oil of cloves (eugenol)
- Large syringe for irrigation. Filled with warm water (cold will cause pain)
- Sterile tweezers
- Suction equipment *OR* cup and tissues to spit into
- Cotton pellets (small balls of cotton wool rolled between gloved fingers)
- Temporary filling material (eg *Cavit*)

#### What you do

- Give **dental pain relief**
- Sit person in comfortable chair
- Remove food or debris from hole. Syringe with warm water or use tweezers
- Ask person to gargle and spit
- Dry hole with cotton pellet held in tweezers
- If pain not relieved — pick up hole-sized pellet of cotton wool, dip into oil of cloves, squeeze out excess, gently put in hole
  - Be careful, oil of cloves can sting gums or tongue
  - **Do not** use if pregnant, breastfeeding, under 12 years
- **If toothache not severe** (mostly painful after eating or drinking) —
  - Put temporary filling on index finger, push in firmly to fill hole
  - Filling will set after few minutes, but will keep putty-like softness. Can be dug out if needed. Won't last for more than a few weeks
- **If toothache severe** —
  - Don't fill tooth
  - Repeat oil of cloves application as needed
- Refer to dental service



## Dressing a dry socket

Dry socket (alveolitis) is due to poor healing, not infection. Treatment will give symptom and pain relief.

### Attention

- **Will need pain relief before procedure**
  - **Do not** use oil of cloves (eugenol). Will burn, won't give pain relief

### What you need

- Paracetamol
- Large syringe for irrigation, filled with warm sterile normal saline. Cold will cause pain
- Suction equipment *OR* cup and tissues to spit into
- Sterile cotton gauze
- Sterile tongue retractor, helper to retract tongue
- Sterile dental mirror
- Sterile tweezers
- Pinch of dry socket dressing (eg *Alvogyl*)

### What you do

- Give **paracetamol** (*CARPA STM p380*)
- Sit person in comfortable chair
- Use syringe to gently wash (irrigate) socket with **normal saline**
  - Have person spit it out — or use suction
- Dry area with gauze
- Use fingers or tweezers to push dry socket dressing (eg *Alvogyl*) into socket
  - Tell person it will smell and may taste bad, but they will feel a lot better
- Tell person to use warm salt-water mouthwash morning, night, and after food
- Check every 2–3 days. Repeat wash out, put in fresh dry socket dressing
- Tell person dressing can be left in place. It is reabsorbed

## Treating a bleeding tooth socket — compression

### Attention

#### If prolonged bleeding

- **Check file notes** for bleeding disorders, medicines that prolong bleeding
- Check history of dental extraction. Talk with dentist who took out tooth
- Usually occurs because blood in socket won't clot normally. Likely causes
  - Person taking medicine that slows clotting (eg warfarin, heparin, aspirin)
  - Blood vessel trauma that prolongs bleeding — wide open sockets, soft tissue damage after difficult/multiple extractions
  - Bleeding at night. Large clot stops direct pressure, causes prolonged oozing
  - Kidney disease, especially if person has missed or delayed dialysis

## What you need

- Paracetamol
- Sterile cotton gauze

## What you do

- Give **paracetamol** (*CARPA STM p380*)
- **Stop bleeding by applying finger pressure**
  - Sit person comfortably in chair
  - Pinch out any large clots with gauze
  - Fold new gauze in half, put over socket
  - Squeeze gum firmly against bony walls of socket, hold for 10 minutes by the clock
  - If bleeding stops — carefully put gauze pack over socket to keep gum against bone, ask person to bite down
  - Keep person under observation, check after 10–20 minutes
- **If bleeding continues** and you have skill needed — see *Treating a bleeding tooth socket — suturing (below)*

## Treating a bleeding tooth socket — suturing

Stopping bleeding using adrenaline (epinephrine) injection and suturing.

### What you need

- Cotton bud
- Topical anaesthetic cream
- Local anaesthetic with adrenaline (epinephrine), dental syringe, dental needles
- Helper to retract tongue, cheek etc
- Sterile tongue retractor
- Sterile dental mirror
- Sterile tweezers
- Sterile cotton gauze
- Sterile suture kit
- 3.0 plain gut suture
- Haemostatic agent, to stop blood flow (eg *Gelfoam*)



5.63

### What you do

- Paint **topical anaesthetic** over injection site/s with cotton bud. Wait 1 minute
- Inject **local anaesthetic + adrenaline (epinephrine)** into surrounding soft tissue
- Wipe dry, remove any large clots, look for torn tissue or source of bleeding
- Put in suture by pushing needle right through **soft tissue only** from outside to inside of socket, then from inside to outside of socket — F 5.63
- Pull socket sides toward each other, knot suture firmly, and cut — F 5.64



5.64

- If haemostatic agent (eg *Gelfoam*) available — use tweezers to gently push into socket and under suture to hold in place. Will mould into position
- Watch for 10 minutes
- If still bleeding — reapply finger pressure and gauze pack
- Recheck medical history. **Dental consult**

## Lancing a pointing abscess

### Attention

- Give **pain relief** (*CARPA STM p377*)
  - **Check medical history**
    - Bleeding disorders, medicines that prolong bleeding
    - If RHD, artificial heart valve, heart transplant, history of bacterial endocarditis, congenital heart problem — **medical/dental consult** about preventive antibiotics before starting procedure (*CARPA STM p298*)
  - If signs of spreading dental infection (*CARPA STM p335*) start antibiotics straight away
    - If person has trouble opening their mouth due to spreading infection — **medical consult, send to hospital urgently**
  - Important that there is immediate follow-up dental care after this procedure to make sure the source of infection is removed, and to prevent a more serious and dangerous infection
- Only lance abscess if sure it is needed, skilled and confident to do so
  - Make sure abscess is clearly pointing — can see pus just under skin (mucosa)
  - **Do not** give local anaesthetic unless trained/skilled to do so
  - **Do not** inject local anaesthetic into swelling. Will not anaesthetise area, can cause dangerous spread of infection
  - Nerve block injections away from site of infection can be safe and effective

### What you need

- Sterile cotton gauze
- Cotton bud
- Topical anaesthetic cream
- Local anaesthetic (LA) for dental use, if required and trained/skilled
- Sterile No. 11 scalpel blade and handle
- Suction equipment *OR* cup and tissues to spit into
- Sterile suture kit
- 3.0 plain gut suture

### What you do

- Sit or lie person down
- Dry area to be lanced with sterile gauze

- If using LA — use cotton bud to paint **topical anaesthetic** over lancing site or injection site. Wait 3 minutes
- Give LA, if required
- Tell person you are about to lance abscess, ask them to keep calm and still
- Plunge scalpel quickly in and out **exactly where abscess is pointing**
- Use suction and gauze to soak up pus and blood
- Let person relax, then ask person to rinse and spit
- Put gauze pack over incision, have person close their mouth to hold in place
- **If bleeding doesn't stop** — use simple suture ([p294](#)) to loosely close incision. Small incision should not need a suture
- Tell person to rinse with warm salty water 3–4 times a day
- Check daily

Need **dental consult** for extraction or root treatment within few days to prevent abscess reoccurring.

### Minor swelling or soreness after extraction

- Some pain and swelling is expected after extraction and/or oral surgery
- Infection is uncommon
- Swelling usually peaks 48–72 hours after extraction
- Sometimes retained tooth or bone fragments can cause symptoms

### Attention

- Give **pain relief** first. May be all that is needed

### What you need

- Paracetamol
- Sterile tweezers
- Warm sterile normal saline

### What you do

- Give **paracetamol** ([CARPA STM p380](#))
- If problem continues — **dental consult**
- May need to
  - Sit person in comfortable chair
  - Remove any bony fragments or debris with tweezers
  - Have person gargle with warm salt water and spit
- Tell person to use warm salt-water mouthwash morning, night, after food

## Dental trauma



Tooth may be loosened, displaced, fractured by trauma.

### Attention

- Treatments for baby (primary) teeth and adult (secondary) teeth are different
- **Dental consult** first if possible
- Put tooth or tooth fragments to be taken to dentist in container of milk — cow's milk (fresh, powdered, long life) or breast milk
  - If milk not available — use normal saline or wrap in cling wrap

### Broken tooth (fractured tooth crown)

#### What you need

- Sterile specimen jar
- Milk

#### What you do

- Give **pain relief** if needed ([CARPA STM p377](#))
- Look for tooth fragment/s — may be in soft tissues
- If adult — broken pieces of tooth can be stuck back on by dentist at any time so keep safe and wet, in specimen jar containing milk
  - If milk not available — use normal saline or wrap in cling wrap
- If child —
  - Baby (primary) tooth — no immediate treatment, send to dentist
  - Permanent (secondary) tooth — send to dentist with broken pieces of tooth
- If tooth very sensitive — may help to press (mould) temporary filling over what is left of tooth in mouth
  - If no temporary filling available — try sugar free gum

### Loose or displaced tooth — adult or child

#### Attention

- **Person will need pain relief before this procedure**
- Tooth may be partially pushed up (intruded) or hanging down (extruded)
- Baby teeth usually left as they are. Baby teeth pushed back up into gum will usually grow out again (re-erupt) without help
- Displaced adult tooth must be put back in place or taken out (extracted)
- Loosened but undisplaced teeth are left alone
- Root canal treatment often needed later

## What you need

- Paracetamol
- Hand mirror
- Small strip of aluminium foil

## What you do

- Give **paracetamol** (*CARPA STM p380*)
- Sit person in comfortable chair
- Hold tooth firmly, move back to proper position
- Check bone and gum are in position
  - Ask person to close teeth together gently
  - Check that bite and appearance are normal, ask patient to check too
- If both seem normal — splint tooth in place with aluminium foil. Cut and mould single layer of foil over inside and outside of tooth and teeth next to it
- **Send person to dentist as soon as possible**

## Replacing knocked out adult tooth

### Attention

**Dental consult** about whether local anaesthetic needed.

If RHD, artificial heart valve, heart transplant, history of bacterial endocarditis, congenital heart problem — **medical/dental consult** about preventive antibiotics before starting procedure (*CARPA STM p298*).

- **Person may need pain relief before this procedure** (*CARPA STM p377*)
- Put tooth back as soon as possible, best within 1 hour
- **Do not** replace baby (primary) teeth. If not sure whether baby or adult tooth — try to put back, **dental consult**
- **If you can't replace tooth** — have person hold tooth between cheek and gum, or put in container of milk and send with person to dentist within 12 hours
  - **Do not** store in water
- Only replace whole tooth with root attached. If fragments — see *Fractured tooth crown (p182)*

## What you need

- Cotton bud
- Topical anaesthetic
- Local anaesthetic, syringe, dental needles, if needed
- Normal saline, if tooth very dirty
- Milk
- Sterile mirror
- Sterile tweezers
- Sterile suture kit

- 3.0 plain gut suture
- Small strip of aluminium foil

### What you do

- Give **pain relief** (*CARPA STM p377*)
- Sit person in comfortable chair
- Paint **topical anaesthetic** over injection site with cotton bud. Wait 1 minute
- Give **local anaesthetic** if needed, if skilled
- **Do not** touch root, only crown
- If tooth very dirty — hold crown, gently shake in **normal saline** to clean
  - If normal saline or milk not available — rinse tooth in water for less than 10 seconds
- If need to store before replacement —
  - Have person hold tooth in mouth between cheek and gum *OR* put in container of milk or normal saline *OR* wrap in cling wrap
  - **Do not** let tooth dry out, **do not** store in water
- Look at shape of tooth, and teeth beside gap
  - Make sure tooth is right way around, ie front of tooth is to the front
- Firmly push tooth all the way back into gap
- Gently press (shape) gum back around tooth
- Hold tooth in place for a few minutes
- Ask person to close teeth together, check tooth in right place, ie looks right, teeth meet properly
- Suture cuts (lacerations) in gum if needed
- Splint tooth in place with aluminium foil. Fold (mould) single layer of foil all the way over tooth and teeth next to it
- Give **antibiotics** (*CARPA STM p341*)
- Check tetanus status, see *Australian Immunisation Handbook*
- Tell person to use **chlorhexidine 0.2%** mouthwash – 10mL. Rinse for 1 minute, 3 times a day
- Send person to dentist **urgently**

## 6 Chest and abdomen

### Chest

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# Lungs and respiratory system examination

## Attention

**Remember** — Assessing trauma — primary and secondary survey ([p35](#)).

- **When examining children**
  - Look before going near them with stethoscope or thermometer
  - RR and work of breathing most important indicators of chest infections in children
  - Listening to chest **not** a reliable way to diagnose chest infections — only one part of assessment
- **Crepitus** — crackling sensation under skin caused by air leaking into tissues from airways or lungs. May be felt around chest drain

Large area of crepitus, with/without drain site — **emergency**.  
See *Needle decompression of tension pneumothorax* ([p57](#)).

- **Crackles** (creps) sound like rubbing hair between fingers
  - Ask person to cough. If caused by sputum in upper airways — will clear
- Practise procedures — know what normal chest looks, sounds, feels like
- If anything abnormal or worrying — **medical consult**

## What you need

- Warm hands with short fingernails
- Warm stethoscope — warm between your hands
- Good ears. If you have hearing problem — use amplified stethoscope
- Pulse oximeter
- Other equipment as needed — peak flow meter, spirometer

## What you do

- Respiratory system starts at tip of nose — examination needs to include ears, sinuses, nose, throat, nodes in neck and armpits (axillae), chest and hands

## Ask about

- Nose — discharge, nostrils clear or blocked
- Cough — when it started, when it happens, any triggers
- Sputum — how much, colour (eg clear, yellow, green, bloody)
- Noisy breathing
  - Breathing out (wheeze)
  - Breathing in (stridor) — important, could be obstruction
- Shortness of breath — at rest, after activity, exercise
- Sore throat
- Chest pain or discomfort
- How they sleep — lying, sitting, how many pillows
- Snoring that wakes others, stops breathing while asleep — could be OSA ([CARPA STM p330](#))

- Swollen legs (oedema)
- Pain in calves — with shortness of breath could be DVT, PE
- Smoking, exposure to cigarette or domestic smoke, chemicals, dust

### Check

- Temp, pulse, RR (for whole minute in children), BP, O<sub>2</sub> sats
  - Skin, hands, feet — warm, cool, sweaty, clammy
- Examine hands and look for clubbing — F 6.1
  - Increased curvature of nails
  - Loss of angle between nail and nail bed
  - Sponginess of nail bed and/or spreading (expansion) of end of fingers
- Check mouth for foreign body or upper airway obstruction
- Feel for swollen lymph nodes in neck and armpits
- **Expose chest and look**
  - Shape of chest (eg pigeon, barrel, concave)
  - Breathing — look for
    - Distressed, agitated, short winded, panting, unable to lie down
    - Rhythmical or uneven
    - Chest moving the same on both sides (symmetry)
    - Excessive use of accessory muscles (eg intercostal muscles), indrawing, jugular vein distension
    - Talking in full sentences, single words, not at all. Number of words spoken a good indicator of shortness of breath
  - Wounds, lumps, depressions on front/back of chest or neck
- **If small child or baby —**
  - Alert, drowsy, lethargic
  - Look at respiratory effort
    - How fast they are breathing, stopping breathing (apnoea)
    - Do nostrils widen (flare) a lot as they breathe in
    - Do ribs and breastbone (sternum) suck inward when they take a breath (indrawing), does abdomen move
  - Able to feed or drink from breast or cup
  - Dehydrated



6.1

### Feel chest (palpate)

- Check position of windpipe (trachea). Put ring and index fingers on heads of clavicles, middle finger on windpipe — F 6.2
  - Is it in centre or moved to one side
  - Is there tracheal tug — notch at bottom of neck sucking in
- Using palms of hands, feel gently for any sore areas, swellings or dents (retractions) of chest wall and between ribs (intercostal spaces) — F 6.3



6.2



6.3

- Feel for crepitus, especially around puncture wounds, drain sites
- Using pads of fingers feel over whole front and back of chest for lumps, scars, skin temperature, tone — F 6.4
- Should be no pain
  - If pain — consider broken ribs, muscle strain from coughing, collapsed lung



6.4

**Measure chest expansion (symmetry)**

Compare movement of both sides of chest wall (symmetry). If problem expanding (inflating) one or both lungs — may be fluid in pleural space, pneumonia, pneumothorax etc.

- Put hands on person's back with tips of fingers below scapula, thumbs touching over spine — F 6.5
  - Ask person to take deep breath. Your thumbs and fingers should separate evenly, equally, at same time
- Note any difference in movement
- Look at collar bones (clavicles) from above, do they rise and fall equally



6.5

**Percuss chest**

- Use hands and hearing to find edges of lungs inside chest
  - 2 main sounds — resonant and dull, see Table 6.1
  - Check if filled with air, fluid, solid matter

**Table 6.1: Chest percussion sounds**

Name	Sound	What it means
<b>Resonant</b>	Hollow sound — like when you percuss the stomach	Normal lung tissue
<b>Very (hyper) resonant</b>	Very loud — drum-like	Too much air in lung — emphysema, pneumothorax
<b>Dull</b>	Thud-like — like when you percuss top of the head	Fluid or pus in lung — consolidation, pleural effusion

Left front chest sounds dull over heart — from sternum to mid-clavicular line, at third or fourth rib space. Normal resonance again at sixth rib space.

**Practise on yourself**

- Put non-dominant hand on top front of your chest with middle finger lying straight and flat
  - With tip of middle finger of dominant hand, tap briskly on non-dominant middle finger just below top joint — F 6.6
    - Tapping movement must come from wrist



6.6

- Will hear **resonant** sound
- Repeat on top of head. You will hear **dull** sound

### Percuss patient

- Put hand firmly on chest, with straightened middle finger between ribs (in rib space)
- Follow percussion sequence for front — F 6.7 and back — F 6.8
- When percussing normal lungs, you hear resonant sound over most of lung



6.7

### Listen to breath sounds (auscultation)

- First listen quietly without stethoscope
  - Wheeze or whistle, wet or dry cough
  - Speaking in sentences, short phrases, or single words
- Sounds made by air passing through larger and smaller airways tell you about condition of lungs and chest (pleural) cavity
  - If normal lungs — soft sound as person breathes in (inspires), nothing as they breath out (expire)
  - If fluid (pleural effusion) or air (pneumothorax) around lung — sounds usually decreased
  - If fluid in lung (eg infection, heart failure) — sounds increased, sounds present when person breathes out (bronchial breathing)
  - If blockage in large airways — loud higher pitched sound when person breathes in (stridor)
  - If blockage in smaller airways (eg asthma, bronchiolitis) — may hear higher pitched sound when person breathes out (wheeze)



6.8

If small child — always rely on **what you can see**.

- Level of distress, breathing rate, effort, chest movements more reliable
- See *Clinical examination of children* (p99)

- Put warm stethoscope diaphragm firmly onto skin. **Do not** listen through clothing — covers sounds, confuses findings
- Ask person to take regular, deep breaths through open mouth
- Follow same sequence as for percussion — F 6.7, F 6.8. Listen at each spot for one complete breath — in and out
  - Listen to back, compare one side of chest to other, then to front
  - See Table 6.2 for normal breath sounds
- If unusual breath sounds — note type, loudness, length, timing (breathing in or out)
  - Ask person to keep saying ‘ninety nine’ (99), listen for changes
- Check under arm for pleural rub (creaky leather sound), means membranes around lungs (pleura) inflamed and rubbing together



**Table 6.2: Normal breath sounds**

Where	Sound
<b>Windpipe</b> (tracheal — over trachea)	Harsh, high pitched
<b>Large air tube</b> (bronchial — over bronchi)	Loud, high pitched
<b>Air sacs</b> (vesicular — over alveoli)	Soft, low pitched

- Type of abnormal sound depends on where air flow is blocked, what is causing blockage. See Table 6.3

**Table 6.3: Abnormal breath sounds**

Where	Sound	Example of causes
<b>Larynx</b>	Stridor — high pitched crowing, worse when breathing in	Croup, foreign body stuck in throat, blocked airway
<b>Bronchus</b>	Wheeze — high pitched, hissing, musical	Asthma, bronchitis, bronchiolitis
<b>Alveolus</b>	Crackles — coarse or fine	Coarse — pus, infection Fine — fluid, fibrosis

- If breath sounds
  - Not there — air not reaching air sacs (alveoli). Lung may have collapsed
    - Pneumothorax, bad infection, severe pulmonary oedema, asthma
  - Less than normal — less air reaching air sacs (alveoli). Lung may contain fluid (pulmonary oedema)
  - Unusual — check medical history for repeated chest infections and/or chronic chest disease, **medical consult**

## Using peak flow meter

- Measures how well person breathes air out of lungs, how well their medicine is working
- Reduced peak flow can be due to lung disease or to person not understanding what they need to do
  - Can tell you there is something wrong with lungs but not what it is
- If you know result when they are well — can help you decide if asthma or COPD worse than normal. Check file notes

## Attention

- Teach person to blow from deep in lungs, not just from mouth

## What you need

- Peak flow meter
- Disposable mouthpieces
- Graph to record result
- Person's inhaler medicine

## What you do

- Ask person to sit up straight
- Put clean mouthpiece on meter
- Hold meter level (horizontal) with indicator facing upward. Make sure marker is on '0' (zero) or 'start'
- Ask person to
  - Take big breath in, get lungs as full as they can
  - Seal lips around mouthpiece, blow out as hard and as fast as they can
- Note result, put marker back to zero/start, do this twice more
- Record best (highest) result on graph
- Ask person to take normal dose of reliever medicine
- Do procedure again after 15 minutes, record result on graph
- Compare result with normal or ideal to decide if treatment working

## Spirometry

- Measures lung function — how much air person can blow out, how fast lungs can be emptied
- If 7 years or over — best test for diagnosing asthma or COPD. Use with history and examination
- Need training to carry out procedure, experience to interpret

## Attention

- Must do procedure with **greatest effort possible**, no pausing
- If person coughs, takes extra breath, blocks mouthpiece with tongue — will not be accurate. Must be done again
- Effort may be reduced by chest pain, abdominal problems, fear of incontinence. Manage these risks to reassure patient
- Takes longer for people with airflow obstruction to fully breathe out
- Avoid spirometry in anyone with eye, chest, abdominal surgery, or pneumothorax in last 6 weeks
- **First** — demonstrate procedure to person
- For video clip demonstrating use in primary care setting see *Spirometry* at [www.nationalasthma.org.au/health-professionals/spirometry-resources/spirometry-technique-video](http://www.nationalasthma.org.au/health-professionals/spirometry-resources/spirometry-technique-video)
- For more information on spirometry see *Spirometry Handbook* at [www.nationalasthma.org.au/uploads/content/211-spirometer\\_handbook\\_naca.pdf](http://www.nationalasthma.org.au/uploads/content/211-spirometer_handbook_naca.pdf)

## What you need

- Accurate calibrated spirometer
- Pre-calibrated single use mouthpieces may be preferred
- Use nose clips if available

## What you do

- Person sits up straight with feet firmly on floor. Tell them to try not to lean forward during test
- Ask person to
  - Breathe in as deeply as they can
  - Seal lips around mouthpiece
  - Blow air out as fast and as hard as they can, keep blowing until lungs feel completely empty
- When measuring breathing out (forced expiratory manoeuvre)
  - Adults and children over 10 years should blow out for 6 seconds or more
  - Children 10 years and under should blow out for 3 seconds or more
- You will need at least 3 good tests
  - If person too tired to do 3 good tests in a row — rest in between
- When 3 good tests — give 2 puffs of **salbutamol** (200microgram) via spacer, wait 15 minutes, repeat spirometry and get another 3 good tests
- Throw away single-use mouthpiece when finished

## Breathing function measurements

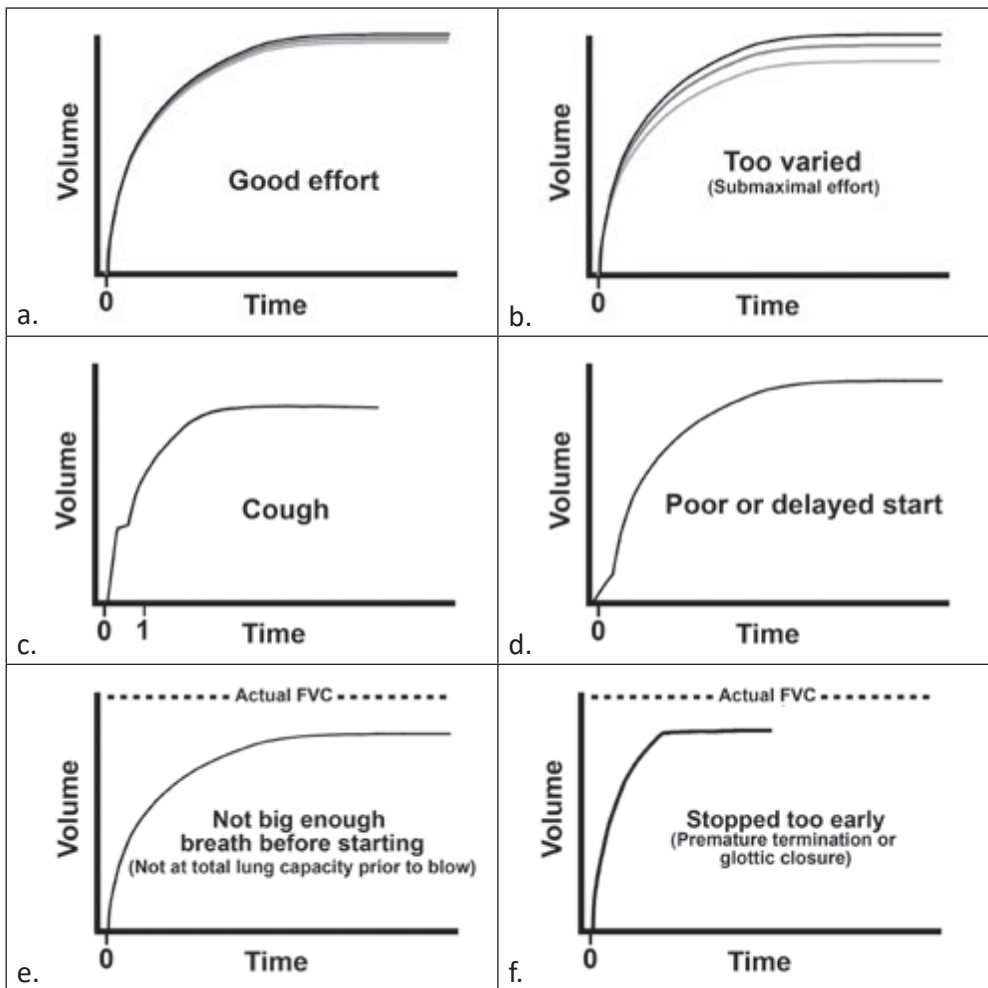
- **FVC (forced vital capacity)**
  - Maximum volume of air which can be forcefully breathed out (exhaled)
  - Abnormal if less than 80% of predicted value based on age, height, gender
  - FVC6 is forced expiratory volume in first 6 seconds. Can be used instead of FVC, especially if severe lung disease and takes a long time to exhale
- **FEV1 (forced expired volume in one second)**
  - Volume expired in first second of a forced expiratory manoeuvre
  - Abnormal if less than 80% of predicted value based on age, height, gender
- **FEV1/FVC ratio**
  - Calculated by dividing FEV1 by FVC, usually expressed as percentage
  - Reduced ratio (less than 0.7 or 70%) suggests airflow obstruction consistent with asthma, COPD, bronchiectasis
- **Improvement in FEV1 following bronchodilator** (eg salbutamol)
  - If airflow obstruction — improvement in FEV1 of more than 12% *AND* at least 200mL after bronchodilator suggests
    - If lung function returns to normal — asthma
    - If obstruction remains — asthma with COPD/bronchiectasis

## ‘Good’ spirometry test

- To be classified as a ‘good’ test, spirometry needs to meet criteria for **acceptability** and **reproducibility**
- **Acceptability**
  - Based on individual forced expiratory manoeuvre
  - Best assessed by looking at both flow-volume and volume-time curves, and patient

- Blow of acceptable quality — F 6.9a
  - Starts quickly — steep rise in flow-volume loop
  - At least 3 seconds if 7–10 years or 6 seconds if over 10 years
  - No cough (at least in first second)
  - Smooth continuous expiration with only 1 breath
- **Reproducibility**
  - Based on how similar 3 acceptable forced expiratory manoeuvres are compared to one another — before and after bronchodilator
  - 2 **best** FVC results should be within 0.15L of one another
  - 2 **best** FEV1 results should be within 0.15L of one another
  - Highest FEV1 and FVC values should be used

### Examples of spiograms



6.9

# Chest physiotherapy

Chest physiotherapy procedures improve **airway clearance** by

- **Improving ventilation, getting air behind sputum** (secretions)
  - Deep breathing exercises, especially deep, slow breaths with breath hold
  - Sitting upright rather than 'slumped'
  - Positive expiratory pressure (PEP) devices such as bubble PEP
  - Physical activity or movement that increases deep breathing
- **Unsticking sputum from small airways**
  - Chest percussion, vibration
  - Bubble PEP
- **Moving sputum toward larger airways**
  - Postural drainage positions, gravity assistance
  - Chest percussion and vibration
  - Huffing and other breathing exercises
- **Clearing sputum**
  - Coughing and swallowing for infants and young children
  - Coughing and spitting out for older children and adults

**Physical activity may help airway clearance, prevent chest problems.** Short bursts of activity (eg running on the spot) through to playing sports.

## Attention

- **Do not** do chest physiotherapy if person
  - Very unwell
  - In early stages of chest infection/pneumonia — fever, fast breathing/RR, chest pain, coughing up blood
  - Having an asthma attack
- Start physiotherapy when fever gone, cough loose, RR in normal range

## Infants and young children with chronic lung disease or chest infection

### Attention

**Do not** use head-down positions. Keep infants and young children flat or upright.

### What you do

- Sit or lie child on your lap or comfortable flat surface
- Use chest clapping (percussion) — slightly cupped hand should make hollow (drum-like) sound, not slapping
  - With child leaning forward on lap or over shoulder, percuss back of chest wall near shoulder, both sides — F 6.10
  - With child lying back against adult's chest, percuss front of chest wall near shoulder, both sides — F 6.11

- With child lying on each side, percuss near armpit — F 6.12
- With child lying on tummy, percuss near spine just under shoulder blade, both sides — F 6.13
- *AND/OR* vibration — gently squeeze and shake chest wall as child breathes out. Use same positions as percussion. Good if child coughs



6.10



6.11



6.12



6.13

- Try physical activities to improve airflow
  - Tickling, giggling, laughing
  - Jumping, short bursts of 20 star jumps, skipping for older children

## Doing bubble PEP

- Bubble PEP aims to help
  - Move sputum from smaller to larger airways so it can be coughed up
  - Increase gas volume in air sacs (alveoli) that are underinflated due to sputum blocking airways

## Attention

- Change water every time
- Wash tubing and bottle in warm soapy water, dry thoroughly after use. Use a clean **dry** bottle and tube each day
- Children may get dizzy if they take big breaths in and blow all way out with every breath. Just slightly bigger breaths than normal are best

## What you need

- 2 tall 2L plastic bottles with or without a handle (eg milk bottle, WFI bottle)
  - 1 for child, 1 for you to demonstrate with
- 2 pieces of thin walled tubing (eg suction tubing or garden drip line)
  - 50cm long x 1cm wide, with internal diameter more than 8mm
- Tape to hold tubing in place, if needed
- 2 bowls to sit bottles in, to catch any overflow
- Food colouring, detergent

## What you do

- Put 10–15cm of water in bottle. Check amount with physio
- Thread tubing down through handle to base of bottle — F 6.14, or tape tubing in place
- Put bottle in bowl, leave top of bottle open
- Blow through tube to make bubbles — F 6.15. Add food colouring and detergent to make it fun
  - If too hard for child — tip out 2–3cm of water

**Note:** If child quite young — start with water only in case they suck by mistake.



6.14

6.15

- **Series of breaths is best, not just single breaths**
  - Aim to build up to at least 8–12 bubble breaths in a row, or 1–2 minutes of bubble PEP breaths at a time
  - After each set of breaths, let child have a break for a minute or so, then repeat bubble breaths
  - Do bubbling for about 10 minutes, depending on child's age, respiratory condition
- **Now encourage variations**
  - Hum a tune. Each line = 1 full breath
  - Blow your longest breath out at end of a set of breaths
  - Gently press paper to coloured bubbles to make prints. Use different colour another day
  - Encourage imaginative fun — make volcanoes or bubble flowers
  - Play 'hide and seek' in the bubbles. Use a straw to blow away bubbles and find hidden object (eg small toy, key, ping pong ball)
  - Slowly and carefully blow the 'world's biggest bubbles'

## Older children and adults with chronic lung disease

### Attention

#### Postural drainage

- Avoid head-down positions in people with enlarged abdomen, high BP, cardiac problems, liver disease, history or symptoms of reflux
- Need to know which lung is affected, which part contains sputum that needs drainage. Need full chest exam ([p186](#)), x-rays and auscultation
- Always start treatment with most damaged lung uppermost
- If too hard for person — shorten time spent in drainage position, but ask them to try and stay in position a bit longer each time they have a go
- Do at least once a day

## What you need

- Surface that can be tilted — special bed, couch, stretcher, or copy ideas in pictures — F 6.16 – F 6.20
  - Make sure person is safe
- Disposable cup or container to spit into, box of tissues

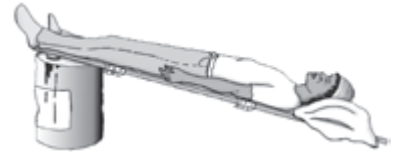
## What you do

### Postural drainage

- Ask person to lie in position that drains affected part/s of lung for 15–20 minutes, do breathing exercises at least 6 times in each position
  - Position in F 6.16 will drain bottom front of lungs
  - Positions in F 6.17 or F 6.18 will drain bottom sides of lungs
  - Positions in F 6.19 or F 6.20 will drain bottom back of lungs

### Breathing exercises

- Ask person to
  - Relax and breathe normally until comfortable lying in position
  - Take 5 big breaths, hold last breath for slow count of 3. If too difficult — may need to take ordinary breaths in between
  - Do 1 or 2 ‘huffs’. For a ‘huff’ ask person to take a breath slightly bigger than normal then force air out quickly through open mouth
  - Relax and breathe normally
  - Repeat until sputum has moved up airways far enough to be coughed out
  - Use 1 breath for 1 cough to clear sputum. Repeat to clear all sputum in upper airways



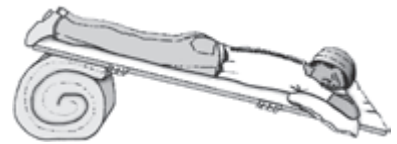
6.16



6.17



6.18



6.19



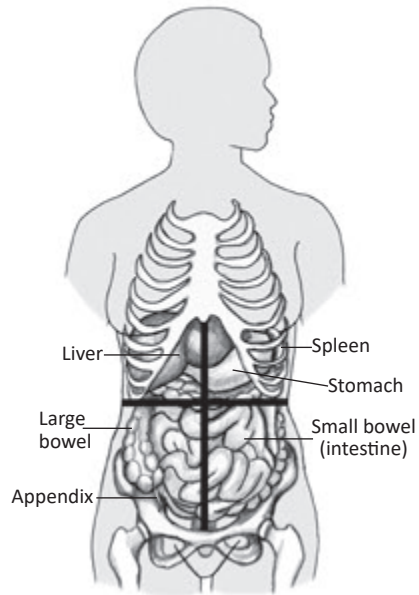
6.20

# Abdominal examination



## Attention

- Make person as comfortable as possible, respect privacy
  - Warm room, empty bladder
  - Gentle approach — start as far from painful area as you can
- Palpate/percuss for a reason, to answer question such as — Is there guarding in right iliac fossa, mass in left upper quadrant, enlarged bladder
  - **Do not** poke or prod abdomen — palpate and percuss gently
  - **Do not** palpate/percuss longer than needed to answer question/s
- Watch person's face during examination to see if they have pain, keep them relaxed
- Mentally divide abdomen into 4 areas (quadrants), know what organs lie in each — F 6.21
  - Start examination well away from painful area, be sure to examine all quadrants, leave painful area/s to last
- Do examination in following order
  - **Look** — for abnormalities, asymmetry
  - **Auscultate** — listen for bowel sounds
  - **Percuss** — check for tenderness, size of organs, masses, air and/or fluid in abdomen (ascites)
  - **Palpate** — feel for masses, enlarged organs, tenderness, guarding, rigidity
- If you find anything abnormal or worrying — **medical consult**



6.21

## What you need

- Warm hands with short nails
- Stethoscope
- Waterproof/permanent marker
- Disposable tape measure
- Pain relief

## What you do

### Look

- Lie person on back, arms by sides, pillow under head
- If person in distress/pain — give **pain relief** now ([CARPA STM p377](#))
- Signs of injury, bruising
- Does abdomen move with respiration
- Does person look very thin (malnourished)

- Jaundice
- Prominent capillaries (spider naevi) or veins visible
- Abdomen swollen/distended
- Where is fat/fluid lying — see *Assessing ascites (p202)*
- Lumps, bulges, rashes, scars
- Umbilicus — in midline, bulging out
- Pregnancy signs — brown discolouration from umbilicus to pubis (linea nigra), stretch marks (striae)
- Bowel moving under skin (peristalsis)
- Pulsing of aorta or femoral arteries

### Listen — with stethoscope (auscultation)

Don't spend a lot of time listening to abdomen. Interpretation of abdominal sounds very individual, doesn't add much to clinical picture. Not a good discriminator, few or lots may be normal, can be serious abdominal pathology with normal sounds.

- Listen for 30–60 seconds in area of umbilicus
  - If no bowel sounds heard — record as absent
  - If bowel sounds present — are they plentiful
    - If plentiful, loud and tinkling — may be obstruction
  - Lots of gurgling may come before diarrhoea, or may be normal
- Use active listening of abdomen to answer question — is there obstruction
  - Mechanical (eg adhesion), twisted (eg volvulus)
  - Lack of intestinal peristalsis (ileus) — from injury, inflammation, low potassium, drugs

### Percuss

- Use same technique as percussing chest (*p188*)
- Percuss very lightly at first, start as far from tender/painful area/s as possible, cover all quadrants
- Listen for
  - Hollow, drum-like sound (tympany) — normal over air filled organs (eg stomach, bowel)
  - Dull sound (dullness) — normal over enlarged liver or spleen, full bladder, uterus. These organs have no overlying bowel
- Use tape to measure
  - Distance liver or spleen extend below ribcage in mid-clavicular line
  - Height of bladder or uterus above pubic bone

### To percuss liver

- Start in mid-clavicular line over lower right lung (just below nipple) then work down. Sound will be hollow over lung
- Use pen to mark where sound becomes dull as you pass over top edge of liver

- Start in right lower quadrant, percuss upward until hollow sound of bowel changes to dullness at bottom edge of liver
  - Confirm bottom edge by light palpation, usually within 2cm of rib cage. Mark this point
- Measure between 2 marks

### To percuss spleen

Can only percuss if enlarged. Need to distinguish from enlarged kidney or stomach tumour.

- **Do not** percuss spleen if left upper quadrant pain/tenderness — might cause damaged/diseased spleen to rupture
- In mid-clavicular line, percuss upward from level of umbilicus
  - Enlarged spleen sounds dull on percussion
    - If covered by bowel — usually sounds hollow
- Confirm by light palpation. Mark this point
- In mid-clavicular line, measure from ribcage to mark

### To percuss bladder

- Do after person has emptied bladder
- Start at pubic bone, percuss up toward umbilicus
- Enlarged bladder sounds dull
- Enlarged uterus and large ovarian masses also sound dull — may be mistaken for bladder

### Palpate

- Always start palpation far away from where patient complains of pain, examine painful area last

**2 types of palpation** — far more information gained from light palpation than deep palpation.

- **Light palpation** — use flat hand and feel with index finger (leading) edge. Press lightly in smooth, gentle movements. Will show up pain, tenderness, tense muscles, some masses, organs lying close to skin (eg liver, spleen, uterus, bladder)
- **Deep palpation** — use more pressure and press deeper (up to 5–7cm if person obese). Can use both hands, one on top of the other. This will show up deep pain, masses, shape/size of deeper structures (eg kidneys, aorta)

### To palpate liver

- Use light palpation to check area you marked during percussion
- Start from right lower quadrant, working upward 2–3cm at a time
- At each site, ask person to take a deep breath
  - If liver or gall bladder enlarged — will feel bottom edge being pushed down by diaphragm
- Normal liver often palpable 1–2cm below ribcage in mid-clavicular line
- Gall bladder tender if infected (cholecystitis)

**To palpate spleen**

In adults you only feel spleen if enlarged. Otherwise protected by lower left rib cage. Occasionally feel edge of normal spleen in children.

Can be difficult to palpate and easily missed even when very enlarged.

- Spleen can be enlarged in
  - Trauma (subcapsular haemorrhage)
  - Leukaemia
  - Myelofibrosis
  - Certain infections — malaria, glandular fever (EBV)
  - Cirrhosis (portal hypertension) occasionally complicated by enlarged spleen

If left upper quadrant tenderness — be very gentle palpating for spleen as injured/enlarged spleen can rupture easily.

- Lie person on right side, facing you
- Sit down with right hand lying horizontally on abdomen at umbilicus
- Feel with leading edge of index finger. Press gently toward left lower rib cage as person breathes in
  - Repeat 4–5 times, each time bringing hand a little closer to rib cage
- Measure in mid-clavicular line from ribcage

**To palpate kidneys**

- Kidneys and adrenal glands are deep, usually difficult to palpate
- Enlarged kidneys usually polycystic
- Kidney and adrenal tumours occasionally palpable, especially in children
- Lower pole of right kidney may be felt if person very thin

**• Right kidney**

- Stand on person's right side, facing their head
- At level of umbilicus, put left hand under person's back half way to midline, put right hand on right abdomen one hand's breadth from midline
- Ask person to take a deep breath and hold for a moment
- With flats of fingers, press up with left hand and down with right to 'capture' and bounce (ballot) kidney between them — F 6.22
- As person breathes out, partially release pressure of right hand, may feel kidney slide back into original position

**• Left kidney**

- Move to person's left side facing head, repeat procedure with hands in opposite positions



6.22

**To palpate bladder**

Pregnant uterus or large ovarian cyst/tumour can be mistaken for bladder.

- Have person try to empty bladder

- Stand on person's right side. Starting above umbilicus use fingers of left hand to lightly palpate into lower abdomen
- Will only feel bladder if distended

## Assessing ascites

### Attention

- **Ascites** is excess fluid between abdominal organs and abdominal wall. Always abnormal
- If abdomen swollen — may be ascites



6.23

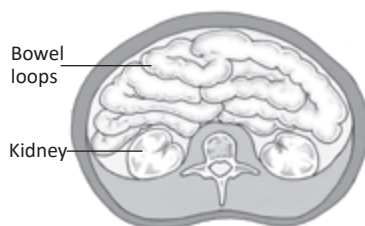
### What you need

- Helper
- Waterproof/permanent marker
- Tape measure

### What you do

#### Percussion wave test

- Person lies on back
- Ask helper to press down firmly in midline with side of hand — F 6.23
- Face person's head and put your hands either side of abdomen
- Tap side of abdomen with right hand. Check for 'ripple' or 'wave' of fluid across abdomen that you can see and feel with left hand — F 6.23



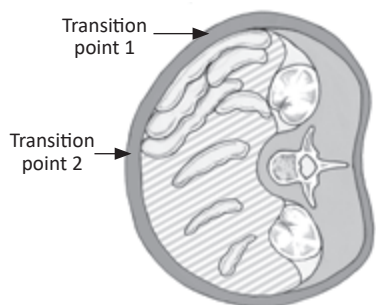
6.24

#### Shifting dullness test

- Person lies on back, stand to side of person
  - Percuss from umbilicus to side away from you
  - Normal air filled bowel — F 6.24 will sound hollow (tympany)
  - If fluid (ascites), hollow sound will change to dullness. Mark this point (transition point 1) — F 6.25
- Roll person onto side facing you, wait a minute for ascites to move down with gravity
  - Percuss from upper side of abdomen toward umbilicus
  - Mark point where hollow sound changes to dullness (transition point 2) — F 6.26
- If ascites, transition point marks will be at least 3cm apart — F 6.26



6.25



6.26

# Rectal examination



## Attention

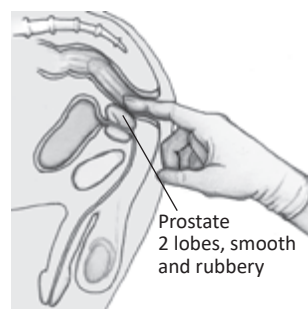
- **Do not** do if splits in skin (fissures) around anus, or other painful conditions
- **Do not** perform on a child unless specifically requested, skilled
- Tampons in female patients can feel like a tumour, so check first
- Very important to explain procedure to person and obtain consent
  - Can be associated with extreme embarrassment, fear of pain, diagnosis of cancer
  - May be more at ease if accompanied by friend, relative, chaperone

## What you need

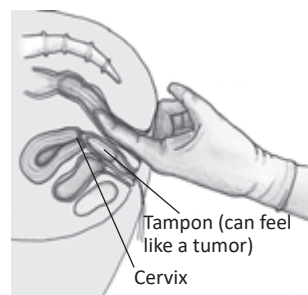
- Paper sheets or blueys
- Well-fitting gloves
- Lubricant
- Tissues

## What you do

- Ask person to empty bladder
- Put clean paper sheet or bluey on bed
- Have person lie on left side with knees drawn up, back to examiner
- Put on gloves, separate buttocks, inspect anus and surrounding area. Note any abnormality
  - Ask the person to 'bear down' and note if prolapse etc
- Put lubricant on tip of finger and place over anus. Ask person to breathe in and out through open mouth, slowly and deeply
- Gently introduce the finger into anal canal, then rectum. Finger will reach 7–8cm with gentle pressure on the perineum
- Sweep finger to front of person (anteriorly) to feel for prostate in males — F 6.27, cervix in females
- Feel all the way around rectum, then back the other way until you have been around full circle — F 6.28



6.27



6.28

## Check

- Haemorrhoids, splits (fissures), abrasions or openings (fistulas) around anus, in anal canal
- Painful or non-painful lumps seen on the outside or felt internally
- When bearing down — rectal or haemorrhoid prolapse, anal muscle tone (strength)

- For impacted faeces
- Check and describe condition of rectal wall
  - Hard, raised, ulcerated areas
  - Soft, spongy, velvety areas
- **The prostate**
  - About 3cm long, 2 lobes with central dip/groove (sulcus). Should feel firm, smooth and rubbery
  - Will feel larger if man has full bladder
  - Rough or craggy hard mass may mean malignant tumour (cancer)
  - Enlarged smooth mass may mean benign enlargement (hypertrophy)
  - Tender, lumpy, boggy mass may mean inflammation/infection (prostatitis)

### Now

- Slowly withdraw finger, check tip of glove for blood, mucus, pus, colour of faeces
- Wipe area with tissues

# Male catheterisation



## Attention

- Male practitioner should do this procedure, if possible
- Aseptic procedure
- Tell person that inserting catheter will cause discomfort
- Check for latex allergy

**Do not** force catheter into urethra.

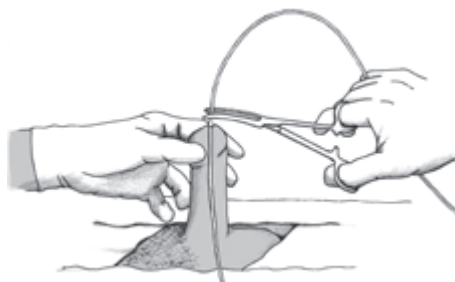
## What you need

- Sterile and non-sterile gloves
- Blueys
- Sterile catheterisation or dressing pack
- Normal saline for cleaning
- Urinary catheter with a balloon, or in/out catheter
  - Smaller the urethra, smaller the catheter
  - 14G or 16G for most men, 12G or less for younger boys
- Clean dish to catch urine
- Sterile lidocaine (lignocaine) catheterisation gel in pre-filled syringe, anaesthetic gel, water-based lubricant
- Sterile specimen jar, if needed
- Forceps (ones in dressing pack usually too small)
- If indwelling catheter — 10mL syringe filled with sterile water, and catheter drainage bag

## What you do

- Lie man on bed, put blueys under bottom, keep upper body covered
- Put on gloves, mask, goggles
- Lay out dressing pack and prepare equipment
- Open catheter **outer packet**, drop catheter onto sterile area. **Do not** open inner plastic covering yet
- Put clean dish between his legs
- Remove gloves, wash hands, put on sterile gloves
- Clean penis with cotton wool balls soaked in **normal saline**
  - Retract foreskin if needed
  - Clean top of penis (glands) in a circular motion, then wipe from top to base
- Drape with sterile towels
- Hold penis upright and gently squirt **lidocaine (lignocaine) gel** into urethra. Wait about 5 minutes for it to work before doing next step
- Open end of inner plastic cover to expose tip of catheter. **Do not** touch tip

- Hold catheter with forceps or by plastic cover so you don't touch it. Put into urethra — F 6.29
- Start with the penis at 90° and gently push catheter in until you meet resistance, then lower penis to 45° and continue until urine flows into collection dish
- Let about 500mL urine flow into dish, then clamp or kink catheter
  - After 5–10 minutes release and let flow finish
- Collect urine specimen if needed ([p393](#)), do U/A
- If catheter to stay in (indwelling)
  - Fill balloon with sterile water from syringe — amount needed is written on side of catheter
  - Withdraw catheter slightly until resistance felt
  - Connect urine drainage bag
  - Secure catheter — check it is not stretched tight when person moves



6.29

# Reduction of a tight foreskin



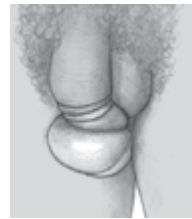
Emergency procedure to loosen retracted, uncircumcised foreskin that has tightened around penis (paraphimosis) — F 6.30, F 6.31.

## Attention

- Can usually do manual reduction in boys. More difficult in men
- Paraphimosis and reduction can be very painful — consider pain relief or light sedation, use compression and ice
  - The more effective the pain relief the better the chance of reduction without need for local anaesthetic or puncture technique (p208)
- If very painful — do ring block
  - **Do not** use lidocaine (lignocaine) 1% + adrenaline (epinephrine)
  - **Do not** use more than maximum dose of lidocaine (lignocaine) 1%, especially for children
- **If you can't do reduction — medical consult, send to hospital**

## What you need

- Ice pack (eg crushed ice in disposable glove)
- Gauze
- Water-based lubricant
- Small needle (eg 23G)
- **If doing ring block**



6.30



6.31

- Plain lidocaine (lignocaine) without adrenaline (epinephrine)
  - Maximum dose  $3\text{mg/kg} = 0.33\text{mL/kg}$  of lidocaine (lignocaine) 1% *OR*  $0.16\text{mL/kg}$  of lidocaine (lignocaine) 2%
- Sterile dressing pack
- Chlorhexidine antiseptic solution
- 5–10mL syringe
- 21G needle for drawing up solution
- 25G needles for injection
- Sterile gloves



6.32

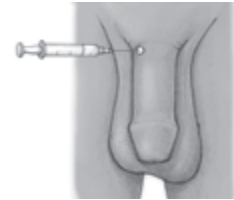
## What to do

- While you are getting ready, apply ice pack
- Put lubricant on head of penis
- Using gauze pads, grip penis over swelling with firm pressure. Hold until swelling goes down (patient can do this)
- Reduce tight foreskin by pushing back on head of penis with thumbs and pulling foreskin forward with fingers — F 6.32

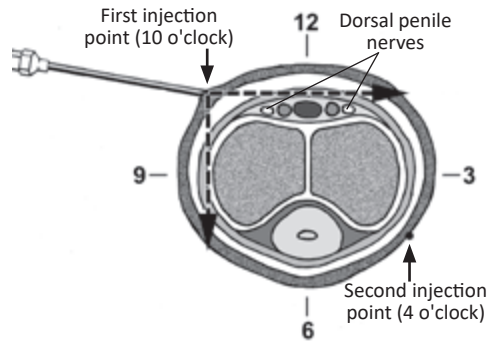
- If too painful — give penile ring block then use puncture technique

### Penile subcutaneous ring block

- Draw up **lidocaine (lignocaine) 1%**
- Make small wheal just under skin at 10 o'clock position at base of penis — F 6.33, first injection point
  - Move needle across penis just under skin toward 2 o'clock position — F 6.34 horizontal dotted line. Tip of needle should move freely
  - Pull back on plunger (aspirate) to make sure you haven't entered column of erectile tissue (corpora cavernosa)
  - Inject  $\frac{1}{4}$  of **lidocaine (lignocaine) 1%** (about 3–5mL for adult) as you move needle back from 2 o'clock to 10 o'clock position
- When back at 10 o'clock position, without taking needle out, swivel and move it down toward 8 o'clock position — F 6.34 vertical dotted line
  - Inject  $\frac{1}{4}$  of **lidocaine (lignocaine) 1%** as you move needle back from 8 o'clock to 10 o'clock position
- Take needle all the way out
- Complete nerve block by repeating on other side so all 4 quadrants anaesthetised. Insert needle at 4 o'clock — F 6.34, second injection point



6.33



6.34

### Puncture technique

For adults (16 years and over) only — **do not** use on children.

- Using 23G needle, make small puncture holes all the way around swollen foreskin — F 6.35
- Use gentle but firm pressure to squeeze out excess fluid — F 6.36
- Keep doing this until swelling goes down. Can take several minutes
- Reduce tight foreskin by pushing back on head of penis with thumbs and pulling foreskin forward with fingers — F 6.32
- Put on dressing
- Ask man to come back next day for review
- Advise to bathe daily in clean warm water



6.35



6.36

# Condoms

- New condom must be in place before any sexual contact
- If condom breaks or slips off penis —
  - Offer both partners STI check – man ([CARPA STM p272](#)), woman ([WBM p238](#)), young person ([WBM p243](#))
  - Consider emergency contraception ([WBM p353](#))

## Offer to demonstrate how to use condom

- Check use-by date — F 6.37. Feel condom packet — should be ‘squashy’. Open carefully
- Hold tip of condom, squeeze air from tip — F 6.38
- Roll condom onto erect penis — F 6.39, F 6.40. Show on model of penis
- Use water-based lubricant for anal sex, or if extra lubrication needed for vaginal sex
  - **Do not** use oils or *Vaseline* — weaken rubber



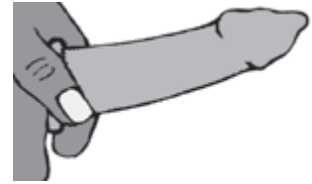
6.37



6.38

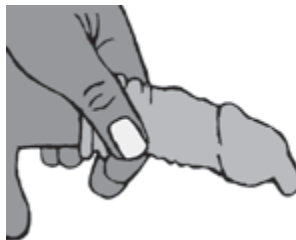


6.39



6.40

- After man has passed sperm (ejaculated, ‘cum’) while penis still hard, hold condom on penis, take penis out of vagina or anus slowly
- When penis soft, remove condom *linea nigra* F 6.41
- Tie knot in condom — F 6.42, dispose of safely — put in rubbish bin
- Wipe excess sperm from penis
- For more information on male and female condoms — see *Barrier contraception* ([WBM p355](#))



6.41



6.42

# Continuous ambulatory peritoneal dialysis

---

CAPD lets people with end-stage kidney disease take care of their dialysis needs in the community.

- Uses peritoneal membrane — body's own naturally occurring semi-permeable membrane that lines the abdominal cavity
  - Fluid is introduced into abdominal cavity through permanent PD catheter
  - Excess water and body wastes (solutes) removed when fluid drains out
  - Exchange of fluids occurs through one of a range of manual or automated methods and regimes
  - Each exchange has a drain, fill and dwell phase
- **Always** shared care with peritoneal dialysis/renal unit
  - Management plan should include how and when to contact the unit
- Biggest risk to patient is peritonitis. Usually caused by contamination of CAPD system. Can be life threatening, lead to dialysis failure

## Contamination of CAPD system

### Contamination of patient line

#### Attention

##### Main causes of contamination

- Most common — breakdown of sterile technique due to touching any of
  - End of transfer set/extension line when disinfection cap off
  - Inside of disinfection cap
  - Patient connection part of peritoneal dialysis solution set
- Using out of date stock
- Using equipment that doesn't have protective cover/cap
- Breakages in any part of delivery system
- Failure to use aseptic technique when injecting additives into peritoneal dialysis bags

#### What you do

##### If you suspect contamination of CAPD system

- Clamp PD catheter until transfer set/extension line changed or repaired
- Person must take oral antibiotics from emergency kit
- If person hasn't already done this — clamp PD catheter
  - Use white PD catheter clamp
  - *OR* plastic scissor clamp with gauze between jaws and PD catheter
- If person hasn't taken antibiotics from kit and didn't bring them to clinic — **renal unit consult for antibiotics order**. Give immediately
- Work out how contamination happened, then decide what to do next
- Contact renal dialysis unit or on-call renal registrar/nephrologist if
  - Contaminated fluid could have entered peritoneal cavity
    - Must be drained out and fresh exchange performed

- Transfer set/extension line must be changed due to any of
  - Set/line split
  - Disinfection cap off and end of set/line (dark blue piece) exposed
  - Exposed end of set/line (dark blue piece) touched
  - Set/line fallen off PD catheter at titanium connector

If 3 or more contaminations in 6 months — peritoneal dialysis/renal unit review.

## Hole or split in PD catheter

### Attention

- Will be wet clothing, fluid leaking from tubing
- Caused by
  - Accidentally cutting catheter
    - **Do not** use scissors or sharp objects near catheter
  - Catheter caught in zipper
  - Catheter weakened by cleaning with alcohol wipes
  - Kink at titanium adaptor if taped incorrectly

### What you do

- Clamp catheter on patient side of hole/split
  - Use white PD catheter clamp
  - *OR* plastic scissor clamp with gauze between jaws and catheter
- **Peritoneal dialysis/renal unit consult** for further advice

## Exit site infection

### Attention

- Will be discharge/pus draining from exit site
- May be pain, redness, large amount of crusting
- PD catheter tunnel tract may also be infected. Redness, pain, swelling over part of catheter under skin
- May feel unwell, have poor appetite

### What you do

- **Peritoneal dialysis/renal unit consult** for advice
- Clean exit site with **normal saline**
- Milk along tunnel tract, apply firm downward pressure over external cuff
- Swab purulent discharge that runs out — send for MC&S
- Continue daily exit site care
- If infection serious — **peritoneal dialysis/renal unit consult**

## Disconnection of line at titanium adaptor

### Attention

- Person needs to check that line firmly screwed onto titanium adaptor every day. After daily shower is a good time

- If line disconnects, peritoneal dialysis fluid will pour out

## What you do

- Clamp catheter close to abdomen
  - Use white PD catheter clamp
  - *OR* plastic scissor clamp with gauze between jaws and catheter
- Cover exposed end with
  - Gauze — sterile or soaked in povidone-iodine
  - *OR* disinfection cap
- **Peritoneal dialysis/renal unit consult** for antibiotics order and further advice

## Peritonitis

### Attention

- If you suspect peritonitis — **urgent peritoneal dialysis/renal unit consult**
- **Treatment must be started urgently.** Can be life threatening and will not get better without treatment

- Caused by
  - Contamination or damage anywhere along CAPD system
  - Accidental disconnection of line at titanium adaptor ([p211](#))
  - Exit site infection ([p211](#))
  - If female — infection of genital tract
  - Constipation or diarrhoea

### Ask

- Abdominal pain, nausea, vomiting
- If female — vaginal discharge
- Diarrhoea, constipation
- Fever, uncontrollable shivering
- Poor drainage of PD fluid
- Feeling very unwell

### Check

- Temp, pulse, RR, BP, O<sub>2</sub> sats — work out REWS ([CARPA STM p6](#))
- Check PD catheter and extension line for signs of damage, missing disinfection cap
- If fluid cloudy — take sample from bag
  - Hang drain bag for at least 15 minutes
  - Wipe bung of each culture bottle with alcohol wipe. Use new wipe for each bottle. Wipe sampling port with new alcohol wipe
    - 1 x aerobic blood culture bottle (room temperature)
    - 1 x anaerobic blood culture bottle (room temperature)
    - 1 x EDTA tube (fridge not freezer)

- 50mL in 'red top' (gamma sterilised) specimen container (fridge not freezer)
- Mark pathology form '**URGENT** Notify nephrologist/renal registrar', send copy to peritoneal dialysis/renal unit. Request
  - White blood cell and differential count
  - Gram stain
  - MC&S

## Do

- **Alert on-call nephrologist/renal registrar**
- **If PD catheter damaged** — do repair or line change, **peritoneal dialysis/renal unit consult**
- Carry out standard bag exchange
  - If dehydrated — use low strength glucose, 0.55% (white ring pull)
  - Reduced volume may help abdominal discomfort
- **Peritoneal dialysis/renal unit consult for medicine order**
- Add IP medicines together to new bag of fluid after drain and 'flush before fill'. Fluid must stay in body for 6 hours
- Give **pain relief** (*CARPA STM p377*)

## Other problems

### Fibrin in effluent

#### Attention

- Fibrin may be seen when peritoneal membrane irritated
  - Usually seen with peritonitis (*p212*)
  - May look like stringy threads in drain fluid, or egg white, or jellyfish as drain fluid cools
  - Can block PD catheter if left untreated

#### What you do

- If effluent otherwise clear and **good drainage** — review in 24 hours
- If effluent clear and **poor drainage** — use **heparin** 1000 unit/L (2L bag needs 2000 unit) in all bags until no fibrin for 24 hours, drainage improved
- If not sure — **peritoneal dialysis/renal unit consult**

### Difficulty draining in or out

#### Attention

- Caused by
  - Closed twist clamp on transfer set
  - Closed clamp on drain line
  - Frangible (inline seal) not broken completely
  - Kinks in drain/fill lines
  - Fibrin

- Not enough gravity for flow
- Catheter tip floating up out of pelvis
- Catheter trapped in loop of bowel or fold of peritoneum (omentum)
- Constipation

### What you do

- Check tubing. Start from exit site and work outward looking for kinks, closed clamps, unbroken frangible, fibrin in drain fluid
- Check that infusion bag high enough and drainage bag low enough for gravity to help with filling and drainage. Ask person to stand, move around, bend forward and backward
- Ask person about recent bowel habits. If constipation — give **laxatives**
- If problem persists — **peritoneal dialysis/renal unit consult**

### Fluid leak at exit site

#### Attention

- Suspect if dressing and clothes become wet
- **Do not** ignore

### What you do

- Clean exit site with **normal saline**
- Press firmly along line of catheter toward exit site
- Put glucose part of a U/A dipstick onto expressed fluid
  - If dipstick positive for glucose — drain fluid from peritoneal cavity
- **Peritoneal dialysis/renal unit consult**

### Extruded dacron cuff

First of 2 cuffs on PD catheter has come out. Part or all can be seen.

#### Attention

- Caused by
  - Pulling or tugging on PD catheter
  - Exit site infection
  - Poor insertion technique
  - Large weight loss

### What you do

- Secure PD catheter in natural fall line — never let it hang loose
- Clean twice daily. Never trim cuff back
- Treat exit site infection ([p211](#)) if needed
- **Peritoneal dialysis/renal unit consult**

## Blood in effluent

### Attention

- 1 teaspoon of blood in 2L of effluent can look like pure blood, don't panic
- Usually caused by
  - Trauma (straining, heavy lifting)
  - If female — period. Peritoneal membrane is open at fallopian tubes
- Can be sign of peritonitis

### What you do

- Add **heparin** 1000 unit/L (2L bag needs 2000 unit) to all bags until fluid is clear
  - Can take up to 48 hours
  - Regular dialysis helps remove blood

## Nausea and vomiting

### Attention

- Can be early indication of peritonitis
- Can be food poisoning or gastroenteritis. Check other family members
- Can lead to dehydration

### What you do

- Do bag exchange. If person dehydrated — use 0.55% glucose-strength bag
- Treat nausea and vomiting. Encourage person to rest, have small frequent sips of water and ice
- Review in 24 hours. If still unwell — **peritoneal dialysis/renal unit consult**
  - May need to sample drain fluid

## Dehydration

### Attention

- Caused by
  - Not drinking enough
  - Using wrong glucose-strength bags — too strong
  - Vomiting or diarrhoea
  - Peritonitis, other infection, illness with fever
- Will have
  - Low BP, headache, cramps, sunken eyes, dry cracked coated tongue, dizziness on standing
  - Weight below ideal body weight

### What you do

- Check level of dehydration. Increase oral fluids, may need IV rehydration
- Treat cause of dehydration

- Use lower than usual glucose-strength bag — 0.55%
  - If not available — use only 1.5%
- Only do 3 exchanges over next 24 hours
- **Peritoneal dialysis/renal unit consult**

## Fluid overload

### Attention

- Caused by
  - Drinking too much, using too much salt
  - Not draining fully
  - Using wrong glucose-strength bags — too weak
- May have
  - Weight above ideal body weight
  - High BP
  - Fluid build-up (oedema) in legs, face especially around eyes
  - Headache
  - Difficulty breathing, especially when lying flat

### What you do

- If severe — can do rapid 4.25% glucose exchanges
  - **Peritoneal dialysis/renal unit or on-call renal registrar/nephrologist consult** for advice
- Make sure full drain occurring. Check person's draining method (technique)
- Do 5 exchanges in next 24 hours
- Treat constipation — slows drainage
- Check urine output
- Talk about diet and fluid intake. Advise person to drink less than 500mL/day, stop adding salt to food

## Stress and depression

Chronic illness, anaemia, doing dialysis 365 days a year, waiting on transplant list, all likely to reduce quality of life, cause stress and depression.

### Attention

- May have mood swings, lack of interest in anything, feel unable to cope, sleep longer than usual but feel less rested

### What you do

- Have person talk to someone — friend, partner, nurse, doctor, ATSIHP
- Contact renal unit. Some have psychosocial support workers, patient groups
- Review regularly

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# Broken bones — simple and compound fractures

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- For joint injuries — see *Reducing dislocated or pulled joints (p244)*, *Joint sprains (CARPA STM p373)*

## Assessing and managing possible fractures

**Remember** — Assessing trauma — primary and secondary survey (p35).

### Ask

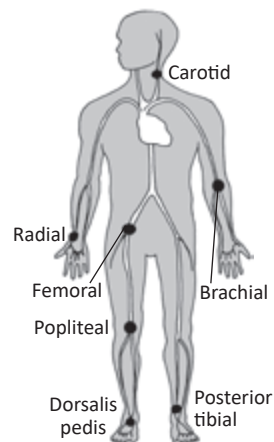
- Pain — when it started, is it getting worse
- Swelling and disability
- How did it happen, were there any witnesses
- What caused the break
  - High speed (eg car accident) — could be more serious compound fracture
  - Low speed (eg simple fall) — could be underlying pathological cause (eg osteoporosis)
  - Repetitive movement causes pain (eg running) — could be stress fracture

### Check

#### Compartment syndrome

- Surgical emergency
- Diagnosed using the Ps
  - **P**ain keeps getting worse even after pain relief, worse than expected for injury
  - **P**oor circulation (cool skin) — **P**allor (hands, feet) and **P**ricking skin are late signs
  - **P**assive movements make pain worse, especially bending toes or fingers back (extension)
  - **P**aresthesia (tingling) and **P**rogressive **P**aralysis follow
  - **Do not** wait for loss of **P**eripheral **P**ulses — F 7.1. Too late to save limb
- **Signs of fracture/dislocation**
  - Swelling
    - Most injuries swell. Keep checking to see how much swelling there is — very important if bandages, splints, casts or slabs used
    - If swelling happens very quickly — consider fracture, dislocation, ligament/tendon rupture
  - Skin — compound fracture will have break in skin
  - Bones — at wrong angle (deformity), tender when palpated on *any* side
    - Gently feel bones that may be broken

- **Do not** palpate obviously broken bone — causes pain
- **Do not** try to produce bone grating (crepitus) — causes pain
- Joints
  - On either side of injury (proximal and distal)
  - Abnormal shape (deformity) or movement
  - Movement — may be limited
- **Signs of problems caused by fracture/dislocation**
  - Cool or cold limbs — may mean arterial injury
  - Sensation — reduced or altered feeling may mean nerve injury
  - Peripheral pulses — F 7.1. Weak or none may mean damage to artery
  - Worsening pain or muscle group feeling tense and firm — may mean **compartment syndrome** (p218)
- Related injuries and complications — internal bleeding, organ damage, nerve damage
- Allergies or adverse reactions that will affect choice of analgesia, dressings, antibiotics
- Age
  - Children — consider greenstick fractures, growth plate injuries, physical abuse
  - Elderly
    - Bones weakened by disease (eg osteoporosis, cancer) can break with very little force (pathological fractures)
    - Injury may be caused by existing medical condition — fall due to dizziness, sepsis, arrhythmia, stroke, internal bleeding, medicines



7.1

## Do not

- **Do not** use the following (HARM) in first 2 days (48 hours) — will make associated soft tissue injuries worse
  - **H**eat
  - **A**lcohol, aspirin, anti-inflammatory medicines
  - **R**unning, strong exercise
  - **M**assage

## Do

- **If signs of nerve or circulation problems** (cool, pulseless limbs) —
  - Gently straighten limb, apply firm traction until pulse returns
  - **Medical consult**
- Give **pain relief** — medicines (analgesics), splints
- Take off any jewellery, watches, rings. Keep them somewhere safe

- If you suspect compartment syndrome —
  - Loosen bandages/slabs/splints
  - Keep limb level with heart
  - **Medical consult**
- Treat with **RICE** — relieves pain and swelling
  - **R**est — immobilise broken limb using sling, splint/slab
  - **I**ce — apply ice or frozen peas for 15–20 minutes every 1–2 hours, then gradually less often over next 24 hours. **Do not** put frozen material directly on skin
  - **C**ompression — apply compression bandage over splint/slab to reduce swelling, give support, immobilise. Bandage should be firm but not tight enough to cause pain. Put on during and after ice
  - **E**levation — lift (elevate) in sling or with pillows after putting on splint/slab, to prevent swelling. Lower limb fracture should be higher than pelvis
- See *Bandaging* (p224), *Splinting* (p229), *Slings* (p227), *Plaster of Paris slabs* (p234)
- See *Fracture types* (p221)

- **Keep checking**

- **End of limb for signs of poor blood supply** (circulation) — see *Compartment syndrome* (p218)
- How much swelling — are bandages too tight

## Compound fractures

If bone exposed to outside environment — compound or open fracture.

- Bone does not always poke through skin, may just be small skin puncture
- Treat all wounds near broken bone as compound fracture
- When skin broken — high risk of infection of tissues and bone
- Treat facial fractures involving sinuses as compound fractures

### Check

- Look for exposed bone
- Feel for distal pulse and sensation
- Tetanus status, see *Australian Immunisation Handbook*

### Do not

- **Do not** poke or probe wound
- **Do not** suture wound, except for bleeding (haemorrhage) control, if there could be fracture underneath
- **Do not** let person eat or drink anything — will need operation

### Do

- Control any bleeding — realign broken bone, apply pressure, suture if needed (p292)
- Clean and wash out wound with **normal saline** in syringe

- Cover wound with sterile, saline-soaked dressing
- Put on back slab or splint, depending on site of wound
- **Medical consult** about IV antibiotics (*CARPA STM p81*) and fluids

## Fracture types

### Fractured skull

- See *Skull fracture* (*CARPA STM p79*)

### Fractured nose

- If nose broken and still crooked after 1 week or can't breathe through 1 side — may need to be straightened. **Medical consult** about surgery
  - Broken nose usually sets by 2 weeks, so need to decide before then

### Fractured jaw

- See *Broken jaw* (*CARPA STM p342*)

### Fractured collarbone (clavicle)

- See *Splinting collarbone* (*p229*)

### Fractured hand/arm

- See *Splinting* (*p230*), *Plaster of Paris slabs* (*p234*)

### Fractured fingers/toes

- See *Splinting single finger/toe* (*p231*)

### Fractured ribs

- See *Fractured ribs* (*CARPA STM p71*), *Flail chest* (*CARPA STM p70*)

### Fractured pelvis

Fracture at front of the pelvis (pubic rami) may present with no deformity or visible bruising, but tenderness and pain on standing and walking (weight bearing).

- It takes a lot of force to fracture pelvis
- If high impact trauma — often bladder and/or abdominal injuries as well

### Check

- Signs of internal bleeding (haemorrhage) — fast heart rate, low BP, poor blood circulation (perfusion). **Can be immediately life threatening** — work out REWS (*CARPA STM p6*)
- Posture — rotation/shortening of lower limb
- Pain around hips when moving
- Palpate for localised (focal) tenderness
- Blood coming from urethra, scrotal/perineal bruising
- U/A for blood

**Do not**

- **Do not** spring pelvis
- **Do not** let person eat or drink anything — may need operation

**Do**

- If multi-trauma (eg chest or head injury, signs of shock [[p39](#)]) — give **oxygen** to target O<sub>2</sub> sats 94–98% *OR* if moderate/severe COPD 88–92%
  - Non-rebreather mask 10–15L/min
- Splint ([p231](#))
- Put in 2 IV cannula ([p84](#)), largest possible. Start IV fluids to maintain hydration and blood volume
- **Medical consult**
- Consider indwelling urinary catheter – female ([WBM p281](#)), male ([p205](#))

**Fractured knee, ankle or foot****Check**

- Use Ottawa rules to help assess injury
  - If x-ray not needed — see *Joint sprains* ([CARPA STM p373](#))

**Ottawa knee rules**

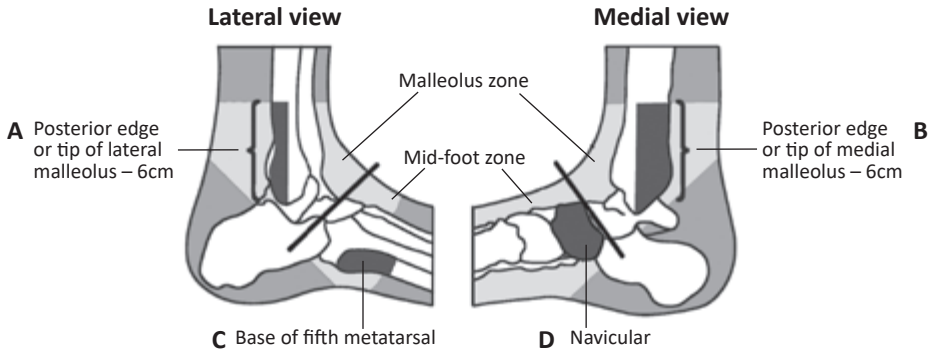
- Knee x-ray only needed if any of
  - Under 18 or over 55 years
  - Tenderness of knee cap (patella) only — no bone tenderness in other parts of knee
  - Tenderness at head of fibula
  - Unable to bend knee to 90°
  - Not able to bear weight straight after injury or when examined in clinic
    - Takes 4 steps — can't bear weight twice on each leg even when limping

**Ottawa ankle rules — F 7.2**

- Ankle x-ray only needed if pain in malleolar zone *AND* any of
  - Bone tenderness at A — posterior edge (6cm) or tip of lateral malleolus
  - Bone tenderness at B — posterior edge (6cm) or tip of medial malleolus
  - Not able to bear weight straight after injury or when examined in clinic
    - Takes 4 steps — can't bear weight twice on each leg even when limping

**Ottawa foot rules — F 7.2**

- Foot x-ray only needed if pain in mid-foot zone *AND* any of
  - Bone tenderness at C — base of 5th metatarsal
  - Bone tenderness at D — navicular
  - Not able to bear weight straight after injury or when examined in clinic
    - Takes 4 steps — can't bear weight twice on each leg even when limping



7.2

**Do**

- If fracture likely — see *Splinting* (p229), *Plaster of Paris slabs* (p234)

# Bandaging



## Attention

**Remember** — Assessing trauma — primary and secondary survey (p35).

**Circulation and sensation** — after bandaging check hands/fingers, feet/toes for colour, warmth, sensation, movement, peripheral pulses — F 7.1 (p219). If any not normal — take off bandage.

- Ask person if bandage is too tight or too loose
- Remember, the bigger the limb, the bigger the bandage
- Start bandaging from inside of limb, wind bandage on so you cover a bit more than half the bandage you have just laid down

## What you need

- Bandages for size of limb
- Tape to secure bandage

## Bandaging a head

Simple way to cover head wound using a triangular bandage — F 7.3, F 7.4



7.3



7.4

## Bandaging an arm

- Wrap end of bandage around wrist twice — F 7.5
- Move up arm, finish at elbow or top of arm — F 7.6
- Check circulation and sensation (*above*)



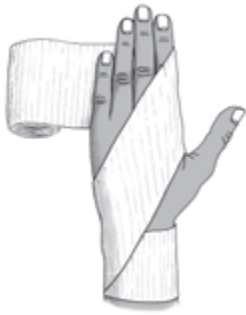
7.5



7.6

## Bandaging a hand

- Wrap end of bandage around wrist twice
- Cross bandage over back of hand to between thumb and index finger — F 7.7
- Go around knuckles once — F 7.8
- Go over hand again, crossing from little finger to wrist — F 7.8
- Repeat until hand covered — F 7.9
- Can use sling to rest hand after bandaging
- Triangular bandage can be used — good to control bleeding palm
  - Make hand into fist while holding combine or non-adherent dressing
  - Cover whole hand with triangular bandage, tie at wrist
- Check circulation and sensation (*above*)



7.7



7.8



7.9

### Bandaging a finger/toe

- Use stretchy tubular bandage
- Cut length 4 times longer than finger
- Flatten tube, cut along length with scissors to about halfway down
- Put uncut end over finger, twist strip at fingertip — F 7.10
- Bring cut ends back over finger and tie around palm and wrist — F 7.11
- Make sure ends around wrist are wide. More comfortable, less risk of cutting off circulation
- Check circulation and sensation ([p224](#))



7.10



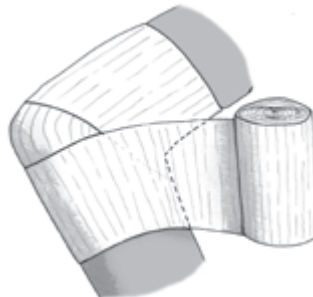
7.11

### Bandaging elbow or knee joint

- Have person bend elbow/knee slightly. Put pillow under thigh to help lift knee
- Wrap bandage around arm/leg below elbow/knee twice — F 7.12
- Go over inside of elbow/knee and around arm/leg above joint — F 7.13
- Go over inside of elbow/knee and around arm/leg below joint again — F 7.14
- Check circulation and sensation ([p224](#))



7.12



7.13

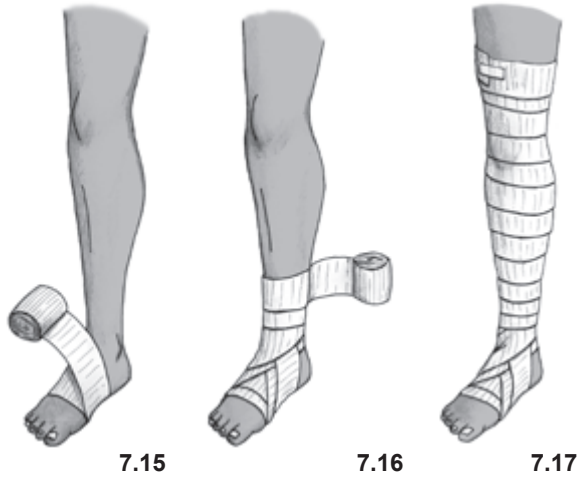


7.14



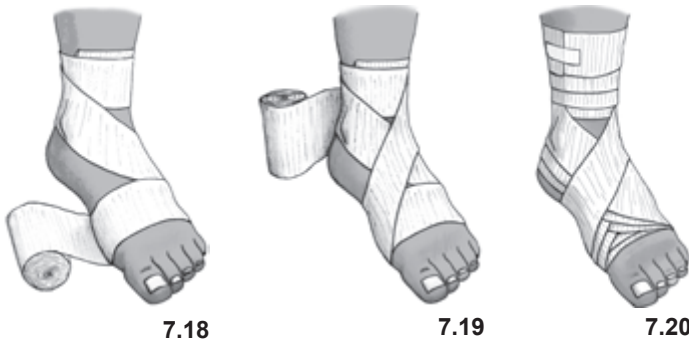
**Bandaging a leg**

- Wrap end of bandage around foot twice — F 7.15
- Bandage ankle — F 7.16
- Go up leg — F 7.17
- Check circulation and sensation ([p224](#))



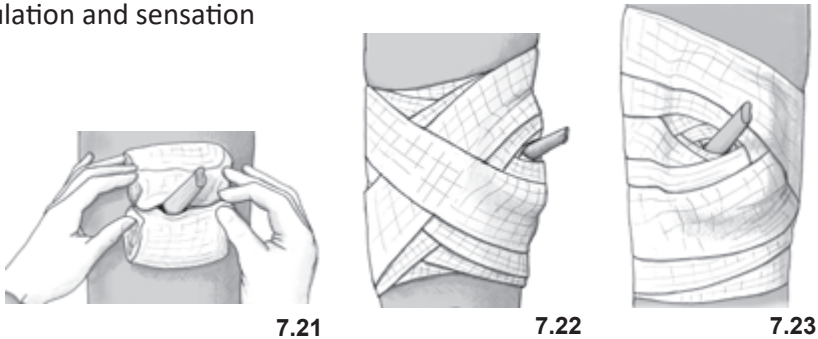
**Bandaging a foot**

- Wrap end of bandage around ankle twice
- Cross bandage over top of foot to little toe, then wrap around foot — F 7.18
- Come from under foot near big toe and cross over top of foot to ankle — F 7.19. Repeat — F 7.20
- Check circulation and sensation ([p224](#))



**Bandaging wounds with protruding objects**

- **Do not** take object (eg knife, spear, glass) out of wound
- **Do not** poke around in (probe) wound
- Put rolled bandage on each side of object to support it firmly — F 7.21
- Use figure of 8 technique and 2 more bandages to bandage around the 2 support rolls until object held firmly — F 7.22, F 7.23
- Check circulation and sensation ([p224](#))



# Slings



Used to support or lift up (elevate) arm after injury to arm or shoulder. Also for elevation to decrease bleeding and swelling.

## Attention

- Support injured arm throughout procedure
- When tying sling around neck
  - Use reef knot so knot lies flat
  - Knot to one side just above collar bone so no pressure on neck
- 5 minutes after putting on sling, check it hasn't come loose, stretched, dropped down, changed position
- If you don't have proper sling — use whatever you can find
  - Can use towels, sheets, bandages etc, but watch for stretching

### Circulation and sensation

After putting on sling check hands/fingers for colour, warmth, sensation, movement, capillary refill, peripheral pulses — F 7.1 ([p219](#)).

If any not normal — take off sling.

## Simple sling

### What you need

- Triangular bandage
- Safety pin or tape

### What you do

- Open out bandage and put under injured arm, pointed edge near elbow and long edge at middle of fingers so tips visible — F 7.24
- Tie ends of sling together at neck on same side as injured arm
  - Hand slightly higher than elbow — F 7.25
- Bring point of bandage around elbow and pin/tape down



7.24



7.25

## Collar and cuff sling

### What you need

- Triangular bandage

### What you do

- Fold pointed edge of triangular bandage to long edge 3 times to make narrow bandage
- Make clove hitch (figure of 8) with 2 large loops, ends of bandage in the middle, one end pointing up and the other end pointing down — F 7.26
- Slide forearm of injured arm through loops with ends to the front — F 7.27
- Lift lower end up across the front of bandage, bring both ends up around person's neck
- Tie bandage on either side of neck, for best support or comfort
  - Hand close to opposite shoulder — F 7.28



7.27

7.26



7.28

## Elevation sling

### What you need

- Triangular bandage
- Safety pin or tape

### What you do

- Bend elbow on injured side so fingers point to opposite shoulder — F 7.29
- Lay triangular bandage over arm with pointed edge (B) near elbow and hand covered — F 7.29
- Bring lower long end (C) under arm — F 7.30 then around to uninjured shoulder
- Gently wrap long edge around injured arm and twist top end (A) around fingers — F 7.30
- Tie ends (A and C) together on uninjured side — F 7.31
- Fold point (B) and any loose fabric along injured arm under sling — F 7.31
- Safety pin/tape securely at elbow



7.29



7.30



7.31

# Splinting



Used to support and immobilise bone you suspect is broken, or for painful tissue damage.

## Attention

**Remember** — Assessing trauma - primary and secondary survey ([p35](#)).

### Circulation and sensation

After putting on splint check hands/fingers, feet/toes for colour, warmth, sensation, movement, capillary refill, peripheral pulses — F 7.1 ([p219](#)).  
If any not normal — take off splint.

- **Padding** — use combines, shirts, jumpers, towels, blankets, cushions etc
- **Splints** — best if made for the job, but you can use any rigid or firm material
  - Can use thick folded blankets, sticks, cardboard boxes, rolled up newspapers
- **Bandages for splinting** — thick, strong triangular bandages used for slings are best, but ordinary bandages will do
- Splint needs to cover and immobilise joints on either side of injury/fracture to prevent movement
- Tie all knots **away** from injured area
- Check bandages are not too tight or uncomfortable — ask person, check circulation

**Remember:** Offer pain relief before splinting ([CARPA STM p377](#)), check distal circulation before and after splinting (*above*).

## Splinting collarbone

### What you need

- Padding
- 2 triangular or ordinary bandages

### What you do

- Offer pain relief ([CARPA STM p377](#))
- Person sits in comfortable chair
- Put padding under armpit on side of injury — F 7.32
- Tie first bandage around upper arm and chest — F 7.33
- Put on elevation sling ([p228](#)) — F 7.34 or collar and cuff sling ([p228](#)) to take weight of arm
- Check circulation and sensation in hand (*above*)



7.32



7.33



7.34

## Splinting upper arm — break not close to elbow

### What you need

- Padding
- 3 triangular or ordinary bandages

### What you do

- Offer pain relief (*CARPA STM p377*)
- Person sits on comfortable chair
- Put on a collar and cuff sling (*p228*) — F 7.35
- Put padding between arm and chest
- Tie one bandage around arm and chest below break, another above break — F 7.36
- Check circulation and sensation in hand (*p229*)



7.35



7.36

## Splinting wrist or forearm

### Attention

- Splint needs to go from elbow to fingertips

### What you need

- Splint
- 4 triangular bandages

### What you do

- Offer pain relief (*CARPA STM p377*)
- Person sits in comfortable chair
- Put forearm and hand on splint, palm downward — F 7.37
- Tie 1st bandage around arm and splint, between elbow and the break — F 7.38
- Tie 2nd bandage around arm and splint, between hand and the break — F 7.38
- Tie 3rd bandage around hand and splint — F 7.38
- Use 4th bandage to make simple sling (*p227*) — F 7.39
- Check circulation and sensation in hand (*p229*)



7.37



7.38



7.39

## Splinting hand or finger/s

### What you need

- Padding
- Splint
- 2 ordinary bandages
- 1 triangular bandage
- Tape or pin for bandage



7.40

### What you do

- Offer pain relief ([CARPA STM p377](#))
- Person sits in comfortable chair
- Put injured hand on padded splint, palm down — F 7.40
- Put rolled bandage under palm to support it — F 7.40
- Bandage hand and forearm to splint, starting at tips of fingers and going up to elbow — F 7.41
- Put on elevation sling ([p228](#)) or simple sling ([p227](#)) to raise (elevate) hand/fingers
- Check circulation and sensation in fingers ([p229](#))



7.41

## Splinting single finger/toe

### What you need

- 2 clean gauze swabs
- Splint — aluminium foam splint, 2 tongue depressors, sticks
- Paper dressing tape

### What you do

- Offer pain relief ([CARPA STM p377](#))
- Tape broken finger/toe to next finger/toe — F 7.42 *OR* ones on either side if middle finger/toe ('buddy splint'). This will act as natural splint
  - Put strip of gauze between fingers/toes to protect skin if needed
- *OR* put splints on both sides of straightened finger/toe, tape around splint and finger/toe
- Check circulation and sensation in fingers/toes ([p229](#))



7.42

## Pelvic sheeting

Preferred option for stabilising pelvic fracture. Used for rotationally unstable pelvic fractures.

### What you need

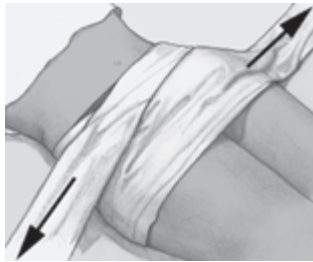
- Bed sheet or towel
- Helpers

## What you do

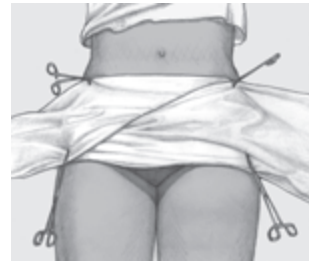
- Offer pain relief (*CARPA STM p377*)
- Log-roll person with helpers (*p68*). Put folded sheet/towel under their buttocks — between top of hip bones and buttock crease
- Roll person back onto folded sheet/towel, pull through so equal amount on each side — F 7.43
- Cross sheet/towel over hip bones, pull firmly in both directions so it tightly fits around and stabilises pelvis — F 7.44
- With helpers holding it in position, clamp sheet/towel at 4 points — F 7.45
- If no clamps available — use large safety pins or tie sheet to stretcher
- Check circulation and sensation in feet (*p229*)



7.43



7.44



7.45

## Splinting pelvis

Use this method or pelvic sheeting (preferred) (*p231*).

### What you need

- Padding
- 2 triangular or ordinary bandages

### What you do

- Offer pain relief (*CARPA STM p377*)
- Person lies on stretcher or immobilisation board, knees bent slightly and supported by folded blanket — F 7.46
- Put some padding under small of back (lumbar area)
- Put soft padding between knees, legs, ankles
- Tie triangular bandage around feet and ankles in figure of 8
- Tie broad bandage around knees
- Support pelvis on either side with rolled up blankets
- Check circulation and sensation in feet (*p229*)



7.46

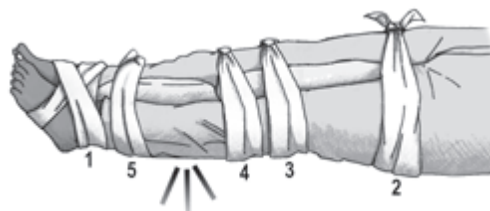
## Splinting lower leg

### What you need

- Padding or pillow
- 5 triangular or ordinary bandages

### What you do

- Offer pain relief ([CARPA STM p377](#))
- Support fractured area with pillow
  - OR put folded padding between thighs and lower legs
- Tie ankles and feet together using figure of 8 bandage
- Tie 2nd bandage around both thighs
- Tie 3rd bandage around both knees
- Tie 4th bandage around both legs, above broken bone
- Tie 5th bandage around both legs, below broken bone — F 7.47
- Check circulation and sensation in feet ([p229](#))



7.47

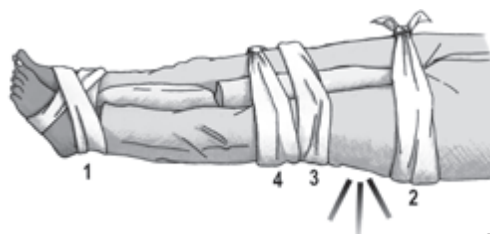
## Splinting upper leg

### What you need

- Padding
- 4 triangular or ordinary bandages

### What you do

- Offer pain relief ([CARPA STM p377](#))
- Put folded padding between thighs and lower legs
- Tie ankles and feet together using a figure of 8 bandage
- Tie 2nd bandage around both legs, above broken bone
- Tie 3rd bandage around both legs, below broken bone
- Tie 4th bandage around both knees — F 7.48
- Check circulation and sensation in feet ([p229](#))



7.48

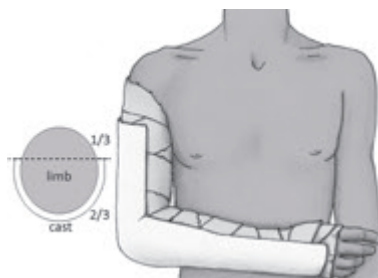
## Plaster of Paris (POP) slabs



- Used to immobilise injured limb or suspected fracture during transport, while waiting for x-ray, until swelling lessens
- Can be used as main support for soft tissue injuries

### Attention

- Examine carefully (*p218*) to accurately diagnose injury and need for immobilisation
- Give **pain relief** if needed before positioning limb, putting on plaster (*CARPA STM p377*)
- Slabs need to be wide enough to fit around curve of limb like a shallow bowl, but not cover more than  $\frac{2}{3}$  of limb circumference — F 7.49



7.49

- **Circulation and sensation** — after putting on plaster check hands/fingers, feet/toes for colour, warmth, sensation, movement, capillary refill, peripheral pulses — F 7.1 (*p219*). If any not normal — **take slab off straight away**
- If person returns to clinic complaining of pain and/or fingers/toes show signs of poor blood or nerve sensation — **take slab off straight away**

### What you need

- A helper
- Plastic aprons — messy procedure, protect person's and your clothing
- Blueys or plastic covers
- Wide bowl or bucket deep enough for plaster bandage to be fully submerged in water — line with plastic bag
- Cool or slightly warm (tepid) water
  - **Do not** use hot water — plaster will set too fast, may cause thermal burns
  - **Do not** use very cold water — plaster will set too slowly
- Cotton or wool underlay (also called plaster wool)
- Crepe bandages (size depends on size of limb), tape
- Strong scissors or plaster shears

- Plaster rolls
  - 5cm for hands, 7.5cm for lower arms, 10cm for upper arms and legs
  - Need 5–10 layers of plaster depending on age and size — provide support but keep light

## What you do

- Cover area around work site with blueys/plastic, put water nearby
- Put on protective aprons



7.50

## Protect skin

- Put on wool or cotton underlay
  - Lay gently around limb — F 7.50. **Do not** pull tight, make creases or ridges
  - Each layer should overlap previous by about half. Usually 2 layers for arm, 3–4 layers for leg
  - Tear to shape around joints
  - Use 2 extra layers to protect joints or prominent areas
  - Bandage 5cm further than area plaster will cover, to fold back over rough ends

## Position limb

- Make sure limb in right position **before** you start to plaster
- Keep limb in right position until plaster dries to avoid making creases that can damage skin, cause pressure areas
- Assistant can be used to help support end of limb (distally), if needed

## Measure and cut slab

- Measure length of slab with crepe bandage or tape measure — F 7.51
  - Measure uninjured limb if injury very painful
  - Allow extra 10% as plaster bandage shrinks when wet
- Lay dry plaster bandage on flat surface to measured length, layer backward and forward until right number of layers (usually 5–10) — F 7.52
- If plaster bandage not wide enough for limb — layers can be fanned out to widen slab — F 7.53
  - Fanning layers weakens slab, so use extra layers but no more than 20 — more than 20 can cause burns
- Hold slab by edges to stop damage to plaster
- Fold plaster ([p237](#)) or cut plaster ([p237](#)) to accommodate thumb if needed
- Hold slab against limb to check size before putting in water



7.51



7.52



7.53

### Wet the slab

- Lift slab by holding one end, lower into water until whole slab wet — F 7.54
- OR hold long slabs (eg full arm) in concertina shape so they fit in water bowl — F 7.55
- Hold under water until bubbles stop
- Lift slab out by holding upright — F 7.56
- Run 2 fingers down length to squeeze out excess water



7.54

### Apply slab

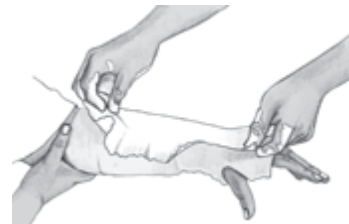
- Handle plaster bandage with care, wet or dry, or it will be damaged and weak
- Check position of limb, fingers/toes. Ask helper to hold, if needed
- Lay slab. Start at knuckles/wrist/toes (extremities) and go toward body — F 7.57
- **Use flat of your hands** to shape around joints and smooth as you go. Smooth from fingers/hands or toes/feet toward body
  - **Do not** use your fingers — can make dents in plaster that press into person's flesh
- Warn person slab will feel quite hot as it dries
- Fold ends of underlay back over ends of slab to protect skin
- Bandage around slab and limb with crepe bandage to keep slab firmly in place
  - Bandage from end of limb/slab toward body
- Hold limb in correct position for 3–5 minutes. Plaster will reach full strength in 24–48 hours
- Put arm in sling or keep leg lifted (eg on pillows)
- Clear away equipment
  - Never tip POP waste down drain
  - Empty used water on garden, throw away POP waste in bottom of bag lining water bowl/bucket
- Check circulation and sensation ([p234](#))
- Organise specialist review



7.55



7.56



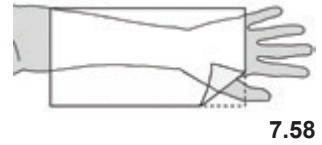
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### Types of slabs

- All plaster slabs are applied on the side with the break — to support and immobilise
- Make room for the thumb in arm slabs — see
  - *Folding slab to accommodate thumb* ([p237](#))
  - *OR Cutting slab to accommodate thumb* ([p237](#))

## Folding slab to accommodate thumb

- Measure and layer plaster to make slab
- Fold down corner of slab — F 7.58
- Hold fold in place while lowering plaster into water — F 7.59
- Lay plaster on arm starting at knuckles with folded side on the thumb side — F 7.58
- Smooth plaster around thumb and across knuckles
  - For Colles or distal forearm fractures — thumb joint should move freely
    - Thumb and middle finger can meet — F 7.60
  - For scaphoid bone or first metacarpal fracture — apply plaster around joint at base of thumb so it doesn't move but middle joint is free and can bend



7.58



7.59

## Cutting slab to accommodate thumb

### Lower arm slab — radial or universal

Used for Colles or distal forearm fractures.

- Put on underlay — from middle of fingers to middle of elbow
  - Put 2 extra layers around wrist and thumb
- Measure from base of knuckle joints to 3 finger widths below elbow crease — elbow joint must move freely
- Make slab and cut to accommodate thumb — F 7.61 or F 7.62
- Position arm, hand, fingers straight
- Lay slab on back of forearm from base of knuckles to 3 finger widths below elbow crease
- With slab applied
  - Thumb joint should be able to move freely, thumb and little finger able to touch — F 7.60
  - All fingers should also be able to bend



7.60



7.61



7.62

### Lower arm slab — scaphoid

Used for fracture of scaphoid bone or first metacarpal that hasn't moved out of alignment (not displaced). Also for soft tissue injury to/around thumb.

- Put on underlay — around thumb, across palm to middle of elbow
  - Put 2 extra layers around thumb
- Measure inside of arm from centre of palm to 3 finger widths below crease of elbow
  - Elbow joint must move freely

- Make slab and cut to fit around thumb and clear knuckles — F 7.63
- Put arm and hand/fingers straight, flex wrist 20° — ask person to hold bandage as shown — F 7.64
- Joint at base of thumb shouldn't move but middle joint is free
- Thumb and 3rd finger should just meet — F 7.65



7.63



7.64



7.65

## Full arm slab

Used for fracture of middle and proximal thirds of radius or ulnar or lower humerus that hasn't moved out of alignment (not displaced).

- Person sits in comfortable chair
- Get helper to hold person's elbow at 90°, fingers in air — F 7.66
- Put on underlay — from fingers to 3 finger widths below armpit, and another layer from tips of fingers to elbow
  - Put extra layer around elbow
  - Put 2 extra layers around wrist
- Measure from centre of palm, around outside of elbow, to 3 finger widths below armpit — F 7.67
- Make slab
  - Fold — F 7.58 or cut — F 7.61, F 7.62 to accommodate thumb, if needed
- Check limb in correct position



7.66



7.67

## Lower leg slab — F 7.68

Used for fracture of distal tibia, fibula, tarsus or proximal metatarsals that hasn't moved out of alignment (not displaced). Also used for soft tissue injuries to lower leg or foot.

- Person lies on bed on stomach with knee and ankle flexed (bent) to 90° — F 7.69
- OR person sits up or lies back with injured foot over edge of bed and ankle flexed to 90°. Use rolled towel to flex knee slightly (15–20°) on injured side — F 7.70



7.68



7.69



7.70

- Put on cotton or wool underlay — from tip of toes to middle of knee
  - Put 2 extra layers around ankle
- Measure back of leg from base of toes to 3 finger widths below base of knee — F 7.71
- Make slab. Fan plaster if legs large, or only narrow plaster rolls available — but do not use more than 20 layers
- Check ankle at 90° and hold in position for several minutes until plaster sets — F 7.68



7.71

# Taking off a cast

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- Take off **Plaster of Paris (POP) casts** with
  - Plaster saw (best)
  - *OR* plaster cutters (harder)
  - *OR* soak cast for 10–20 minutes, tear it apart bit by bit, soaking as you go (much harder)
- **Fibreglass casts** can only be taken off with plaster saw

## Attention

- **If using saw** — always steady (brace) hand holding saw against plaster cast and/or work surface
- **Saw blade can cut person** or give a burning sensation on skin, so go carefully
  - Avoid areas where bones stick out (protrude) such as ankle and wrist joints
- Do outside or in well-ventilated area — makes a lot of noise, dust, mess

## What you need

- Plaster saw or plaster cutters
- Cold wet towel — soak in bowl of ice cubes
- Plaster spreaders or very strong wrists
- PEP for you and person
  - Hearing protection (ear muffs or plugs)
  - Goggles and masks — to protect eyes and lungs from dust particles

## What you do

- For **plaster** make 1 cut down back of limb
- For **fibreglass** make 2 cuts, one down either side of limb (bivalve) (eg radial and ulna borders)

## Using plaster saw

- Brace saw by resting knuckles on cast — F 7.72
- Cut plaster in short movements going down then up, then forward
- **Do not** push or drag blade — increases friction and heats saw blade more
- Saw blade gets very hot, can burn person. Stop every few minutes, cool blade with cold, wet towel
- Monitor cutting process by asking person if they feel any heat at cutting site
- **Stop** when you feel a slight give in plaster and plaster wool can be seen
- Split whole length of cast with saw



7.72

### Using plaster cutters

- Start cutting from hand/foot end of cast, take care not to bruise skin and bone underneath

### When cast split

- Open up cast using plaster spreaders — or a lot of wrist strength. You can also soak plaster to loosen it
- Cut through plaster wool with blunt-ended scissors and gently take off cast
- Check limb for bruises, lesions
- Wash with soap and water to remove dead skin or dirt

### Tight cast

If cast too tight but new one can't be put on in your clinic —

- Saw down 1 side, open cast with spreaders but **leave in place around limb**
- Cut plaster wool with blunt-ended scissors
- Pad between cut edges of plaster with cork, wads of gauze etc to stop it closing again, bandage
- Send for replastering and review

# Using crutches

---

Crutches are used to help stop person putting weight on injured limb, and/or Plaster of Paris cast or slab, especially before it has set.

## Attention

- Crutches should fit comfortably and cause no pain or tingling in arms or shoulders
- Crutches that are too long put pressure on armpit, can damage large network of nerves running from neck to arm (brachial plexus) causing drop hands (crutch palsy)
- Check crutches have all nuts, bolts, screws firmly in place and have good non-slip rubber tips
- Person needs shoes with good grip
- Practise procedures yourself before teaching to others

## What you do

### Fit crutches

- With person standing upright on their good leg, make sure tops of crutches fit properly under their arms
  - Top of crutches should be 2–3 finger widths below armpit when standing straight
  - Person should not stoop down or lift shoulders up to make them fit
- Change height by moving position of bolt and nut on lower peg of wooden crutches, or using the push pins on aluminium crutches
- Hand grips should be level with top of hip
- Elbows should be a bit bent (15°) when holding hand grips

### Demonstrate

- Shoulders should be slightly forward when using crutches
- Keep top of crutches tightly against sides using upper arms
- Take weight through hands, not under arms
- Don't rest armpits on top of crutches
- **Sitting to standing**
  - Good foot on ground close to edge of seat, bad foot just in front
  - Hold both crutches in 1 hand, use other hand to push up from chair
  - Lean forward and stand up
  - Put 1 crutch under each arm and stand up straight
- **Standing**
  - Hold crutches slightly to side of and just in front of feet
- **Walking**
  - Look ahead to where you are walking, don't look at feet
  - Put both crutches forward and bring bad foot level with crutches
  - Swing good foot just past crutches
  - Do this again — this is walking

- **Standing to sitting**
  - Make sure good leg is right back against edge of seat
  - Take crutches from under arms, hold in 1 hand
  - Bend hips and knees, reach down to seat with other hand, keep bad foot slightly forward
  - Lower bottom onto seat
  - Keep crutches nearby, **do not** put weight on injured limb
- **Going upstairs**
  - Get as close to first step as you can, put good foot up onto first step
  - Lift crutches and bad foot up onto same step
    - If hand rail — put both crutches in 1 hand, hold rail with other
  - Do this again — one step at a time
- **Going downstairs**
  - Get as close to first step as you can, put crutches and bad foot down onto first step
  - Put good leg down onto same step
  - Do this again — one step at a time

## Reducing dislocated or pulled joints

---



Used to put back (reduce) a joint knocked or pulled out of its proper place.

### Attention

- **Medical consult** before attempting reduction of dislocated joints
- Need person to be relaxed and comfortable. Speak calmly, move slowly to reassure them. Give sedation if needed
- Always consider possibility of fracture
- Always check and document circulation and sensation (neurovascular) status before trying any manipulation/reduction

#### Circulation and sensation

When finished, **always check** hands/feet (peripheries) for colour, warmth, sensation, movement, swelling, capillary refill, peripheral pulse — F 7.1 (p219) to make sure no damage to nerves, arteries, veins.

## Dislocated shoulder

Mostly seen in younger people following sports injury or fall.

### Attention

- Always suspect fracture, especially in older people
- Longer the shoulder left dislocated, more the limb will swell, muscle will spasm, making it harder to reduce
- Person will need sedation **unless** dislocation has just happened, or is recurrent. If so, first try gently without sedation

- **Do not** try if you suspect a fracture — x-ray first
- If attempted reduction doesn't work, or **posterior** dislocation suspected (eg from fall caused by seizure in epileptic person) — refer for x-ray, specialist treatment

## Stimson manoeuvre and scapular manipulation

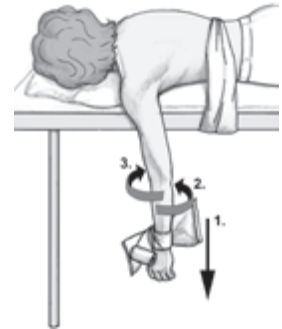
### What you need

- Firm, high, narrow examination couch, stretcher, or bench top
- 2.5–5kg weight — sandbag, plastic bottle full of water
- If person sedated — may need sheet to tie them to couch

### What you do

- Lie person face down on couch so injured shoulder right on edge, arm hanging straight down — F 7.73

- If person sedated — tie sheet around them and couch to make sure they don't roll off
- Strap/tie weight to wrist of injured arm
- Wait 20–30 minutes to see if traction weight reduces dislocation
- **Reduction may be helped by trying following steps in order** — F 7.73
  1. Apply gentle traction down on arm
  2. Turn arm outward (externally) until joint has 'clunked' back into position
  3. Turn arm inward (internally)
- **If this doesn't work, try scapular manipulation**
  - Leave weight in place
  - Support (stabilise) upper part of shoulder blade (scapula) with one hand and push bottom tip of shoulder blade straight across toward spine (medially) as far as it will go — F 7.74
    - Can use thumb of supporting hand to help with push — F 7.75



7.73



7.74



7.75

**Note:** May be hard to tell when joint has gone back into position, as movement in arm and shoulder is very small. Ask person if it has worked.

- Check circulation and sensation ([p244](#))
- After reduction, strap arm with elevation sling ([p228](#))
- Specialist review for follow-up, physiotherapy referral

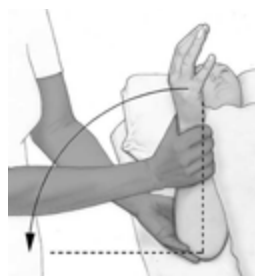
## External rotation

### What you need

- Firm, high examination couch or stretcher

### What you do

- Person lies on back, arm close to side, elbow bent (flexed) to 90°
- Stand facing person on same side as the dislocation
- Grip elbow with one hand keeping it close to person's side. Hold wrist with other hand — F 7.76
  - Ask person to SLOWLY let arm fall to the side (externally rotate). Guide movement with hand at wrist — F 7.77
  - Tell person to stop if pain or spasm, support weight of arm for them until pain settles and muscles relax, then have them start movement again



7.76



7.77

- Full external rotation can take 5–10 minutes
- Shoulder may pop back into place without usual ‘clunk’
- Unless it is clear that the shoulder is back in place, continue until arm fully externally rotated
- If shoulder back in position — put arm across person's body, with hand on opposite shoulder. Strap in place with elevation sling ([p228](#))
  - Check circulation and sensation ([p244](#))
  - Specialist review for follow-up, physiotherapy referral
- If shoulder not back in position — see *Milch technique* (below). Person remains in same position

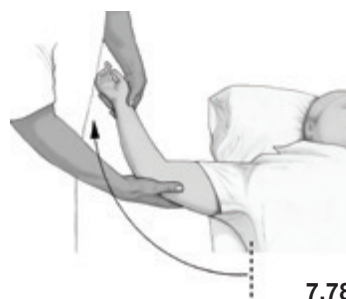
### Milch technique

#### Attention

- Use immediately after unsuccessful attempt to reduce shoulder with external rotation

#### What you do

- Person remains on back with arm fully externally rotated — F 7.77
- Use your hands at elbow and wrist to move arm out to the side and toward overhead position. Keep elbow bent at all times— F 7.78
- When shoulder is at 90° move your hand from elbow to axilla (under arm) and use your thumb or fingers to push head of humerus up and into position — F 7.79
- If shoulder back in position — put arm across person's body, with hand on opposite shoulder. Strap in place with elevation sling ([p228](#))
  - Check circulation and sensation ([p244](#))
  - Specialist review for follow-up, physiotherapy referral
- If shoulder not back in position — **medical consult**



7.78



7.79

### Pulled elbow (dislocated radial head) in small child

#### Attention

- Often caused by adult lifting child from ground while holding them below elbow (eg forearm, wrist, hand)
- Only do if clear story about how injury happened, otherwise send for x-ray
- Warn child's parents/carers that procedure may cause brief pain

#### What you do

- When child calm
  - Hold elbow, press your thumb on head of radius — F 7.80

- With your other hand, hold wrist, then quickly and firmly twist arm from palm down to palm up (supination) — F 7.81 while keeping constant pressure on radial head
- Check circulation and sensation ([p244](#))
- If still painful — put sling on to rest arm. Take sling off after 24 hours
- Check if child needs specialist review



7.80



7.81

## Dislocated elbow in adult

### Attention

- Always do x-ray first
- If no wrist (distal) pulse — **medical consult**, send to hospital straight away
  - Get advice. May need to do reduction without x-ray

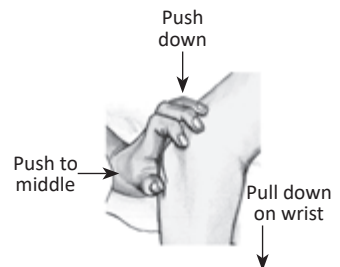
- Always check for fractures of radius bone

### What you do

- Lie person on comfortable couch or flat surface off the floor so arm can hang over the side — F 7.82
- Check for wrist pulse — see *Attention (above)*
- Check movement and feeling in elbow, lower arm and hand. If poor — might be nerve damage
- Hold wrist, pull down slowly and continuously along line of forearm — 7.82 until relaxed. May take a while
- When forearm muscles relaxed, use thumb and forefinger of your other hand to move tip of elbow joint (olecranon) down and toward middle (medially). Should put joint back into position — F 7.83
  - If joint not back in position — **medical consult**
- Check circulation and sensation ([p244](#))
- Put arm in collar and cuff sling ([p228](#)), elbow needs to be kept bent at 90° for at least 1 week
- Specialist review for follow-up, physiotherapy referral



7.82



7.83

## Dislocated finger (interphalangeal joint)

### What you need

- Rough paper tape/plaster

## What you do

- Wrap paper tape around dislocated finger so you can get a good grip — F 7.84
- Stand facing person, firmly hold end of taped finger or ends of tape
- Ask person to lean backward while you hold finger or tape — F 7.85. Dislocated joint should slip back into position
  - If joint not back in position — **medical consult**
- Check circulation and sensation ([p244](#))
- Splint injured finger ([p231](#)) to finger beside
- Check if person needs specialist review



7.84



7.85

## Lateral dislocation of kneecap (patella)

Most common in young people playing sports or from direct blow to knee.

### Attention

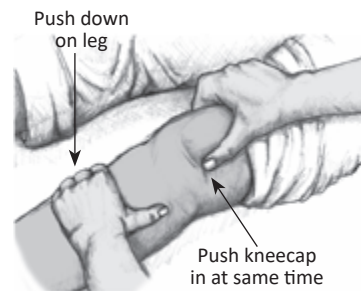
- If seen in elderly person — suspect fracture
- Only use this procedure if kneecap dislocated to outside of knee (laterally). Other dislocations very rare, need x-ray and specialist care
- Best to straighten leg quickly, as lessens pain and nervousness. If done slowly — person will tense leg muscles

### What you need

- Examination couch
- Splint
  - Plaster of Paris and plaster wool for slab
  - Special knee immobiliser

### What you do

- Sit person comfortably on couch, pillows supporting their back. Knee will be slightly bent from injury
- Hold kneecap — F 7.86
- With other hand — push down on lower leg, just below knee (to quickly straighten leg)
- **At the same time** push kneecap toward middle (medially) — F 7.86
- Kneecap should slide back into place over head of femur
  - If kneecap not back in position — **medical consult**
- Check circulation and sensation ([p244](#))
- Splint leg in straightened position, using knee immobiliser or plaster slab
- Specialist review for follow-up, physiotherapy referral



7.86

# Joint aspirations and injections



## Attention

- **Do not** do unless you have been trained. **Medical consult** prior to procedure
- Most common joints to be injected/aspirated are knees, shoulders
- Principles for joint injection and aspiration the same
- **Be aware** of risk of introducing infection — always use aseptic technique
- Before aspirating for diagnostic reasons — see *Joint fluid analysis* (p255)
- If aspirating for healing (therapeutic) reasons — remove most of the fluid
- Local anaesthetic not always needed. Depends on size of needle used
- Always put needle in parallel to joint surfaces to prevent damage to cartilage
- Use ultrasound guidance for shoulder injection if available

**Note:** Leave a bit of air in preloaded syringe. Air can easily be injected into joint but not tissue (strong resistance), helps you know if you are in joint

**Circulation and sensation** — when finished **always check** hands/feet (peripheries) for colour, warmth, sensation, movement, swelling, capillary refill, peripheral pulses — F 7.1 (p219), to make sure no damage to nerves, arteries or veins.

## Syringes and needle sizes

- Needle size depends on
  - Diagnostic or healing (therapeutic) aspiration
  - How much fluid and how thick
  - Size of joint
- Always use smallest needle size possible
  - For **aspiration** usually 21G
  - For **injection** usually 23G
- Needle length
  - Long — 32mm for shoulders or knees, 38mm for obese patients
- Needle and syringe size
  - Aspiration of toe/finger — 25G needle and 3mL syringe
  - Aspiration of knee/shoulder
    - 21G *OR* 18G needle/cannula if you expect thick or bloody fluid
    - 5mL syringe for diagnostic
    - 10–20mL syringe for healing (therapeutic) aspiration

## Do not

- **Do not** do joint aspirations if
  - Bacteraemia present
  - Skin infection or severe dermatitis over joint

- Joint too difficult to reach
- Severe lack of blood clotting (coagulopathy)
- Gout in big toe (classic first metatarsophalangeal gout), very painful, not needed for diagnosis
- **Do not** do steroid injection if
  - Bacteraemia present
  - Infectious arthritis
  - Close to bone infection (osteomyelitis)
  - Person having joint replacement surgery in less than a week
  - Bleeding into joint (haemarthrosis)

### Reasons (indications) for joint aspiration

- **To help with healing (therapeutic)**
  - To relieve symptoms (pain, swelling)
  - To help stop damage to joint caused by infection
- **Diagnostic**
  - To improve joint movement so swollen joint can be fully examined
  - To find reason for unexplained fluid build-up in joint

### Types of effusions

- **Bloody effusions**
  - Traumatic — most common
    - Bloody aspirate indicates soft tissue or bony injury
    - Fat globules in bloody aspirate indicate joint fracture
    - Usually contain streaks of clotted blood
  - Non-traumatic
    - Include haemophilia, anticoagulant therapy, malignant/benign tumours
    - Fluid is evenly bloody
  - May be caused by traumatic tap during joint aspiration — usually contains streaks and fresher looking blood
  - Don't need to send bloody aspirate to pathology unless you suspect septic arthritis, crystal arthropathy, malignant tumour
- **Non-traumatic effusions** are usually non-bloody. Send aspirate to pathology for diagnosis
  - Single inflamed joint could be septic arthritis. Very damaging
    - 20% of people with septic arthritis don't have a fever
    - 20% of cases of septic arthritis involve more than one joint

### What you need

- Blueys
- Sterile dressing pack
- Chlorhexidine 5% in 70% alcohol solution or povidone-iodine antiseptic solution
- Syringes and needles ([p249](#))

- Sterile needle holder or haemostat clamp (to keep needle still when changing syringes)
- Small sticking plaster
- Compression bandage

#### May need

- Large pillow
- 3mL syringe preloaded with local anaesthetic and/or steroid for injection
- Yellow cap sterile specimen container for aspirate
- Crutches

## Knee injection/aspiration — medial and superolateral approach

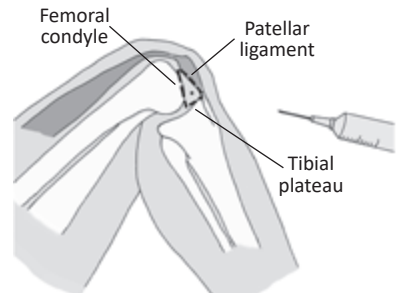
### Attention

- Usually
  - Medial approach for injections and small (diagnostic) aspirations
  - Superolateral approach for large (healing/diagnostic) aspirations
- Use method you are most comfortable with

### What you do

#### Medial approach

- Lie person on back with knee bent 45–90° over bluey-covered large pillow
- Find site for aspiration/injection — F 7.87
- Mark injection site by making indentation with tip of syringe
- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Disinfect site and drape with sterile towels
- Put needle
  - Into triangular space made by edge of femoral condyle, tibial plateau (make sure you can palpate edge of tibial plateau) and patellar tendon, 1cm medial to patellar tendon — F 7.87
  - Behind patella, aiming for femoral notch. Direct inward and slightly backward toward person's thigh for 2–3cm



7.87



7.88

#### Superolateral approach

- Lie person on back with leg straight
- Insert needle 1–2cm above (superior) and 1–2cm to outside (lateral) of upper outer aspect of patella at 45° angle, and at 45° to skin surface — F 7.88



## For both medial and superolateral approaches

- **If aspirating**
  - Connect aspirating needle and syringe
  - Put spare hand (or have helper put their hand) on thigh above knee, press distally to milk effusion into joint. Take care to keep area sterile
  - Insert needle, pushing in slowly while aspirating until you see fluid, then aspirate
  - Don't aspirate while needle being withdrawn through the skin. Can contaminate aspirate
- **If injecting**
  - Inject skin and deeper tissues at needle insertion site with **local anaesthetic**
  - Use sterile needle holder/forceps (with non-dominant hand in pencil grip) to hold needle in joint, disconnect syringe, attach steroid/lidocaine (lignocaine) syringe
  - Put needle gently into centre of insertion site, push in slowly while aspirating until you see fluid or hit bone. If bone hit — pull back slightly
  - Inject
- **If aspirating and injecting**
  - Do aspiration
  - Use sterile needle holder/forceps (with non-dominant hand in pencil grip) to hold needle in joint, disconnect aspiration syringe, attach steroid/lidocaine (lignocaine) syringe
  - Inject

## Now

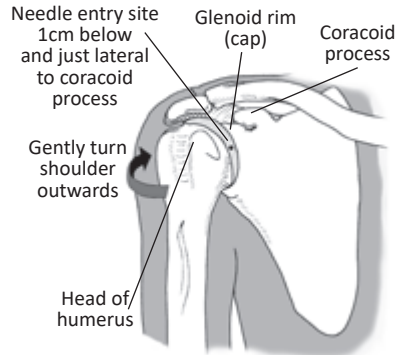
- Take out needle, put firm pressure over site with thumb to stop any bleeding
- Put on sticking-plaster dressing
- If blood aspirated — put on firm bandage ([p225](#)), arrange crutches ([p242](#))
- Put aspirate into specimen jar, store and transport under refrigeration
- Check circulation and sensation ([p249](#))

## Shoulder joint injection/aspiration — lateral approach

### What you do

- Sit person comfortably on chair or couch facing you, arm hanging loosely by side, palm turned forward
- To find site
  - Gently turn shoulder around from inside to outside to feel head of humerus
  - Find groove between head of humerus and glenoid rim
  - Needle entry site is in groove 1cm below and just lateral to coracoid process — F 7.89
- Mark site by indenting skin with tip of syringe

- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean front of shoulder
- Inject local anaesthetic into skin, if using
- Connect syringe to needle. If injecting only — remember to start procedure with smaller needle
- Put needle gently into shoulder at identified site. If you hit bone — pull back slightly
- Aspirate fluid
- Use sterile needle holder/forceps (with non-dominant hand in pencil grip) to hold needle in joint, disconnect aspiration syringe, attach steroid/lidocaine (lignocaine) syringe
- Inject
- Take out needle, put firm pressure over site with thumb to stop any bleeding
- Put on sticking-plaster dressing
- Put aspirate in specimen jar, store and transport under refrigeration
- Check circulation and sensation ([p249](#))



7.89

## Shoulder joint — subacromial bursa injection

### Attention

- Aiming to inject into soft tissue that lines non-cartilaginous surfaces (subacromial bursa)
- **Do not** inject into tendon. If needle enters tendon (gritty resistance) — pull out straight away
- If injection in right place — pain will be quickly relieved

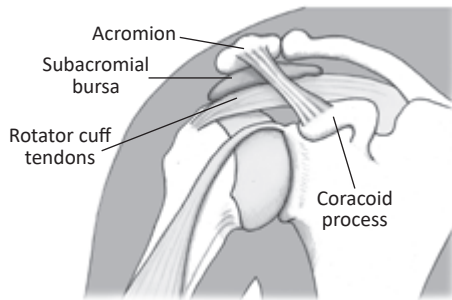
### What you need

- Sterile dressing pack
- Chlorhexidine 5% in 70% alcohol solution or povidone-iodine antiseptic solution
- Local anaesthetic and equipment (if using)
- 3mL syringe preloaded with lidocaine (lignocaine) 1% and 1mL of steroid for injection
- Long 23G or 25G needle
- Small sticking-plaster dressing

### What you do

- Ask person to put affected arm behind their back, with backs of fingers touching far waistline
- Palpate acromial margin laterally or posterolaterally
  - Injection is below acromial margin, laterally, directed upward under acromion — aim for coracoid process

- Mark injection site by indenting with end of syringe
- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean site and drape with sterile towels
- Inject local anaesthetic into skin, if using
- Connect preloaded syringe and needle
- Guide needle tip into site, beneath acromion, angled slightly upward and parallel to acromial under surface — F 7.90
- Inject air you have left in syringe to see if you are in joint. If no resistance felt — inject **lidocaine (lignocaine)** and **steroid**
- Take out needle, put firm pressure over site with thumb to stop any bleeding
- Put on sticking-plaster dressing
- Check circulation and sensation ([p249](#))



7.90

## Steroid injection

- Steroid injections give pain relief
- Adding lidocaine (lignocaine) to steroid injection
  - Relieves pain at target site
  - Helps you work out if medicine has reached its target
  - Allows area to be re-examined while joint under anaesthesia
  - Helps to tell difference between local and referred pain
  - Gives volume to injection fluid
  - Distributes corticosteroid in large joints

### Lidocaine (lignocaine) concentration

- More concentrated (eg 2%) for small joints needing smaller volume
- Less concentrated (eg 1%) for large joints needing larger volume

## Attention

- Infection after injection rare. Prevented by making sure person knows how to keep site clean
- **Post-injection flare** (2–5%). Painful condition, starts 6–12 hours after injection, lasts 2–3 days. Easily confused with infection. Prevented by
  - Avoiding weight-bearing and vigorous activity with injected joint for 48 hours post-injection
  - Applying ice
  - NSAIDs — if no contraindications ([CARPA STM p381](#))

- **Steroid dose**
  - Reduce dose for young people, the elderly, those in poor health
  - Be careful with short-acting steroids in people with diabetes. Risk of increased blood glucose levels for up to 3 weeks after injection

### What you need

- See *What you need* (p250)

AND

- 1mL betamethasone mixed with 3–5mL of lidocaine (lignocaine) 1%
- OR 1mL methylprednisolone mixed with 3–5mL of lidocaine (lignocaine) 1%
- 3mL syringe preloaded with lidocaine (lignocaine) and steroid
- Small joints (eg wrists, ankle) — consider stronger steroids in smaller volumes

### What you do

- See *What you do* — knees (p251) or *What you do* — shoulders (p252)

## Joint fluid analysis

- Send non-bloody fluid to pathology for cell count, gram stain, bacterial culture and, if needed, special tests such as crystals, fluid-protein, fluid-glucose and fluid-LD levels
- Do cultures on all synovial fluids. Bacterial infections can look like or be present along with joint disease

### Collection

- Need a minimum of 2mL aspirate in sterile yellow container for gram stain, culture, WBC, crystals
- For diagnosis
  - If enough fluid, put 1–2.5mL in EDTA tube (purple lid) — gives more accurate analysis of WBC. Important if delay in transport
  - If septic arthritis suspected and enough joint fluid — put 2.5mL in blood culture bottle (aseptic technique)

### Transport

- Best within 4 hours, but no later than 48 hours. Refrigerate if delay
- Use blood culture bottle

### Results

Joint fluid analysis will fall into one of 3 categories, see Table 7.1.

- Non-inflammatory
  - Degenerative (eg osteoarthritis, overuse syndrome)
  - Trauma, if no blood in fluid
- Septic (eg infective mono-arthritis)
  - Non-gonococcal bacterial arthritis
  - Gonococcal bacterial arthritis

- Inflammatory
  - Acute crystal arthropathy (eg gout, pseudogout)
  - Any type of arthritis

**Synovial fluid findings**

**Table 7.1: Microscopic findings**

MC&S	Normal	Non-inflammatory	Inflammatory	Septic
<b>WBC per mm<sup>3</sup></b>	Less than 200	200–2,000	2,000–150,000 (likely less than 75,000)	15,000–200,000 (likely more than 100,000)
<b>PMN</b>	Less than 10–25%	Less than 25%	Often more than 50%	More than 75%
<b>Gram stain</b>	–	–	–	+
<b>Culture</b>	–	–	–	+
<b>Crystals</b>	–	–	+	Possible
Chemicals (eg protein, glucose, LD) not routinely requested, need an extra 0.5mL aspirate.				

# Stiff neck

## Attention

Always consider meningitis (*CARPA STM p101*) in people complaining of a stiff neck.

- Exclude more serious neck injury
- Acute wry neck (torticollis) — sudden onset of severe neck pain with spasm of neck muscles. Causes person to bend or twist neck and head away from painful side
- May be caused by holding awkward position, often from day before (eg long distance driving)
- Usually occurs on one side of neck, resolves by itself
- Common in young people — 12–30 years
- **Do not** drive when suffering from this condition
- Keep posture as normal as possible
- Keep moving neck as much as pain will allow — gentle exercise will speed up recovery

## Active movement and manual traction

### Attention

- If person has pins and needles or numbness during procedure — **medical consult**

### What you need

- Hot pack or ice pack — use what person tolerates best

### What you do

- Lie person down in comfortable position with pillow supporting head
- Put hot/ice pack under neck
- Have person turn head toward painful side as far as comfortable, then toward non-painful side
- If no improvement — apply gentle manual traction to head
  - Hold back of skull with one hand and under chin with other hand — F 7.91
  - Pull gently and evenly for 20 seconds
  - If feels the same or better — repeat
- Advise simple pain relief (eg paracetamol) (*CARPA STM p380*)



7.91

If this procedure does not relieve symptoms — try hold–relax procedure (*p258*).

## Hold-relax

### Attention

- Can be taught to person to do at home
- Turn head toward or away from painful side, depending on which hurts less
  - Turning toward pain described, but technique the same for both



7.92

### What you do

- Person sits in comfortable chair
- Turn head slowly and gently toward painful side until it starts to become uncomfortable, then stop
- Put one hand against side of head opposite to painful side
- Use other hand to steady neck — F 7.92
- Ask person to **turn** head against pressure of your hand — not push sideways
- Keep even, firm pressure against head so that they just can't turn their neck, not so hard that you move their head
- At the same time, ask person to take a deep breath and hold it, look upward to side where your hand rests
- Count 10 seconds then ask person to relax and breathe out
- Person should now be able to turn their head a little more toward painful side without your help
- Do this again 3–5 times in a row — there should be a great improvement in tension and pain
- Physiotherapy referral may be useful

# Feet



## Foot examination

### What you need

- 10g monofilament
  - If not available — tissue/cotton wool

### What you do

- Compare lower legs for size, shape, muscle wasting, swelling (oedema) — F 7.93
- Check both feet for skin colour, sores, ulcers, blisters, corns, bunions, moles, rashes, scars, swollen (varicose) veins, deformities
- Check toes and nails for ulcers, dead tissue (necrosis), blackened areas — F 7.94
- Feel both feet, check if they can move in all normal directions. Can they bend (flex) and straighten (extend) ankles and toes
- Check touch and pain sensation in toes and feet using monofilament *OR* cotton wool or tissue
- Feel for foot pulses ([p260](#))



7.93



7.94

## Diabetic foot

- Regular self-care can prevent diabetic foot problems — ulceration, infection, amputation
- Risk of foot problems
  - Increased by poor diabetes control, length of time person has had diabetes, smoking, foot deformities, inadequate footwear
  - Decreased with regular foot checks and management
- Refer to podiatrist

## Foot checks

### Attention

- All health practitioners should be able to screen diabetic feet
- Screen feet at least once a year, more often if problems found

### What you need

- Foot screening checklist, if used by your health service
- 10g monofilament

**Note:** If no monofilament available — use cotton wool or tissue for rough assessment. Compare sensation in feet to arms

## What you do

- **Ask about**

- Signs of nerve damage — pins and needles, tingling, numbness, weakness, burning
- Pain

- **Feel for foot pulses** in both feet — should be 2 pulses in each foot

- One on top of foot — F 7.95
- One behind medial malleolus (inner ankle) — F 7.96

- **Check sensation** using 10g monofilament

- Sit person with legs out straight, feet level, eyes closed
- Test 3 sites on each foot (avoid hard skin and wounds) — F 7.97
  - Hold filament at 90° to skin, press hard enough to bend filament — F 7.98, then remove. Takes about 2 seconds
  - Ask person if they can feel touch and which foot you are touching
- Touch each site 3 times with filament
  - Protective sensation present at site if person feels touch at least 2 times

- **Look for anomalies** — any of

- Calluses, corns, hard skin, thick nails, cracks or fissures
- Wounds, infection
- Deformities — crooked toes, bunions, bony prominences
- Scars on sole of foot
- Amputations

- **Look and ask about self-care practices**

- Are shoes worn, what type
- Can person care for their feet
  - Consider level of understanding, vision, can they reach their feet



7.95



7.96



7.97



7.98

### High risk foot

May be one or both feet

- 1 or both pulses missing
- Protective sensation missing at 1 or more sites
- Anomalies present
- Person doesn't know how or can't care for own feet

## Foot management

- People with feet at **high risk** need
  - Management plan
  - To be taught daily foot care ([p262](#))
  - 3 monthly foot checks
- People with feet at **low risk** (especially if new diagnosis of diabetes) need
  - To be taught daily foot care ([p262](#))
  - Yearly foot checks

## What you may need

- Soap and water
- Scalpel blade and handle
- Nail clippers, single use best
- Single use nail file
- If active lesion — sterile blunt end probe

## What you do

- If you can't feel all pulses — refer for vascular studies, or use hand-held Doppler ultrasound to check arterial blood flow to foot
- If sensation poor and person can't feel monofilament —
  - Record area of nerve damage (peripheral neuropathy)
  - Remind person they need to check and feel their feet every day
  - Refer to podiatrist for pressure reduction (offloading) and appropriate footwear
  - Review diabetes management

## Treat active foot lesions

- Remove thick hard skin with scalpel (debride) to relieve pressure, prevent ulcers forming
- Use nail clippers and file to reduce long, thick toenails. Can damage other toes or form ulcers under nail
- Debride ulcers, especially on sole of foot, to encourage healing
- If person dark skinned and area of thick skin has become darker in colour — area is inflamed and/or stressed, needs attention straight away
  - Rest area from weight bearing by debriding calluses ([p263](#)), using protective padding, wearing shoes
  - Refer to podiatrist
- **Wounds**
  - **Painless** wounds are sign of peripheral neuropathy
  - **Painful** wounds may be infected or have reduced blood flow (ischaemic)
  - Probe wound with sterile blunt end probe to check whether bone involved
  - If wound chronic or could involve bone — send for x-ray
- Refer to podiatrist. Consider high-risk foot clinic referral/consult
- Infections need antibiotics ([CARPA STM p262](#))

## Follow-up

- Teach daily foot care. Make sure person understands activities and importance
- Monitor person's foot care practices whenever you can — during clinic and home visits, when doing other health checks
- Encourage person to wear comfortable, soft-soled shoes to cushion and protect feet

## Teaching daily foot care

### Attention

- Talk about and show people as part of routine health checks
  - Daily foot care needs to be done **daily**
  - Wash hands before doing foot care
  - Take care not to injure skin. **Do not** use sharp instruments (eg scissors, razor blades, graters)
- Advise to come to clinic if any wounds on feet



7.99

### What you need

- Soap, liquid soap
- Clean cloth
- Bucket
- Non-abrasive kitchen scourer
- Clean towel
- Sorbolene-based cream or simple moisturiser
- Nail clippers, single use best
- Single use nail file
- Clean socks and comfortable, soft-soled shoes



7.100

### What you do

#### Show person how to

- Wash feet well with soap and cloth — F 7.99
  - Safer to do this seated with feet in bucket, not in shower
- Use scourer with soap and water to reduce thick skin. **Do not** use sharp instruments
- Gently dry all skin surfaces with towel — F 7.100
- Look at and feel both feet all over including between toes. Check for blisters, cracks, injuries, changes in skin colour, temperature, texture
- Rub sorbolene-based cream or hand cream into dry skin — F 7.101
- Trim toenails straight across or follow natural curve — F 7.102. **Do not** cut down sides



7.101



7.102

- Use file to smooth edges, lessen thickness of nail
- Clean and cover small skin sores (blisters, scratches, cracks) with simple dressing or sticking plaster to keep dirt out
  - If sores get smelly or sticky (infected) — go to clinic straight away

### Tell person

- To care for their feet they need to
  - Do foot care every day
  - Have feet checked regularly by health team
  - Control their diabetes — keep as active as possible, eat healthy food, take their medicines
- Protect feet by wearing socks and shoes. Thongs better than bare feet
  - Shake rubbish (eg sand, seeds, stones) out of shoes before putting on

## Other foot conditions

### Calluses and corns

#### Attention

- Caused by increased mechanical stress on foot, always at pressure area
- Can be painful, cause underlying necrosis
- Increased risk when on diabetic foot with nerve damage
- Often misdiagnosed as warts
- Need to be removed (debrided)

#### What you need

- Size 10 scalpel blade and handle
- Well-fitting gloves
- Emery board

#### What you do

- Use thumb and index finger of free hand to stretch skin out either side of callus/corn — F 7.103
- Use scalpel to debride callus/corn in layers — F 7.104
  - Use slicing motion, **not** scraping motion
- Should not be painful. Callus/corn doesn't have nerve or blood supply
- Feel texture of surface skin with free thumb as layers removed. Will become more pliable as thickened (keratinised) skin removed
- Corn has central core, needs to be removed carefully with tip of scalpel
- Change scalpel blade as needed — becomes blunt quickly
- Smooth any rough edges with emery board



7.103



7.104

## Plantar warts

### Attention

- Caused by Human Papillomavirus
  - Disturbs skin cells, produces thickened surrounding skin that protects virus from topical applications
- Not caused by mechanical stress, can be anywhere on bottom (plantar surface) of foot
- Often confused with corns and calluses
- Never penetrate into dermal layers of skin
- If small and not painful — can be left
- If large or complex — refer for surgical removal

### What you need

- Size 10 scalpel blade and handle
- Well-fitting gloves
- Topical application (commercial salicylic acid solution)
- Occlusive tape (eg zinc oxide, sports tape). Blocks air and water

### What you do

- Use thumb and index finger of free hand to stretch skin out either side of callus/corn — F 7.103
- Use scalpel to debride wart in layers — F 7.104
  - Use slicing motion, **not** scraping motion
- Can contain capillary loops, will often bleed as layers of skin removed
  - Stop debriding as soon as bleeding seen
- Apply topical solution as per instructions or use cryotherapy (eg liquid nitrogen) on base of wart
- Apply occlusive tape that will soften (macerate) wart tissue
- Debride weekly until all wart tissue removed

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# Skin examination



## What you do

- **Ask about** (OLD CARTS)

**O** nset — slow or sudden, associated with injury or event, food or drug use  
**L** ocation — where is it  
**D** uration — how long has it been there, had it before, changing over time  
**C** haracteristics — itchy, bleeding, painful, red, swollen, crawling sensation  
**A** ggravating factors — what makes it worse (eg worse when touched)  
**R** elief — what helps  
**T** ried — what have they already tried, what worked before  
**S** igns and symptoms (other) — done anything lately that's different, travel, contact with people with a rash, recent weight loss/gain, feeling unwell, fever, cough, eating and drinking (what and how much), medicines used

- **Do full head-to-toe examination**

- Ask person to undress, leave underwear on
- Don't forget to look inside mouth, at soles of feet
- Ask about lesions on scalp, covered by underwear. Check with consent

- **Look and check for**

- Overall condition and colour of skin
- Condition of hair and nails
- Any differences in colour or appearance of arms, legs, hands, feet.  
Compare sides
- Hydration — skin turgor. Lightly pinch loose piece of skin. Does it return to normal straight away or stay saggy
- Swelling/s
- Oedema — legs, feet, hands, bottom, face. Does pressing leave a dent
- Signs of ageing — wrinkled or saggy
- Sores, lumps or rashes
- Burns, scars or bruises
- Blanching — press skin with piece of glass (eg slide) or acrylic (eg clear plastic ruler) and note if rash fades

**Note:** Bleeding into skin **doesn't** blanch. Pinpoint lesions are **petechiae**, larger lesions are **purpura**

- **Feel** skin temperature — hot, sweaty, cold, clammy

- **Rash or lesion**

- Colour — red, purple, pale, multi-coloured
- Size of lesions, distribution over body
- Any of
  - Atrophy — loss of thickness of epidermis, dermis, other tissue
  - Blister/vesicle — skin bleb filled with fluid

- Crust — dried serum, thick mass of horny cells, or both
  - Cyst — deep fluid-filled cavity
  - Erosion — partial loss of epithelium or mucous membrane
  - Erythema — redness
  - Excoriation — scratch marks scoring epidermis
  - Fissure — crack or split in epidermis
  - Lichenification — thickening, horny layer, looks like leather
  - Macule — flat spot. Can see but can't feel it
  - Nodule — lump deeply set in skin
  - Papule — small, dome-shaped, may be skin coloured
  - Plaque — raised solid flat spot, usually larger than 1cm
  - Pustule — skin bleb filled with pus
  - Scale — flaky
  - Ulcer — total loss of skin or mucous membrane
- **Lump or mass**
    - Location — involves skin, muscle, tendon, bone
    - Movement — easy/hard to move, loose, fixed to surrounding structures
    - Size — draw around edge with pen, then measure
    - Shape — regular/irregular, un/even (a/symmetrical), defined/diffuse edges
    - Shade — dark, light, multi-coloured (variegated), different colours
    - Signs of inflammation — red, painful, pus, crusting, dry, moist
    - Surface edge and consistency — looks different to skin around it
    - Feel — hard, soft, smooth, rough, like liquid (fluctuant) in boil/cyst
  - **Swollen nodes**
    - Look at neck for lumps, swelling, obvious pulses
    - Feel (palpate) head and neck with both hands. Take care with the elderly, infant's fontanelle if less than 18 months
    - Start at tip of chin, feel around under jaw to below ears, then feel down muscles at each side of neck to end of collarbone — F 8.1
    - Gently feel behind ears for enlarged nodes, move along to nape of neck, gently follow muscle line down to shoulders
  - **When assessing for melanoma** — look for
    - **A symmetry** — uneven
    - **B order** — irregular
    - **C colour** — uneven
    - **D iameter** — more than 5mm
    - **E volving** — changing size and colour



8.1

### Now

- Measure and describe clearly in file notes
- Take digital photo (with consent) with paper measuring tape, ruler, or paper with measurements beside
  - Keep a copy with file notes, email to specialist for further advice

# Cutting and draining an abscess

---



## Attention

### Do not attempt procedure if

- Abscess large
- Person very sick from bacterial infection
- Abscess over major organ, bone, joint, nerve
- You can't give good local anaesthetic to stop pain

Refer for specialist treatment instead.

- Always count number of gauze swabs used to pack drained abscess, record in file notes
- Maximum safe dose of lidocaine (lignocaine) 1% is 3mg/kg up to 200mg (20mL)
  - Lidocaine (lignocaine) 1% is 10mg/mL
  - **Do not** use solutions containing adrenaline (epinephrine) for fingers, toes, penis, nose, ears

## What you need

- Blueys
- 2 x sterile dressing packs
- Chlorhexidine or povidone-iodine
- Sterile gauze swabs
- 2–5mL lidocaine (lignocaine) 1%
- 5mL syringe, 21G and 25G needles
- Sterile No. 23 scalpel blade and handle
- Sterile artery forceps
- Sterile wound probe
- 20mL syringe
- Normal saline
- Sterile combine pad, tape to secure
- Sterile gloves
- Pathology equipment (if culture needed)

## What you do

- Lay out first dressing pack, chlorhexidine or povidone-iodine, equipment for local anaesthetic (lidocaine)
- Wash hands, put on sterile gloves
- Clean site, drape with sterile towels from dressing pack
- Draw up local anaesthetic

- Anaesthetise over top of abscess by inserting 25G needle just under and parallel to surface of the skin
  - Inject anaesthetic into intradermal tissues very superficially — **not** into abscess cavity
  - Use gentle pressure to infiltrate the skin — you will see the skin going pale (blanching) as anaesthetic spreads out
- Wait for anaesthetic to work (5–10 minutes), clear away first dressing pack
- Lay out second dressing pack, instruments, **normal saline**, 20mL syringe, gauze
- Make cut across abscess for its whole length — not just small hole
- Take swab for MC&S if needed ([p388](#))
- Mop out pus with gauze
- Open up hole (cavity) using gauze swab wrapped around forceps, or sterile gloved finger
- Break up chambers inside abscess, make sure all the pus runs out
- Using 20mL syringe and **normal saline**, flush out hole until pus has gone
- Pack hole with sterile gauze soaked in **normal saline** to level of skin
  - **Do not** pack too tightly
  - **Count packing swabs, record in file notes**
- Cover with thick combine dressing, tape in place
- Ask person to return in 24 hours to check dressing. If not full of pus or dirty — leave in place for another 24 hours, then remove. Count packing swabs
- If still a deep cavity after removing packing —
  - Consider inserting a strip of silver coated dressing (eg *Acticoat*) to give further protection against infection
  - Change in 3 days time
- See *Wound dressings* for follow-up ([p280](#))

# Injuries — fingers



## Taking out splinters

### Attention

- Wood splinters (eg from mulga) common in remote areas
- Can become infected if left in skin, especially if large
- If deep — consider underlying structures

### What you do

#### Very small, shallow splinters

- Put on drawing dressing (eg *Magnoplasm*) for 1–2 days.  
Splinter may come out on its own



8.2

#### Larger splinters

- Sit/lie person comfortably
- Lay out dressing pack and equipment
- Wash hands, put on sterile gloves
- Clean site, drape with sterile towels
- Give local anaesthetic or ring block ([p305](#)) if needed
- Spear splinter with fine needle, lever out of skin
- OR cut skin with scalpel over length of splinter — F 8.2, pull it out with forceps
- OR if wound shallow and splinter has jagged edges that will tear the flesh if pulled back through entry site
  - Cut opening at base of splinter, pull it through with forceps
  - Suture if needed or leave open if risk of infection and review in 3 days
- OR if splinter under fingernail or toenail — F 8.3
  - Use sharp scissors to cut small V shaped area out of nail over splinter — F 8.4
  - Pull splinter out with small forceps — F 8.5



8.3



8.4



8.5

## Taking ring off finger

### Attention

If finger swollen from illness or injury — rings must be taken off to stop loss of blood supply to finger.

- If a lot of pain — ring block ([p305](#)) may be needed

- If following methods fail — ring may need to be cut off using metal ring cutters (best) or wire cutters (if nothing else)

### What you need

- Soap or grease
- Dental tape, fine string, mersilk
- Paperclip or fine wire

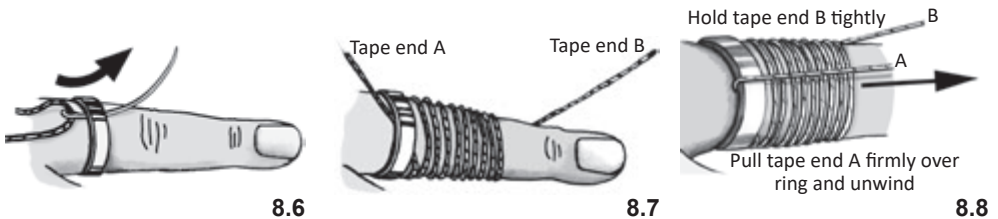
### What you do

- Rub soap or grease on finger, try to slide ring off

### If that doesn't work

- Put more soap or grease on finger
- Slide paperclip or fine looped wire under ring and loop dental tape through bend. Pull one end of tape through under ring — F 8.6
- Hold tape end A, wind tape end B around finger toward fingertip, covering middle joint — F 8.7
- Hold tape end B tightly, pull tape end A straight back over ring toward fingertip, unwinding tape — F 8.8

**Note:** Pressure of tape wound evenly around whole finger helps to reduce swelling. Ring should slide over tape as tape unwinds.



## Taking out fish hooks

### Attention

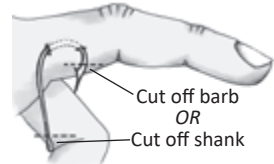
- Large hooks may need surgical removal — **medical consult**

### What you need

- Strong string
- Sterile dressing pack
- Chlorhexidine antiseptic solution
- Lidocaine (lignocaine) 1%, syringe and needles, if needed
- 5mL syringe and 16–18G needle
- Pair of wire cutters, if needed
- Pair of pliers
- Sterile suture set and sutures, if needed
- Sterile gloves
- Goggles (fish hooks can become missiles!)
- Dressing

## What you do

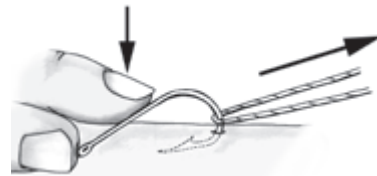
- Sit/lie person comfortably
- Lay out dressing pack and equipment
- Wash hands, put on sterile gloves
- Clean site, drape with sterile towels
- Give local anaesthetic or ring block ([p305](#))
- Following curve of hook, push barb end of hook all the way through skin until it is easily seen — F 8.9
  - Cut off shank — F 8.10, pull hook out through exit hole
  - OR cut off barb — F 8.9, pull hook out through entry hole — F 8.10
- OR loop some string or fishing line around hook where it enters skin
  - Push down on hook shank while giving firm, sharp tug on string to pull out hook — F 8.11
    - Be bold! but careful of flying hook, keep out of its path and wear eye protection
  - OR push 16–18G needle attached to small syringe through hook entry site so needle bevel is over barb point — F 8.12
    - Bring both needle and hook back out through entry site
- OR make small cut in line with curve of hook — F 8.13
  - Pull hook out gently through hole — F 8.14
  - Suture if needed ([p292](#))



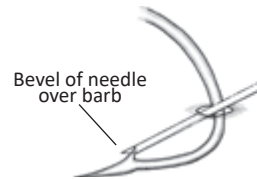
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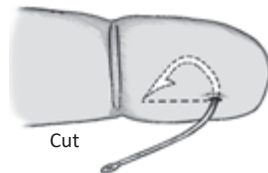
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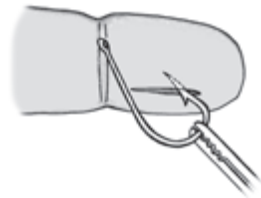
8.11



8.12



8.13



8.14

## Injuries — fingernails and toenails



### Attention

- Always better to keep nail in place if possible. Can be used to splint injury by taping back onto nail bed
- Try not to damage nail base, so nail will grow back evenly

### Letting out blood from under nail (subungual haematoma)

#### Attention

- Use if blood is fluid (not clotted) and covers only part of area under nail
  - If blood fills **whole** area underneath nail — nail may need to be removed, or lifted to suture underneath
- Hot end of needle/paperclip should go **just under nail surface** and not touch nail bed. Painless if done properly
- Tell person discoloured part of nail will usually grow out over 4–6 months. If enough of nail bed injured — nail will drop off, new nail grows in over 4–6 months

#### What you need

- 21–23G needle
- *OR* ordinary paperclip and hot flame source (eg lighter, candle, spirit lamp)
- Sterile dressing pack
- Normal saline
- Sterile gloves
- Dressing, if needed

#### What you do

- Pierce nail
  - Use gentle rotating motion with needle to make 1 or 2 holes in nail
  - *OR* unfold 1 end of paperclip and hold over flame until red hot — F 8.15
    - Quickly move paperclip to nail. Hold at 90° (right angle) and press down lightly in centre of blood (haematoma)
    - Don't push too hard, let paperclip burn through nail. You will feel it give way, blood will ooze out, pain will lessen — F 8.16
- Gently squeeze nail area to get all the blood out
- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean site with **normal saline**, dress if needed



8.15



8.16

## Letting out pus from next to or under nail (paronychia)

### Attention

- All procedures need ring block anaesthetic (p305)
- Soak finger/toe in warm water for 10 minutes to soften tissue around nail

### What you need

- Equipment for ring block (p305)
- Sterile dressing pack
- Chlorhexidine antiseptic solution
- Sterile gloves
- Finger dressing

### AND

- Sterile scalpel blade and handle (for procedure A)
- Sterile gauze soaked with normal saline (for procedure A)
- Sterile fine artery forceps (for procedures B, C)
- Sterile small metal retractor (for procedure C)
- Sterile pair of sharp scissors (for procedure C)
- Vas gauze (for procedure C)

### What you do

- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean site and drape with sterile towels
- Give ring block (p305)

#### Pus beside nail (procedure A)

- Cut with scalpel over area of pus — F 8.17
- Clean out pus from wound
- If deep — pack with **normal saline** soaked gauze ribbon
- Dress wound and keep dry

#### Pus at bottom of nail (procedure B)

- Lift eponychial fold with artery forceps to release pus — F 8.18
- Dress wound and keep dry

#### Pus under nail itself (procedure C)

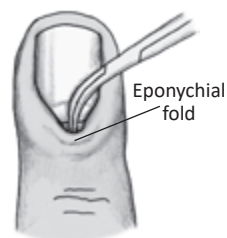
- Pierce nail using hot paperclip method (p273) — not over nail base. Pus will flow out and nail can stay in place
  - May need to repeat several times to keep hole open

### OR

- Push eponychial fold back until you can see nail base, hold in place with retractor. You may need helper
- Lift nail base away from nail bed — cut off small area to let pus out if needed — F 8.19
- Dress with vas gauze, keep dry



8.17



8.18



8.19

# Removing a tick



## Attention

- Try to avoid tick bites
  - Stay away from areas with lots of ticks
  - When in area with ticks, wear clothes that cover your skin (eg long-sleeved shirt)
- Remove ticks as soon as you can
- Need to remove mouth parts of tick, not just body
- **Do not** squeeze, crush or puncture tick's body. Its fluids may contain infectious agents
- On east coast of mainland Australia and in Tasmania ticks can carry a bacteria that causes tick typhus
  - If fever and rash develop within 1 week of removing tick — report to CDC/PHU
- Only try to kill tick before removing it if using alternate tick removal method ([p276](#))

**Note:** Most veterinary clinics stock simple, cheap, plastic tick removers.

## What you need

- Sterile dressing pack to use as clean work area
- **Normal saline**
- Tick remover *OR* pointed tweezers, preferably curved
  - **Do not** use normal household tweezers — they will squeeze the contents of the tick into the blood stream
- Anaesthetic drops (eg tetracaine [amethocaine] 1%) for tick in ear

## What you do

### For ticks on skin

- Lay out dressing pack and equipment
- Grasp tick firmly, as close to skin as possible — F 8.20
- Pull up to remove
- Clean bite area and your hands well with soap and water or alcohol wipe



8.20

### For ticks in ear

- If safe to do so — remove as for ticks on skin
- *OR* try washing out with anaesthetic drops

## Alternate tick removal

May be preferable to kill the tick in place. Removing ticks by force may increase the likelihood of allergic reaction.

- Large ticks — apply freezing agent containing **ether** (eg *Wart off*) to tick
  - Wait 10 minutes for tick to die
  - Brush off
- Small ticks or tick larva — apply cream containing **permethrin**
  - Apply cream at least twice, waiting 1 minute between applications
  - Wait for ticks or larva to die, or cover with band-aid and leave overnight
  - Brush off

# Wound assessment

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Use this procedure to assess the wound for specialist advice and/or to help decide which dressings are best.

- Consider health, cultural, environmental factors that could impact on wound healing
- Expert advice is always helpful, essential if wound is chronic. Most major hospitals have a dedicated wounds nurse
  - Contact by email, MMS (mobile phone), webcam, telehealth etc
  - Check what information your specialist service needs so images and information are appropriate

**Remember:** Ask permission before photographing and sending images or arranging a webcam link up, preferably with written consent.

## Check — patient

- Temp, pulse, RR, BP, BGL
- Things that can affect healing
  - Medical — diabetes, heart disease, kidney disease, transplant, cancer, rheumatoid arthritis, anaemia, bowel disease, vascular disease, autoimmune disease, TB
  - Lifestyle factors — smoking, alcohol, illicit drug use, diet, exercise, hygiene
  - Nutritional status — BMI ([p108](#)), waist measurement ([p111](#)), recent history of weight gain or loss, hair and skin changes
  - Age
- Previous wounds and outcomes
- Allergies, sensitivities
- Medicines — over the counter, traditional/bush, prescribed. In particular immunosuppressants, NSAIDs, cytotoxics, steroids, antibiotics
- Results — MC&S, biopsy, x-ray, doppler
- Psychosocial
  - Anxiety ([CARPA STM p196](#)), depression ([CARPA STM p201](#)), other mental health problems — may impact on ability to manage wound. Consider cognitive assessment ([p113](#))
  - Impact of wound on lifestyle, ability to participate in treatment program
- Consider
  - Pain assessment ([CARPA STM p377](#)) — acute and chronic
  - Assessment of mobility, falls, skin integrity
  - Vascular assessment
  - Sensory assessment

## Check — wound

Record all findings, wound measurements and tracings in person's file.

- Type — trauma, surgical, burn, pressure, infected, chronic
- Cause of original wound
- How long have they had it
  - Acute wound becomes chronic if it fails to respond to treatment within 4 weeks
- Location
- Size — length, width, depth, circumference
  - To measure depth of cavity or sinus — use cotton tip applicator or sterile non-metal wound probe
  - To record wound area — cover with cling wrap or sterile plastic, trace with waterproof marker, redraw onto grid

### Use colours to help you identify the different conditions in a wound

- Pink = new skin growing over the wound (epithelialisation tissue)
- Red = healthy tissue in the wound (granulation tissue)
- Green = infection, wound has been colonised by bacteria
- Yellow = dead tissue that may be wet or dry (sloughy tissue)
- Black = dead tissue that is drying out, and is brown, leathery or hard (necrotic)

You may also see

- Overgranulation or hypergranulation — red tissue that is higher than skin level
- Exposed tendon or bone

### Use TIME to help you assess wound and consider dressings (*below*).

**T**issue

**I**nflammation/ **I**nfection

**M**oisture

**E**dge of wound

Look at wound bed (uppermost visible layer of wound) for

- **Tissue** — is it good (viable) or bad
  - If bad tissue (sloughy or necrotic) — remove bad tissue by dressing choice (eg hydrogel) or debridement
  - If tissue healthy — continue using same dressing
- **Inflammation/Infection**
  - Look for signs of infection — swollen, hot, red, tender, increase in ooze (exudate), green areas, darker skin may have darker colour around edge of wound
  - If infection present — use antimicrobial dressing to reduce bacterial load
  - If no infection — use normal dressings to help with healing

- **Moisture** — is wound too wet or too dry
  - If too wet — use dressing that will soak up moisture (eg seaweed, alginate)
  - If too dry — use dressing that adds moisture (rehydrates) (eg gel)
  - If moisture balanced — keep using same dressing

**Note:** Do not rehydrate gangrene — refer for specialist advice.

- **Edge of wound**

- Are edges of wound coming together (healing)
  - If yes — keep using same dressing
  - If no — consider why. Consider general health, diet, dressings
- If edges further apart after 2–4 weeks — wound is chronic, **medical consult**

### **Take digital photograph of wound**

- Ask person for consent
  - If possible, photograph wound **before** removing dressing — allows specialist to assess ooze (exudate), type of dressing
  - Clean (irrigate) wound with **normal saline**
  - Put ruler or tape (or mark 1cm on piece of paper) next to wound
    - Use disposable ruler to avoid cross contamination
  - Make sure wound is well lit but don't use flash, can cause reflection
  - If background included in picture — use neutral pale colour without any lines or other objects
  - If able to print photograph — write date on hard copy, keep in file notes
- Send images, patient information, your assessment to specialist for advice.

# Wound dressings

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## Attention

- Use normal saline to clean wounds
- Only use antiseptic solution (eg chlorhexidine, povidone-iodine) if needed to wash dirty or infected wounds — chlorhexidine preferred
  - Leave on for 2 minutes then rinse well with normal saline or clean water
  - Throw away
    - Chlorhexidine aqueous solution (water-based) 24 hours after opening
    - Chlorhexidine alcohol solution 7 days after opening
- **Do not** use hydrogen peroxide
- **Do not** swab wound with cotton wool
- **Do not** let wounds dry out. Heal faster and better when kept moist — exception is dry gangrene

### **Remember:**

- If it is wet you need to control the ooze (exudate)
- If it is dry you need to hydrate it (except dry gangrene on toes)
- Consider the whole person, the whole story!
- If in doubt — ask, **wound specialist consult**

## What you do

- Before dressing wound —
  - Consider other problems that could affect healing ([p277](#))
  - Assess the wound ([p278](#))
  - Have a management plan
- Irrigate wound gently with **normal saline**
- Use gauze to remove slough
- When trimming wounds — remove smallest amount of skin/tissue possible
  - **Do not** trim wound if no foot and/or leg pulses — not enough blood for healing, a small cut while trimming may cause the wound to get worse
- Select appropriate dressing — see *How to manage and dress different types of wounds* ([p282](#)) and *Table 8.1: Wound dressings* ([p281](#))
  - Consider whether dressing
    - Protects wound from secondary infection
    - Provides a warm, moist wound healing environment
    - Can be removed without damaging wound
    - Removes drainage and debris
    - Is free from particles and toxic products
- Cover dressing with crepe bandage to hide and protect wound if needed
- Encourage person to shower every day, except where dressings can't be wet
- Provide appropriate information so person/carer can help with wound care

Table 8.1: Wound dressings

Type of wound	Dressing	What dressing does
<ul style="list-style-type: none"> <li>• Dry necrotic</li> <li>• Sloughy or clean</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrogel (eg <i>Solosite, Intrasite</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Rehydrates wounds</li> <li>• Removes dry slough</li> <li>• Removes necrotic tissue</li> </ul>
<ul style="list-style-type: none"> <li>• Wet sloughy or clean</li> </ul>	<ul style="list-style-type: none"> <li>• Calcium alginate (eg <i>Sorbsan, Kaltostat</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Absorbs exudate</li> <li>• Removes wet slough</li> </ul>
<ul style="list-style-type: none"> <li>• Wet or dry</li> <li>• Shallow wounds — primary dressing</li> </ul>	<ul style="list-style-type: none"> <li>• Foam (eg <i>Allevyn, Biatain</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Absorbs exudate</li> <li>• Protects low exudate wounds</li> </ul>
<ul style="list-style-type: none"> <li>• Wet to very wet</li> </ul>	<ul style="list-style-type: none"> <li>• Exudate manager (eg <i>Zetuvit, Mesorb</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Absorbs exudate</li> <li>• Provides protection</li> </ul>
<ul style="list-style-type: none"> <li>• Dry to lightly moist</li> </ul>	<ul style="list-style-type: none"> <li>• Film island dressing (eg <i>Opsite post op, Asguard clear island</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Protects wounds</li> <li>• Maintains moist environment</li> </ul>
<ul style="list-style-type: none"> <li>• Dry to lightly moist</li> <li>• Shallow wounds only</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrocolloid (eg <i>Comfeel, Duoderm</i>)</li> <li><b>Do not</b> use on top of other dressings</li> </ul>	<ul style="list-style-type: none"> <li>• Rehydrates wounds</li> <li>• Removes dry slough and necrotic tissue</li> </ul>
<ul style="list-style-type: none"> <li>• Wet and sloughy</li> </ul>	<ul style="list-style-type: none"> <li>• Hypertonic saline (eg <i>Mesalt, Curasalt</i>)</li> <li><b>Do not</b> use on painful wounds</li> </ul>	<ul style="list-style-type: none"> <li>• Cleans and removes wet slough</li> </ul>
<ul style="list-style-type: none"> <li>• Inflamed wet or dry</li> <li>• Infected wet or dry</li> </ul>	<ul style="list-style-type: none"> <li>• Silver coated dressing (eg <i>Acticoat, Acticoat Flex</i>)</li> <li><b>Do not</b> use if thick slough or necrotic tissue</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces infection and inflammation</li> </ul>
<ul style="list-style-type: none"> <li>• Offensive smelling</li> <li>• Infected sloughy</li> <li>• Infected wet or dry</li> </ul>	<ul style="list-style-type: none"> <li>• Cadexomer iodine (eg <i>Iodosorb</i> ointment, <i>Iodosorb</i> paste)</li> <li>◦ Wet – use ointment</li> <li>◦ Dry – use powder</li> <li><b>Do not</b> use on children under 12 years or pregnant women</li> </ul>	<ul style="list-style-type: none"> <li>• Cleans wound</li> <li>• Reduces infection</li> </ul>
<ul style="list-style-type: none"> <li>• Colonised wet or dry (sloughy/necrotic – but not actively infected)</li> </ul>	<ul style="list-style-type: none"> <li>• Enzyme alginogel (eg <i>Flaminal hydro, Flaminal forte</i>)</li> <li>◦ Wet – use <i>Flaminal Forte</i></li> <li>◦ Dry – use <i>Flaminal Hydro</i></li> <li><b>Do not</b> use on very wet wounds</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces bacterial load of wound</li> <li>• Cleans wound that may become infected without treatment</li> </ul>

## How to manage and dress different types of wounds

- Do weekly tracing to make sure wound is getting smaller (healing) (p278)
- If wound continues to improve — continue with same plan/dressing
- If wound deteriorates or becomes bigger — reassess using TIME (p278)
- If wound continues to deteriorate — **wound specialist or medical consult**

### Epithelising wounds — wounds that are healing over

- Protect and encourage healing
- Use a foam (eg *Allevyn*, *Biatain*) or film island dressing (eg *Opsite*, *Asguard*)

### Granulating wounds — wounds with a red wound base — F 8.21

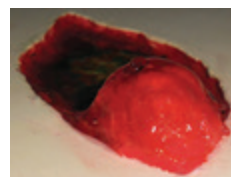
- **Do not** debride
- High exudate — use calcium alginate (eg *Algisite*)
  - Cover with foam (eg *Allevyn*, *Biatain*) OR exudate manager (eg *Zetuvit*, *Mesorb*)
- Low exudate — use hydrogel (eg *Solosite*, *Intrasite*) to promote moist environment
  - Cover with secondary dressing that will keep in moisture (eg adhesive foam, hydrocolloid or film island dressing) — see *Wound dressings table* (p281)



8.21

### Hypergranulation/overgranulation in wounds — wound tissue grows higher than skin level — F 8.22

- Use pressure pad
  - Cover wound with thick gauze pad
  - Strap firmly in place with strips of non-woven dressing (eg *Fixomul*)
    - Cut strips in downward direction to the box to get non-stretch weave
  - Apply strips by pulling firmly in different directions
- OR use caustic stick/silver nitrate stick to remove overgranulation
  - Apply paraffin to good skin for protection from nitrate stick
  - Then apply silver nitrate stick to overgranulation
- OR remove overgranulation by debridement
  - Check if person is on anticoagulant therapy (eg warfarin, enoxaparin, rivaroxaban)



8.22

### Necrotic wounds — wounds with dry dead tissue — F 8.23

- Check cause and circumstances of wound (aetiology) first (eg diabetes)
- Debride — but only if adequate pulses are present
  - Surgical debridement may be necessary
- Score thick necrotic tissue if necessary
  - Use scalpel to cut lines through top layer of thick eschar (dead tissue) to allow gel to absorb into dry hard tissue

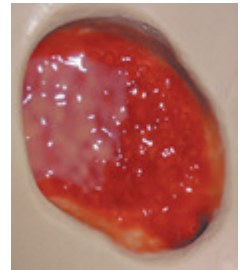
- Needs hydration — use a hydrogel dressing (eg *Solosite*, *Intrasite*)
  - If no signs of bacterial infection use film island dressing (eg *Opsite*, *Asguard*) or hydrocolloid (eg *Comfeel*, *Duoderm*) to speed up rehydration
- **Do not** hydrate dry gangrene (black fingers or toes)
  - Paint with povidone-iodine (*Betadine*) and leave to dry — **wound specialist/medical consult**



8.23

### Sloughy wounds — wounds with wet or dry sloughy tissue — F 8.24

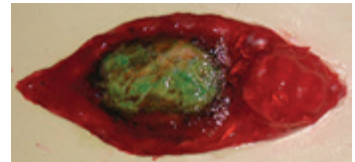
- Need dressings that assist with natural (autolytic) debridement
  - Low exudate — use hydrogel (eg *Solosite*, *Intrasite*)
  - Moderate to high exudate — use hypertonic saline gauze (eg *Mesalt*, *Curasalt*). **Do not** use on painful wounds
  - High exudate — use calcium alginate (eg *Algisite*)
- May need sharp debridement which will speed up healing by stimulating the inflammatory response



8.24

### Infected wounds — F 8.25

- Need topical antimicrobial dressings — silver coated dressing (eg *Acticoat*) or cadexomer iodine\* (eg *Iodosorb*)
  - Bite wounds/dirty, traumatic wounds — use silver coated dressing
  - Sloughy infected wounds — use cadexomer iodine\*. **Do not** use silver coated dressing on thick slough
- **Do not** use hydrocolloid (eg *Comfeel*, *Duoderm*) as a dressing cover
- High exudate
  - Silver coated dressing (eg *Acticoat*) with calcium alginate (eg *Algisite*) over the top
  - **OR** for small wounds — cadexomer iodine\* powder (eg *Iodosorb*)
    - Cover with foam (eg *Allevyn*, *Biatain*) or exudate manager (eg *Zetuvit*, *Mesorb*) for absorbency
- Low exudate
  - Sheet of silver coated dressing (eg *Acticoat* sheet) — moisten twice a day, or wet daily while showering
    - Cover with non-woven dressing (eg *Fixomul*)
  - **OR** for small wounds — cadexomer iodine\* ointment (eg *Iodosorb*) and cover with adhesive foam (eg *Allevyn*, *Biatain*) or film island dressing (eg *Opsite*, *Asguard*)



8.25

\***Do not** use cadexomer iodine if under 12 years, pregnant or breastfeeding.

**Remember:**

- Silver coated dressing (eg *Acticoat*)
  - Broad-spectrum topical antimicrobial — works within 30 minutes
  - Has anti-inflammatory properties
  - Cannot debride thick slough or necrotic tissue
- Cadexomer iodine (eg *Iodosorb*)
  - Stimulates wounds that are not healing (static) or chronic
  - Reduces colonisation / bioburden of wounds
  - Cleans sloughy infected wounds
  - **Do not** use if under 12 years, pregnant, breastfeeding

**Colonised wounds that are not actively infected**

- Use an enzymatic gel (eg *Flaminal*)
  - Moderate exudate (eg *Flaminal Forte*)
    - Cover with adhesive foam (eg *Allevyn*, *Biatain*) or exudate manager
  - Low exudate (eg *Flaminal Hydro*)
    - Cover with adhesive foam (eg *Allevyn*, *Biatain*) or film island dressing (eg *Opsite*, *Asguard*)
- Wounds with high bioburden — a lot of dead or necrotic (non-viable) tissue, offensive odour but not actively infected
  - Wash first with a wound anti-infective (eg *Prontosan*), rinse thoroughly with **normal saline**, then apply *Flaminal*
  - *OR* wash with **povidone-iodine** for 2 minutes, rinse thoroughly with **normal saline**, then apply enzymatic gel (eg *Flaminal*) or cadexomer iodine (eg *Iodosorb*)
    - Povidone-iodine wash effective in reducing wound colonisation especially MRSA

**Hydrocolloid dressing**

(eg *Comfeel*, *Duoderm*)

- For wounds with no or low exudate
- Very good for friction burn/gravel rash. Change daily, it will lift out gravel you have not been able to remove

**What you do**

- Leave on for 3–7 days (change daily to remove gravel)
- Change if there is leakage
- Can use tape to hold onto skin if needed

**Non-woven dressing**

(eg *Fixomull*, *Hypafix*, *Mefix*)

- Use to hold dressings on or to protect healed burns from rubbing or friction (eg under bra straps)

## Attention

- **Do not** use if skin is fragile or broken

## What you need

- Non-woven dressing

## Also need for removal

- Oil — olive, vegetable, baby oil
  - **Do not** use peanut oil — may cause allergic reaction
- Plastic cling wrap
- Bandage
- Sink, bath/shower

## What you do

- Cut amount needed from roll, take off backing paper, put straight on healed burn/wound sticky side down
  - **Do not** overlap dressing by more than 2cm
  - **Do not** stretch dressing
- To cover joint — bend limb, put along line of long bones
- Explain to person/carer how to care for dressing
  - For first day — keep dry
    - If it gets wet — gently pat dry with clean tissue
  - After first day — wash gently with ordinary soap and water twice a day, pat dry. Do not soak in water
- Leave on for 5–7 days

## To remove

- Soak dressing all over in oil
- Wrap in cling wrap and cover with bandage
- Leave for 4 hours or more — can be left overnight
- Wash gently in shower/bath, remove dressing
- *OR* use commercial silicone based adhesive remover (eg *Niltac*)

## Silver coated dressing

(eg *Acticoat*)

- Use for partial thickness burns at risk of infection, full thickness burns smaller than a 20 cent piece. See also *Management of minor burns (CARPA STM p44)*
- Coated with slow-release nanocrystalline silver. Keeps wound moist, kills bacteria, stops infection

## Attention

**Do not** use if person allergic to silver.

- Water activates silver

- **Do not** use saline or salt water, will stop silver working (deactivate)
- Keep dressing moist not soaking

### What you need

- Sterile water or clean tap water
- Silver coated dressing (eg *Acticoat*)
- Scissors
- Non-woven dressing ([p284](#))

### What you do

- Set up sterile dressing area
- Cut piece of dressing a little bigger than wound
- Wet dressing with sterile or clean tap water then gently squeeze out
- Wait a few minutes to lessen stinging, then lay dressing on wound (blue side down for *Acticoat*)
- Cover with non-woven dressing ([p284](#))
- Tell person to wet dressing twice a day to activate silver. **Do not** use saline or salt water
- Check every day but **do not** open dressing. Wash any ooze (exudate) off dressing with clean or sterile water
- Leave for 3 days

### To remove

- Wash in shower or with **normal saline** to loosen dressing
- *OR* use commercial silicone based adhesive remover (eg *Niltac*)
- **Do not** put oil on non-woven dressing — not needed as only small amount in contact with healthy skin
- Brown or silver colouring on unburnt skin is not harmful and will wash off

# Examining and cleaning a wound before closing



## Attention

- Trim edges of wound if tissue viability in doubt, or wound very ragged. Remove as little skin as possible
- **All** dirt, gravel, sand, etc must be taken out of wound before suturing, so it heals properly, doesn't get infected
- Routine use of antiseptic solution (eg povidone-iodine, chlorhexidine) not recommended for wound cleaning
- Giving antibiotics is not a substitute for proper cleaning of wounds
- Check tetanus status, see *Australian Immunisation Handbook*

## What you need

- Hair clippers
- Sterile dressing pack
- Normal saline for cleaning
- 20mL syringe and 19G needle
- Sterile scissors with pointed ends
- Extra sterile gauze
- 2 pairs sterile gloves (new non-sterile gloves if sterile not available)

## What you do

- Wash hands, put on sterile gloves
- Check sensory and motor nerve response before giving local anaesthetic ([p289](#))
- Look carefully, explore wound and surrounding area for
  - Colour, warmth, sensation, movement, swelling
  - Size and shape
  - Clean, dirty (eg soil, glass)
  - Nerve injury
  - Damage to major blood vessels
  - Tendon injury
  - Deep muscle damage
  - Bone or joint involvement

## Now

- Lay out dressing pack and equipment
- Wash hands, put on another pair of sterile gloves
- Procedure may be painful. Give local anaesthetic ([p289](#)) if needed before cleaning wound
- Use forceps in pack to take out any dirt or debris in and around wound
- Clean site and drape with sterile towels

- Use 20mL syringe and 19G needle to wash out (irrigate) wound with **normal saline** — use pressure to remove any visible dirt (contaminants)
- Trim any torn skin edges with sterile scissors — only remove tissue/skin that you think is so badly damaged that it won't survive. Take off as little skin as possible
- Trim hair around wound if needed. **Do not** trim eyebrows (they may not grow back)

## Giving local anaesthetic before closing a wound



Local anaesthetic (LA) used to numb area before doing painful procedure (eg suturing).

### Attention

- 2–5mL of lidocaine (lignocaine) 1% usually needed for most procedures
  - **Maximum safe dose is 3mg/kg**
  - Lidocaine (lignocaine) 1% is 10mg/mL
- **Do not** use local anaesthetic + adrenaline (epinephrine) for fingers, toes, penis, nose, ears
- **Topical anaesthetic** (skin) patches
  - **Do not** leave on for more than one hour — anaesthetic may be absorbed and cause symptoms such as dizziness, headache, fast pulse, blue skin (cyanosis), especially in children
- Before injecting, always pull back on (withdraw) syringe plunger to make sure you are not in vein/artery
- To lessen pain
  - Warm local anaesthetic to room temperature, inject s-l-o-w-l-y
  - Consider using anaesthetic spray on skin before first injection
- LA can be injected as needle pulled back out through tissue. Will anaesthetise all tissue in its path
  - If needle pulled out steadily and continuously — LA should not be injected into vein or artery. Practise on a piece of meat
- ‘Fanning’ — technique used to inject wide area of tissue from single injection point
  - Needle put in at one spot then moved around in clockwise or anti-clockwise direction to anaesthetise a bigger area (eg sural [foot] nerve block [p309](#), episiotomy [WBM p56](#))
- Wait 3–5 minutes for LA to work before starting procedure
  - Check area for feeling using sharp needle. Also gives person confidence

### Direct infiltration

#### Attention

- Try flushing wound with small amount of LA before first injection. Wait 2–3 minutes for this to work
- **Do not** go too deep with injection. Anaesthesia may be delayed or not work at all
- Aim to put needle **below dermal layer of skin** and **above fat layer**
  - If needle in dermal layer — will be hard to press down syringe plunger. Take it out, try again a little deeper

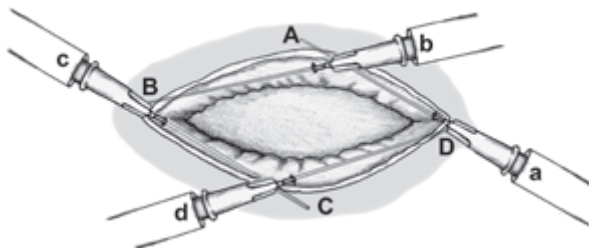
- Scalp wounds may need bigger needle to infiltrate — tissue is tough

### What you need

- Bluey
- Sterile dressing pack
- Normal saline for cleaning
- 2–5mL of lidocaine (lignocaine) 1%
- 5mL syringe, 21G needle for drawing up, 23G or 25G needle for injection
- Sterile gloves

### What you do

- See *Examining and cleaning a wound before closing* (p287)
- Put bluey under site
- Lay out dressing pack, equipment
- Wash hands, put on sterile gloves
- Clean site, drape with sterile towels
- Draw up LA
- Starting at one end of wound, slide needle **through wound edge** under dermal layer and above fat — F 8.26, needle **a**
- Pull back on plunger to check for vein/artery, then inject anaesthetic as you pull needle out. Will anaesthetise shaded area around **A** — F 8.26
- Wait a few moments until anaesthetic is working, so person doesn't feel it, then push needle into anaesthetised area at tip of previous injection — F 8.26, needle **b**. Repeat injection as above
- Keep doing this until wound is anaesthetised along its whole length, then repeat process on other side — F 8.26, needle **c** and needle **d**
- If wound short — may only need 1 injection on each side
- Make sure ends of wounds also injected with LA
- Wait for anaesthetic to work. Use needle to test for feeling before you start suturing



8.26

## Parallel margin infiltration

### Attention

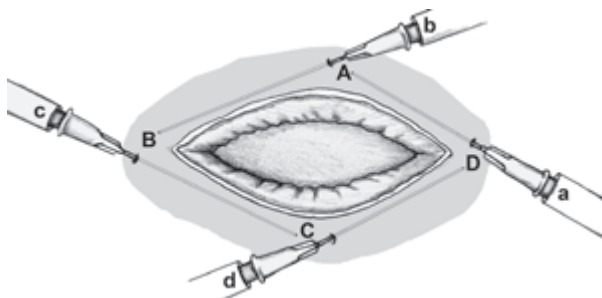
- **More painful than direct infiltration. Only use** if wound very dirty and needle may take dirt further into tissue

### What you need

- Bluey
- Sterile dressing pack
- Normal saline for cleaning
- 2–5mL of lidocaine (lignocaine) 1%
- 5mL syringe, 21G needle for drawing up, 25G needle for injection
- Sterile gloves

### What you do

- See *Examining and cleaning a wound before closing* (p287)
- Put bluey under site
- Wash hands, put on sterile gloves
- Lay out dressing pack, equipment
- Clean site, drape with sterile towels
- Draw up LA
- Starting at one end of wound **about 4mm from edge**, push needle in, keeping **parallel** to wound edge — F 8.27, needle **a**
- Pull back on plunger to check you are not in vein/artery, then inject anaesthetic as you pull needle out
- Wait a few moments, push needle into anaesthetised area at tip of previous injection, inject as before — F 8.27, needle **b**
- Keep doing this until wound anaesthetised along its whole length, then repeat process on other side — F 8.27, needle **c** and needle **d**
- If wound short — may only need 1 injection on each side
- Make sure ends of wounds also injected with LA
- Wait for anaesthetic to work. Use needle to test for feeling before you start suturing



8.27

## Closing a wound



Consider best way to close wound. Options include

- Sutures (*below*), staples ([p300](#)), skin adhesive ([p301](#)), adhesive strips ([p302](#)), daily dressings to allow 'healing by second intention', delayed primary closure
- Combination of methods (eg sutures and adhesive strips) especially on ragged wounds or thin skin
- Tying clumps of child's hair together to close head wound. If hair too fine — spray with plastic skin to thicken

- Give local anaesthetic if needed

### Surgical consultations

Consult with plastic surgeon or other surgical specialist for

- Large wounds best closed in theatre, or needing grafting
- Severely contaminated wounds
- Tendon, nerve, vessel damage
- Open fractures, amputations, joint penetrations
- Laceration over site of fracture. Treat as open/compound fracture even if exposure of bone unlikely
- Compression injuries. Can cause extensive soft tissue and muscle damage that may not be obvious straight away
- Puncture or high-pressure injection wounds (eg paint or grease gun). Can later develop widespread tissue injury
- Concern about cosmetic outcome by patient or family

## Suturing

### Suture materials

Table 8.2: Suture material sizes and removal times

Where used	Suture material size for adult (smaller for child)	Remove stitches
Face	5.0–6.0	3–5 days
Ear	5.0–6.0	10–14 days
Scalp	3.0	6–8 days
Hand	5.0	10–14 days
Limbs	3.0–5.0	12–14 days
Chest or abdomen	3.0–5.0	8–10 days
Back	3.0–5.0	12–14 days

- Use smallest material possible, but strong enough to hold skin/tissue in place and close wound
- Choice depends on depth and location of wound, age and occupation of person, conditions that may delay healing

**Table 8.3: Suture material by wound type**

Wound type	Suture material
Skin and scalp	<ul style="list-style-type: none"> <li>• Nylon (eg <i>Ethilon</i>)</li> <li>• Monofilament nylon-like material such as polypropylene (eg <i>Prolene</i>, <i>Premilene</i>)</li> <li>• If available can use iridescent yellow sutures (eg <i>Radene</i>) for scalp — easy to see, tie, remove</li> </ul>
Subcutaneous	<ul style="list-style-type: none"> <li>• Dermal absorbable sutures (eg chromic gut)</li> <li>• PGA (eg <i>Dexon</i>)</li> <li>• Polyglactin 910 (eg coated <i>Vicryl</i>)</li> </ul>
Fascia (muscle)	<ul style="list-style-type: none"> <li>• Dissolving or absorbable sutures (eg dacron, polyglactin 910, chromic gut)</li> </ul>
Mucosa	<ul style="list-style-type: none"> <li>• Dissolving or absorbable sutures 3.0–4.0 (eg polyglactin 910, chromic gut)</li> </ul>

## Putting in sutures

### Attention

**Remember:** The bigger the area of skin/tissue being pulled together and the more strain on suture, the bigger the suture will need to be. Compromise is needed.

- Make sure sutures are not too tight, too loose, too close together. Skin should not be puckered, buckled, gaping
- Edges of wound should be slightly raised and pressing together (kissing), so healthy tissue meets healthy tissue
- Count how many sutures you put in, record in file notes
- **Beware of wounds to chest or abdomen.** May involve organs underneath
- **Do not** shave eyebrows — may not grow back
- Make sure person knows when sutures need to come out
- If wound in prominent place (eg face) — consider sending for specialist cosmetic review
- Animal or human bites
  - Only suture dog bites that are clean and less than 8 hours old, and small clean bites on face less than 12 hours old
- Check tetanus status, see *Australian Immunisation Handbook*

### Do not suture

- Dirty or infected wounds
- If there could be a fracture underneath

- Wounds more than 8 hours old
- Fingers — risk of damage with swelling. A couple of loose sutures are ok, close with adhesive strips if needed
- Deep wounds (especially in hands or feet) **until you are sure there is no damage to tendons, nerves, deep muscle**
- Coral cuts
- Stab wound (eg spear, knife)
- Gunshot wounds
- Anything you are not confident with, **especially on face**

### What you need

- Sterile dressing pack
- Sterile suture set — scissors, toothed forceps, needle holders
- Suture material needed
- Extra sterile gauze
- Sterile gloves
- Wound dressing and tape

### What you do

#### For all sutures

- Clean wound ([p287](#))
- Give local anaesthetic ([p289](#))
- Lay out dressing pack and equipment
- Wash hands, put on sterile gloves
- Check local anaesthetic working

### Simple interrupted sutures

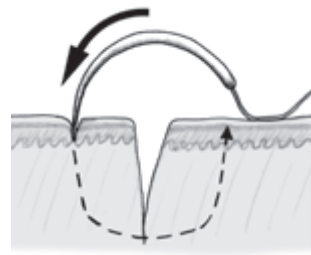
- Hold needle with needle holder — F 8.28, F 8.29
- Start by putting **first suture in middle of wound**
- Put needle in at 90° (right angle) far enough from edge for skin not to tear, push down through skin
- Take big enough 'bite' to get under skin layers but not into deep fat or muscle — F 8.30



8.28



8.29



8.30

- Gently lift the skin on one side of the wound with the forceps and push needle through to the middle of the wound — F 8.31
- Pull suture material through leaving a 2–3cm strand on the entry side
- Re-grasp the needle and push it through the skin on the other side of the wound until it curves up and out, still at 90° (right angle) and same distance from wound edge as other side — F 8.32
- Pull the suture through — F 8.33



8.31



8.32



8.33

- Loop the suture material around the forceps 3 times — F 8.34 then grasp and pull the loose end of the suture through to make a knot — F 8.35
- Don't pull wound edges together too tightly, just enough so edges are slightly raised when they meet (kissing) — F 8.36



8.34



8.35



8.36

- Pull knot over to one side — F 8.37. Use same side for every knot
- Now do another knot looping the suture material once a round the forceps — F 8.38, F 8.39, F 8.40. If knot slipping, do third tie to make it firm



8.37



8.38



8.39

- Cut both ends, leaving about 1.5cm

Keep dividing wound in half with sutures until edges are together along whole length

**Note:** as the wound starts coming together you should be able to make a suture by pushing the needle through both sides of the wound in one movement — instead of piercing each side separately (as shown in F 8.31 and F 8.32)



8.40

- Record number of sutures in file notes
- Dress wound
- Tell person
  - To keep wound dry for 48 hours — can then shower and pat dry
    - **Do not** submerge in water
  - When to come back to have sutures removed — see Table 8.2

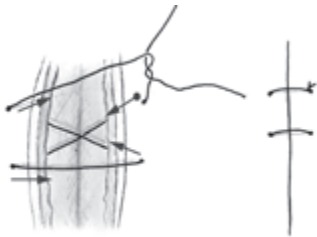
## Figure of 8 sutures

### Attention

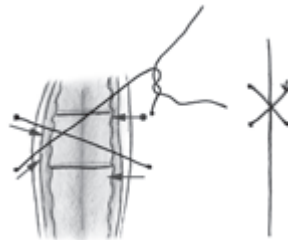
- For artery that won't stop bleeding
- Good for scalp and head wounds
- Use 2.0

### What you do

- Choice of 2 methods — F 8.41, F 8.42



8.41



8.42

## Mattress sutures — horizontal and vertical

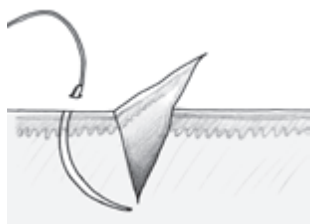
### Attention

- Vertical — good for anchoring ragged edges that tend to fall into wound (invert)
- Horizontal — good for wounds under tension

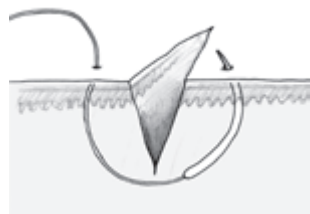
### What you do

- Vertical sutures — see F 8.43 – F 8.47
- Horizontal sutures — see F 8.48 – F 8.51

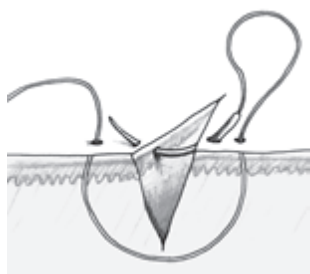
## Vertical mattress



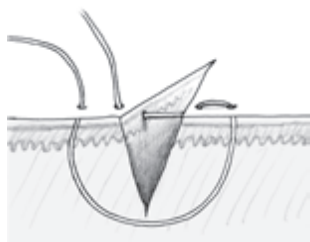
8.43



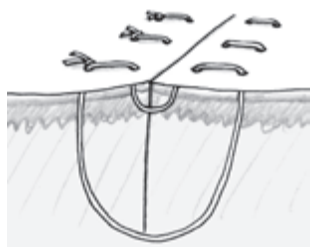
8.44



8.45

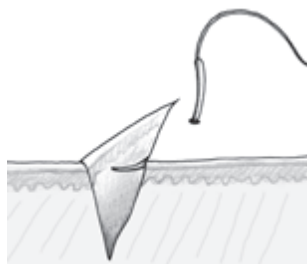


8.46

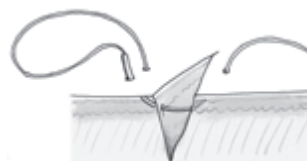


8.47

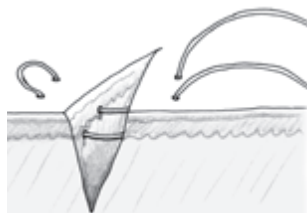
## Horizontal mattress



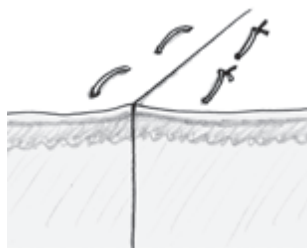
8.48



8.49



8.50



8.51

## Suturing muscle

### Attention

- Suture small tears in muscle sheath (fascia), or muscle may bulge (hernia)
- **Do not** use simple sutures on wounds across muscle. Will pull through muscle fibres
- If muscle wound dirty — get advice

### What you do

#### For wound across muscle (transverse laceration)

- Use absorbable material and horizontal mattress sutures ([p297](#)) to pull fascia together — F 8.52, F 8.53, F 8.54



8.52



8.53



8.54

#### For wound along muscle (longitudinal laceration)

- Use absorbable material and simple interrupted sutures ([p294](#)) — F 8.55, F 8.56



8.55



8.56

## Suturing the scalp

### Attention

Always explore wounds carefully to check for fractures underneath.

- Staples ([p300](#)) ideal for closing scalp wounds

### What you do

- Use interrupted sutures ([p294](#)). Large needle, size 3.0 strong material for tough scalp skin
- **If bleeding a problem** — try closing wound quickly using large figure of 8 sutures ([p296](#)), then apply pressure
- Yellow suture material (eg *Radene*) easier to see

## Suturing an eyebrow

### Attention

**Remember:** Do not shave off eyebrows. Regrowth unpredictable

- Make sure eyebrow lines up properly

### What you do

- Close small wounds with simple sutures, size 5.0 non-absorbable material

## Suturing a lip

### Attention

- Where skin and lip join (vermilion border) usually needs sutures
- Mucosal surface may not need suturing if good blood supply and edges are joining well — but skin surface should be closed
- Inside of mouth only needs suturing if large, loose flaps of skin
- Use as few sutures as possible, lips can swell a lot



8.57

### What you do

- If wound crosses edge of lip — first suture should be put through both edges of divided vermilion border — F 8.57

## Suturing an ear

### Attention

- **Do not** suture through cartilage — it will tear, high risk of infection
- **Do not** leave open with cartilage showing through skin edges — will not heal
- Make sure edges of ear line up exactly

### What you do

#### For wounds with little or no cartilage damage

- If missing cartilage is less than 0.5cm — close skin with simple interrupted sutures ([p294](#))
- Line up edges carefully

#### For wounds with cartilage damage

- Trim as little cartilage as possible. If needed, trim up to 5mm so skin edges can be brought together without too much stretching
- Suture skin together to cover cartilage and bring edges of cartilage together
- Fibrous outer cover of cartilage (perichondrium) needs to be included in suture so stitch will hold. **Do not** include cartilage

#### For wounds on front and back of ear (eg bite)

- Put first stitch on outer edge of ear, leaving a long thread
- Suture wound on front of ear

- Hold long thread on edge of ear with artery clip, pull ear forward so back of ear can be easily seen and reached
- Suture wound on back of ear

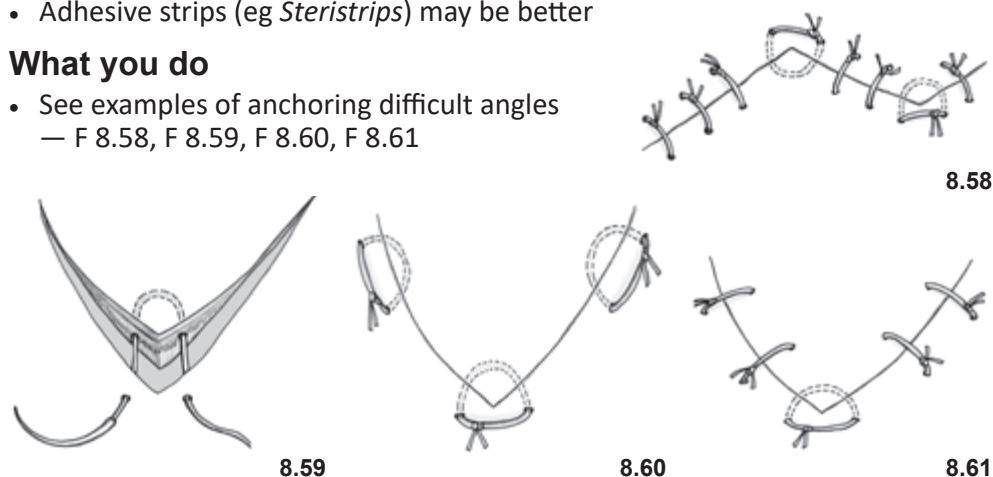
## Suturing skin flaps, torn skin with ragged edges

### Attention

- Skin flaps tend to have thin skin edges, take care not to tear with needle
- Adhesive strips (eg *Steristrips*) may be better

### What you do

- See examples of anchoring difficult angles  
— F 8.58, F 8.59, F 8.60, F 8.61



## Staples

Quick and easy. Wounds need straight, sharp edges. Ideal for scalp wounds.

### Attention

- **Do not** use for face or neck wounds, wounds with jagged edges, over creases or joints, hands or feet due to discomfort
- **Do not** use for people who may need CT or magnetic resonance imaging. Cause scan artifacts, may be removed by powerful magnetic field
- Same principles apply as for suturing wound
- In large full thickness wounds, underlying tissue will need to be sutured with dissolving sutures (*Table 8.3, p293*) before stapling

### What you need

- Sterile dressing pack
- Sterile skin forceps
- Stapling device, staples, staple remover
- Lidocaine (lignocaine) 1%
- Irrigation solution (eg sterile normal saline)
- 20mL syringe and 19G needle
- Sterile gloves
- Dressing for wound

## What you do

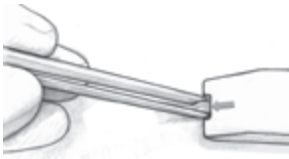
- Give local anaesthetic ([p289](#))
- Lay out dressing pack and equipment
- Wash hands, put on gloves
- Check anaesthetic working
- Staple either from left side of wound or from the middle
- Bring wound edges together with forceps — F 8.62
  - Edges of wound should be slightly raised and pressing together (kissing), so healthy tissue meets healthy tissue
- Hold stapling device at 40–65° — F 8.63
- Line up opening of wound with centre of marker on the stapler head — F 8.64
- Using gentle pressure, slowly squeeze trigger of stapling device to insert staple into skin
- Properly placed staple will sit slightly above skin — F 8.65
- Put staples 0.5–1cm apart until wound is closed — F 8.66
- Put on antibiotic ointment and waterproof dressing
- Tell person
  - Come back next day for wound review, in 7–10 days for removal of staples
  - They can shower with stapled scalp wounds within a few hours



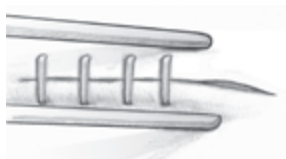
8.62



8.63



8.64



8.65



8.66

## Skin adhesive

- Use on clean wounds with edges that meet easily, don't need deep sutures
- Best for small wounds, facial lacerations
- Anaesthetic not usually needed, good for children

## Attention

- **Do not** use on moist skin (eg inside mouth)
- **Do not** get in wound. Uncomfortable, prevents healing
- Use as little as possible. Too much weakens it, uncomfortably hot when setting
- If using near eyes — protect eyes with pads

### What you need

- Skin adhesive (eg *Histoacryl*, *Dermabond*, *Epiglu*)
- Dressing pack
- Normal saline
- Dry dressing
- Sterile gloves

### What you do

- Lay out dressing pack and equipment
- Check manufacturer's instructions for how to apply — each is different
- Wash hands, put on sterile gloves
- Make sure wound is clean and dry
- Hold edges of wound together, apply very small amount of glue **across join**. Keep edges together for 30 seconds
- Put on simple dry dressing, check after 24 hours
- Tell person to come back to clinic if wound breaks open or gets infected
- Skin glue doesn't need to be removed, comes off by itself in 1–2 weeks

## Adhesive strips

### Attention

- Use only for clean superficial wounds
- **Do not** use on moist wounds, hairy or sweaty areas

### What you need

- Skin adhesive strips (eg *Steristrips*)
- Wound closure tape
- Dressing pack
- Normal saline
- Dry dressing

### What you do

- Lay out dressing pack and wash hands
- Make sure wound is clean and dry
- Hold edges of wound together, without tension, edges 'kissing'
- Apply tape without stretching across middle of wound, then apply strips on either side usually 3mm apart
- Put on simple dry dressing, check after 24 hours
- Tell person to come back to clinic if wound breaks open or gets infected
- Keep clean and dry for 3–5 days — leave to come off by themselves

# Taking out sutures and staples



## Attention

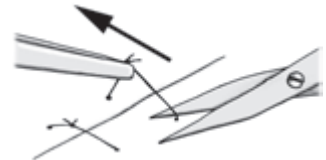
- If taken out too soon — wound can open up again
- If left in too long — can be scarring, infection
- See Table 8.2 for suture removal times ([p292](#)), staples usually removed after 7–10 days

## What you need

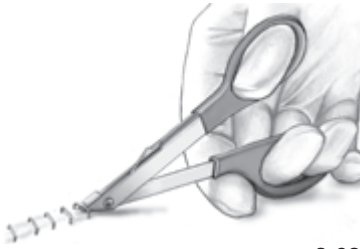
- Sterile dressing pack
- Disposable gloves
- **Normal saline**
- For sutures — fine pointed/curved suture-cutting scissors or sterile stitch-cutter blade
- For staples — staple removing device
- Adhesive strips (eg *Steristrips*) for any gaping in wound
- Non-stick dressing and paper tape, if needed

## What you do

- Check
  - Wound healed and closed
  - Signs of infection
  - Where sutures/staples are, how many. Check against file notes
- Lay out dressing pack and equipment
- Wash hands, put on disposable gloves
- Clean healed wound with **normal saline**, remove any dry or dead skin on sutures/staples
- **Sutures**
  - Hold knot securely with forceps
  - Cut suture close to skin on side away from knot, then pull out in direction of knot — F 8.67
  - **Do not** pull dirty part of suture through skin
  - If sutures small or close to skin — stitch-cutter blade may be easier to use
- **Staples**
  - Slide bottom lip of staple removal device between staple and skin — F 8.68
  - Bring 2 lips of staple removal device together — F 8.68. Staple bends and opens points of staple in skin — F 8.70
  - Gently lift out staple, put into dressing tray



8.67



8.68



8.69



8.70

- First remove every second suture/staple, even if all to be removed
  - If wound starts to gape — leave rest of sutures/staples in. Clean and close with adhesive strips. Leave for another 1–2 days
- After sutures/staples removed — check approximation and healing of skin
- Put adhesive strips across wound if needed
- Dress if needed

# Nerve and ring blocks



## Attention

- Before starting and when finished, always check hands/feet (peripheries) for colour, warmth, sensation, movement, swelling, peripheral pulses — F 7.1 (p219) — to make sure no damage done to nerves, arteries or veins
  - **Do not** use lidocaine (lignocaine) + adrenaline (epinephrine) for fingers, toes, penis, nose, ears
- 
- 2–5mL of lidocaine (lignocaine) 1% usually enough for most procedures, except where indicated. Check before using any more — see *Giving local anaesthetic before closing a wound* (p289)
  - Always pull back on (withdraw) syringe plunger before injecting to make sure needle is not in vein or artery
  - If there is a lot of resistance when injecting or it is very painful — withdraw needle by 0.5cm and then inject
    - Prevents damage caused by injecting straight into a nerve
  - Massaging the injected area for 30 seconds can help improve anaesthesia
  - Wait 3–5 minutes for local anaesthetic to work before starting procedure
    - Check area for feeling with sharp needle. Also gives person confidence

## What you need

- Marker or pen
- Sterile dressing pack
- Povidone-iodine solution
- Lidocaine (lignocaine) 1%
- 5–10mL syringe, 10mL will be needed for foot and hand blocks
- 21G needle for drawing up the solution and 25G needles for injection
- Sterile gloves
- Small sticking plaster

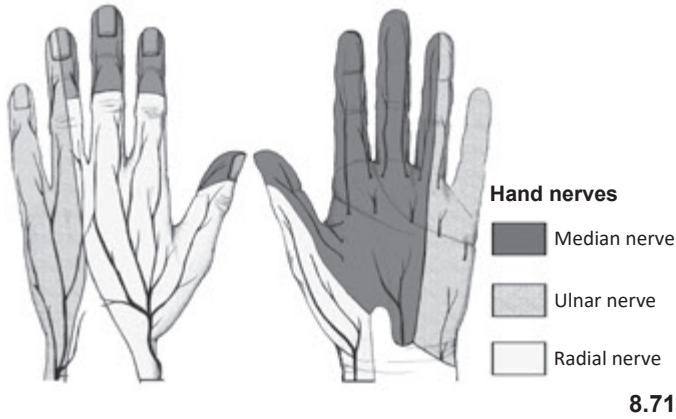
## What you do

For all procedures

- Put clean bluey under site
- Lay out dressing pack and equipment
- Wash hands and put on sterile gloves
- Clean site and drape with sterile towels
- Put in local anaesthetic and do procedure
- Cover with sticking plaster dressing if needed
- Check hands/feet (peripheries) for colour, warmth, sensation, movement, swelling, peripheral pulses — F 7.1 (p219)
- Warn person they will have little or no feeling in area for a few hours, may need help

## Finger nerve block

**Note:** There are four nerve branches in each digit (including the thumb) — 2 along the top (dorsal) and 2 along the bottom (palmar) — 8.71. Toes are similar.



### What you do

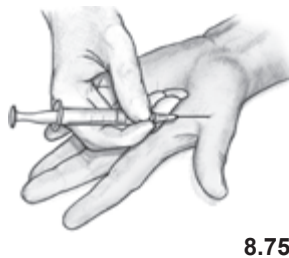
- Inject both sides of finger — F 8.72, F 8.73
- Inject **lidocaine (lignocaine) 1%** — 1–2mL

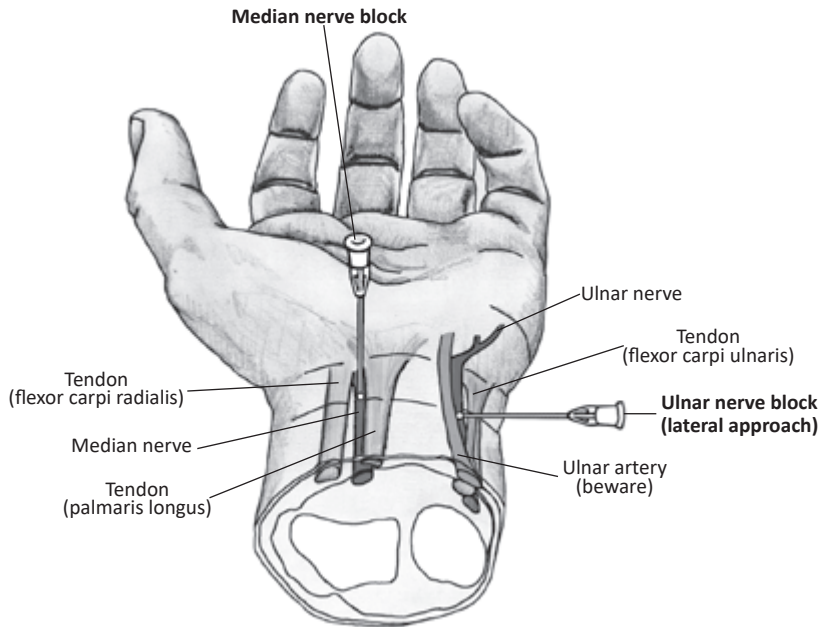


## Thumb nerve block

### What you do

- Thumb needs only one injection site, with needle angled in 2 directions — F 8.74, F 8.75
- Inject **lidocaine (lignocaine) 1%** — 1–2mL





8.76

## Hand — anatomy and infiltration sites

F 8.76 shows basic anatomy and structures you need to know to find right site for each injection.

### Attention

- **To find palmaris longus tendon** — ask person to put tip of thumb and little finger together and bend (flex) wrist forward. You will see tendon stand out in the middle of inner wrist  
**Note:** Not everyone has this tendon.
- **To find flexor carpi ulnaris tendon** — ask person to bend (flex) wrist forward against resistance. Tendon can be felt easily at level of wrist crease, on little finger side, just below bone at base of palm (pisiform bone)

## Hand — median nerve block

### What you do

- Lay person's hand on flat sterile surface, palm up
- Find space between palmaris longus and flexor carpi radialis tendons, mark this spot with pen
- Hold syringe at 90° (right angle) to wrist and put needle between these tendons at level of ulnar and radius head and second wrist crease — F 8.76. Put needle in 1cm
- Pull back on plunger to check for vein/artery
- Inject **lidocaine (lignocaine) 1%** – 3–5mL, leaving small amount to keep injecting as you pull out needle

## Hand — ulnar nerve block — lateral approach

### What you do

- Lay person's hand on flat sterile surface, palm up
- Find site at level of wrist crease on little finger side of wrist, underneath flexor carpi ulnaris tendon — F 8.76. Mark with pen
- Hold syringe on its side (horizontally) toward site. Put needle in 1–1.5cm
- Pull back on plunger to check for vein/artery
- Inject **lidocaine (lignocaine) 1%** – 3–5mL, leaving a small amount to keep injecting as you pull out needle
- If you need to numb ulnar nerve for the back of the hand — F 8.76
  - Inject **lidocaine (lignocaine) 1%** – 2–3mL under skin on the back of the hand on ulnar (little finger) side in line with previous injection

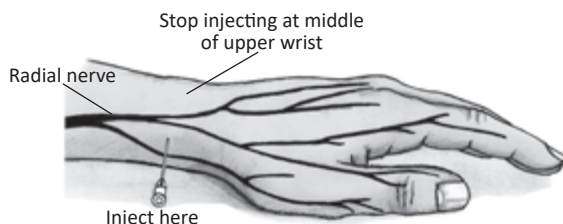
## Hand — radial nerve block

### Attention

Never inject (infiltrate) lidocaine (lignocaine) all the way around wrist. Stop at the middle of the upper wrist — F 8.77

### What you do

- Lay person's hand on flat sterile surface, palm down
- Find radial pulse at level of wrist crease, mark radial artery with pen **so you can avoid it**
- Draw up **lidocaine (lignocaine) 1%** – 5–10mL
- Put needle in 1–1.5cm, **to side** of radial artery (outside thumb edge, toward top of wrist) — F 8.77
  - Pull back on plunger to check for vein/artery — **beware of radial artery**
  - Inject **lidocaine (lignocaine) 1%** – 2–5mL
  - Pull out needle
- Wait a few moments for anaesthetic to work
- Point needle across the back of the hand toward the middle of the wrist
- Put needle in just under the skin (superficially) at about the mid-point of the wrist and still in line with wrist crease
  - Inject **lidocaine (lignocaine) 1%** – 2–5mL
  - Pull out needle



8.77

- May need 2 injections to reach mid-point of wrist depending on size of wrist — you are trying to create a continuous line of LA spreading up toward the mid-wrist
  - **Do not** inject any further than the mid-wrist

## Toe nerve block

### What you do

- Use same technique as for finger nerve block ([p306](#))
- OR*
- Toes other than big one can be anaesthetised using one injection site because they are small and narrow
- Put needle in at entry site. Don't take needle right out when moving it from one side to the other — F 8.78 (see also F 8.74, F 8.75)



8.78

## Foot nerve block

- 5 major nerves in foot
- Sural and posterior tibial nerve blocks most useful for procedures on sides and sole of foot



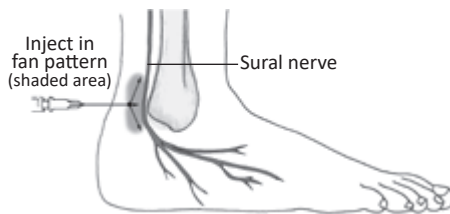
8.79

## Foot — sural block

Will anaesthetise **outside (lateral side) of foot and heel** — F 8.79. Injection is on outside of ankle (lateral).

### What you do

- Put needle in 1cm, behind outside ankle bone (lateral malleolus) to the side of and in front (anterior) of the achilles tendon — F 8.80
- Pull back on plunger to check for vein/artery
- Inject **lidocaine (lignocaine) 1%** – 3–5mL. Use fan-like pattern in shaded area — F 8.80



8.80

## Foot — tibial (posterior) block

- Will anaesthetise **sole of foot** — F 8.81. Injection is on inside of ankle (medial)

### Attention

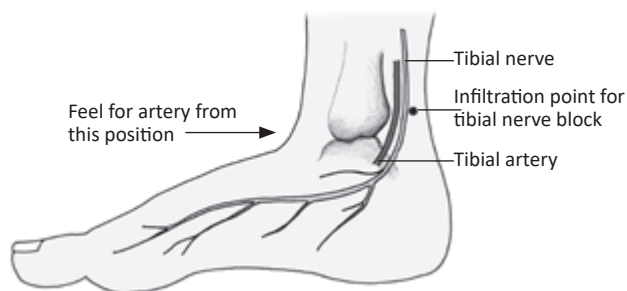
Beware of tibial artery.

### What you do

- Face person
  - Feel for tibial artery just behind inside ankle bone (medial malleolus)
  - Tibial nerve lies just behind artery. Mark spot with pen — F 8.82
- Put needle in 1cm deep, in line with the inside ankle bone (medial malleolus)
  - Try to inject close to but not into the tibial artery
  - **Do not go too deep or you may inject into nerve**
- Pull back on plunger to check for vein/artery. **Beware of tibial artery**
- Inject **lidocaine (lignocaine) 1%** – 2–5mL



8.81



8.82

## 9 Infection control

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# Personal protection

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## Standard and transmission based precautions

- Standard precautions minimise risk of transmission of health care related infections. Use with all patients all the time
- Transmission based precautions are used as well as standard precautions when increased risk of transmission of some types of germs
- Using standard and transmission based precautions should be part of everyday practice for health care workers

## Standard precautions

- Hand hygiene, before and after every patient contact
- Use of personal protective equipment
- Safe use and disposal of sharps
- Routine environmental cleaning
- Reprocessing of reusable equipment and instruments
- Respiratory hygiene and cough etiquette
- Aseptic non-touch technique
- Waste management
- Correct handling of linen

## Transmission based precautions

- Used with patients suspected or confirmed to have infection that can be transmitted by
  - Contact (eg multi-resistant micro-organisms)
  - Droplet (eg whooping cough, influenza)
  - Airborne route (eg chickenpox, measles, pulmonary tuberculosis)
- Precautions include continued use of standard precautions *AND*
  - Use of special face masks (eg duck bill [P2/N95] masks) for staff having contact with people known to have active pulmonary TB
  - Patient dedicated equipment (for resistant micro-organisms)
  - If disease can be spread by airborne route — moving patient to separate area away from waiting room
  - Extra cleaning and disinfection of clinic/health service

Health care staff should always be aware of their immune status for

- Hepatitis B
- Measles
- Whooping cough (pertussis)
- Chickenpox (varicella)
- Tuberculosis

## Hand hygiene

### Attention

- Have liquid soap, antiseptic hand wash, alcohol-based hand rub or gel in clinic. Wall-mounted pump-action bottles are best
- Use small containers of hand rubs and gels for personal use outside clinic (eg in ambulance, when visiting people at home)
- **Do not** use soap bars
- If hands visibly dirty — wash first with liquid soap and water

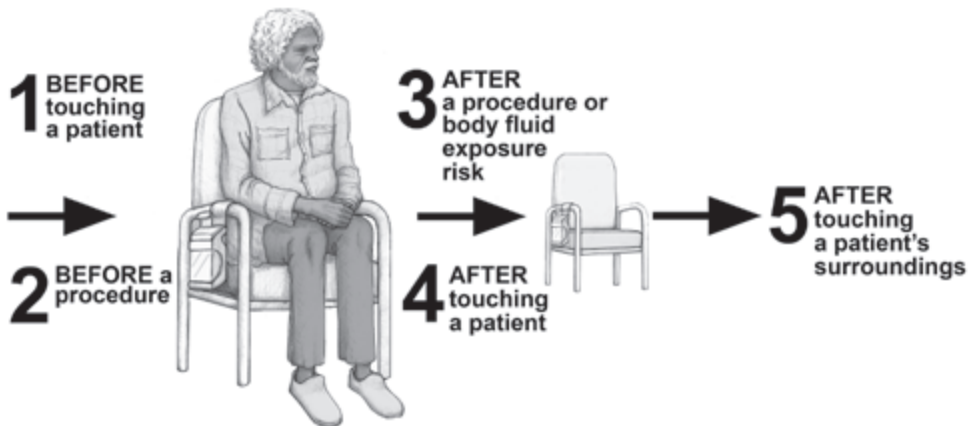
### When to do hand hygiene

#### Hand hygiene moments

- **Moment** — possible or real risk of germs passing from one surface to another (pathogen transmission) via the hands — F 9.1

#### 5 Moments for hand hygiene

- **Moment 1** — Before touching a patient
- **Moment 2** — Before a procedure
- **Moment 3** — After a procedure or body fluid exposure risk
- **Moment 4** — After touching a patient
- **Moment 5** — After touching a patient's surroundings



9.1

### What you need

- Hot and cold running water
- Hand cleaner
  - Liquid soap or antiseptic hand wash
  - *OR* alcohol-based hand rub or gel
  - *OR* surgical scrub (eg povidone-iodine)
- Clean paper or single-use towel

## What you do

### Washing hands

- **Same procedure** is used for surgical scrub, washing and rubbing
- **Difference** is how long it takes (timing)
  - 3–5 minutes for surgical scrubbing (depending on product used)
  - 1 minute for washing
  - 30 seconds for rubbing
- Use **either** hand wash **or** hand rub, not one after the other

### 3–5 minute surgical scrub before aseptic technique

- Wet hands with water — F 9.2
- Apply enough surgical scrub/liquid soap to cover all hand surfaces
- Rub hands palm to palm — F 9.3
- Rub backward and forward on top of hands with fingers interlaced then do the other way around (vice versa) — F 9.4
- Rub palm to palm, with fingers interlaced — F 9.5
- Rub palm to palm with fingers between knuckles — F 9.6
- Rub thumb with palm in circular movement — F 9.7. Do both hands
- Rub in circular movement, and backward and forward, around each palm with clasped fingers — F 9.8
- Rinse hands with water
- Dry hands thoroughly with clean paper towel
- Using same paper towel to turn off tap, throw towel in bin



9.2



9.3



9.4



9.5



9.6

### 1 minute wash

- Use liquid soap or antiseptic hand wash
- Wet hands with warm water, use 1 squirt (about 3mL) of product
- Do above procedure for 1 minute



9.7



9.8

**30 second rub — only if hands have no visible soiling**

- Use alcohol-based hand rub or gel
- Put 1 squirt of product to dry hands (about 3mL)
- Rub over all parts of hands including fingers, thumbs and webbing
- Let it dry on your hands
- Takes 30 seconds

**General hand care**

- Take off rings, watches, jewellery before cleaning hands
- Clean under fingernails using nail cleaner under running water
- Keep fingernails trimmed (less than 7mm long)
  - Don't wear false nails or chipped nail polish. Gives germs a place to hide
- Keep up fluid intake, use water-based hand moisturiser 3–4 times a day
  - Make sure moisturiser is compatible with hand wash or rub/gel

**Gloves****Attention**

Gloves **do not** replace good hand hygiene. Do appropriate hand hygiene ([p313](#)) before and after wearing gloves — F 9.9.

**What you do****Clean (non-sterile) gloves**

- **Direct** patient contact
  - With blood, mucous membranes, broken skin
  - IV cannula insertion and removal
  - Taking blood samples
  - Vaginal and pelvic exams
  - Suctioning — oral, nasal, tracheal
  - Epidemic or emergency situations
- **Indirect** patient contact
  - Handling or cleaning instruments
  - Handling waste (eg vomit, urine, faeces)
  - Cleaning up spills of body fluids, handling contaminated clothing/bedding



9.9

**Sterile gloves**

- Contact with body tissue that would normally be sterile
- Wound care — dressings, suturing, chest drains
- Birth procedures

**Gloves must be changed**

- Before and after different procedures on same person, to stop germs (micro-organisms) being carried from one site to another

- Before and after caring for patient
  - **Do not** wear same pair of gloves for care of more than one patient
- After touching contaminated site and before touching clean site
- If they are torn or have hole in them (punctured)

## Surgical face masks and goggles (protective eye wear)

Must be worn when there may be splashing, splattering, sprays of blood or other body fluids or tissue.

- **Surgical face masks** — F 9.10 must be
  - Close fitting and fluid resistant
  - Thrown away after use
- **Protective eye wear** — F 9.11 must
  - Be close fitting, with side pieces to protect corners of eyes
  - Cover eye glasses (spectacles)
  - Be cleaned with disinfectant ([p321](#)) after each use



9.10



9.11

## Clinical and related waste management in remote areas



- No national definition of clinical waste in Australia, health care facilities must conform with local legislation and regulations
- In remote areas a balance needed between managing public health risks and minimising discharge of dioxins, furans, coplanar PCBs
- Until clinics have access to proven, environmentally safe options, incineration is still considered appropriate. Purpose-cut drums are used when purpose-built incinerators not available

### On-site management of clinical waste

#### Attention

- Clinical waste (blood and other body fluids) and non-clinical waste must have separate waste bag or container system
- Always sort waste to help cut down need for burning and emissions
- Work with your local council to ensure appropriate management of general clinical waste in community waste designated area
- Store and transport to regional centre — blood bags, chemotherapy tubing, heavy metals such as mercury (eg broken thermometers). Never burn or send to dump
- Recycle paper, glass, plastic if possible

#### What you do

- **Waste bags**
  - Put in pedal bins, keep close to where you are working. Take bin to waste wherever possible
  - Change often — no more than 90% full. Tape or tie shut
- **Separating waste**
  - **Clinical waste** (contaminated) — bury in local rubbish dump. If dump does not bury waste and/or is not fenced — burn in incinerator or purpose-built drum. **Make sure it burns completely**
  - **Non-clinical waste** — recycle glass, plastic, paper, fibre waste if possible
- **Storing waste** to send to regional centre for disposal
  - Storage area needs to be lockable, clean, dry
  - Concrete floor, able to contain a spill, lined with extra absorbent material (eg shipping container)

## On-site management of medical sharps and syringes

### Attention

- Person using a sharp instrument is responsible for its immediate disposal
- Only use Australian/New Zealand Standard approved sharps containers to store sharps and pharmaceutical waste. Must be puncture and leak proof, clearly labelled
- Use separate, clearly labelled container for cytotoxic waste
- Sharps containers must only be incinerated under licence. Can't be done in remote locations. Store and transport to regional centre
- **Do not** burn plastic syringes, **do not** try to bend/break needles

### What you do

- If possible — dispose of sharp where it is used — F 9.12
  - If not possible — use puncture-proof tray/dish to hold and carry sharps
- Put drawing-up needle straight into sharps container and use new, sterile needle for injection
- **Do not** recap or take needle off disposable syringes
- Close containers when they reach fill mark — **never** overfill
  - Make sure lid shut tightly, use tape if needed
- Store full containers in safe, secure area until transported to depot



9.12

### Transporting sharps and clinical waste

- When carrying sharps containers and clinical waste bags in vehicles
  - Must put inside another container secured in non-passenger area
  - Carry spill kit in case of leaks or accidents

## Biohazard and needle stick injuries

### Attention

Contact nearest infection control unit/CDC/PHU for advice immediately.

### What you do

#### Minor exposure

- Includes
  - Unbroken healthy skin exposed to bloodstained body fluid
  - Unbroken or broken skin or eyes exposed to non-bloodstained body fluid
  - Superficial or penetrating injury with sterile or unused clean sharp
- If on skin — wash immediately
- If splash to eye or mouth — irrigate well with water
- Fill out accident/injury form, report immediately to CDC/PHU

## Major exposure

- Includes
  - Superficial injury with/without bleeding involving bloodstained body fluid
  - Penetrating injury involving bloodstained body fluid
  - Splash with bloodstained body fluid to mucous membranes, eyes, broken skin

**Table 9.1: Major biohazard exposure**

Exposure	Action
Injury/contamination goes through skin (eg needle stick, scalpel blade)	Wash well with water and liquid soap (or other available soap)
Contamination goes into eye (eg splash of blood)	Thoroughly but gently irrigate eye with water ( <a href="#">p151</a> )
Contamination goes into mouth (eg splash of blood)	Spit out and rinse thoroughly with water several times
Contamination goes on skin (eg splash of blood)	Wash area with soap and water, check skin for cuts, sores, abrasions

## Follow-up

- Fill out accident/injury form
- Test your and person's blood for blood borne viruses
  - Prophylaxis may be available for occupational exposure

Health workers need to know their hepatitis B status **at all times**. Hepatitis B immunisation is mandatory for health staff in some states/territories.

## Cleaning soiled and contaminated linen and blankets

### Attention

- Household washing machines and chlorine-based products **do not** decontaminate infectious laundry. Only use to wash linen/blankets not soiled by body fluids
- Remote clinics can deal with contaminated linen/blankets by
  - Sending to central collection point for processing
  - *OR* burning, as for clinical waste ([p317](#))
- On examination couches — use disposable paper covers over washable plastic covers, instead of linen. Wash down plastic covers as for contaminated surface ([p326](#))

## What you do

- Put soiled and contaminated linen in separate bags on linen trolleys. Keep away from children
- In remote clinics, use large plastic bags that can be burnt, not standard material linen bags (can't be laundered properly)
- Store full bags in secure area until washed, burnt, or transported to depot

**Note:** Red alginate bags dissolve in water. Can be used to hold soiled linen then put straight into machine without emptying. Don't need to touch linen.

## Cleaning up biological spills using solidifier

Solidifier can absorb fluid up to 100 times its own weight.

### What you need

- Solidifier (eg *Green-Z*)
- Paper towel

### What you do

- If splashing likely — put on gloves and protective eye wear
- Sprinkle solidifier on spilled blood, urine, vomit, other hazardous waste
- Wait a few seconds for solidifier to change spilled fluid into small grains of gel
- Scoop up gel using paper towel, put in clinical waste bag

## Cleaning up mercury from glass thermometers



This is a guide only. Contact CDC/PHU for more information.

### Attention

- **Mercury is a dangerous, toxic substance.** Must be handled and thrown away (disposed of) correctly
- **Do not** touch with your hands
- **Do not** put in ordinary bin or sharps container
- Keep children well away

### What you need

- Mercury disposal kit with
  - Plastic snap-lock bag
  - Disposable gloves, mask
  - Small bottle of sulphur powder (from pharmacy)
  - Small flat-bristle paintbrush
  - Cardboard scoop
- Small biohazard bin — or send used kit to collection depot

### What you do

- Put on gloves and mask
- Cover mercury with sulphur powder, brush mercury and powder onto scoop
  - Put in sulphur bottle, screw lid on tightly
- Put broken glass (only) into sharps bin
- Put all other contaminated material, sulphur bottle, and gloves into snap-lock bag and seal. Put bag into biohazard bin in clinic or collection depot

# Cleaning, disinfecting and sterilising reusable medical equipment



## Cleaning

- Uses mild (neutral) detergent to remove foreign material (eg dirt, organic material), lessen number of germs (micro-organisms) on surface
  - Always do before disinfecting and sterilising

## Disinfecting

- Uses chemicals or heat and water (thermal) to make non-sporing germs inactive
  - Not a sterilising process

## Sterilising

- Destroys all germs on surface of instrument or device, prevents disease transmission through use of item
  - Procedure must be validated under controlled conditions. Keep test records
- Presence of micro-organisms on item described in terms of probability. Can be very low number but will never be zero

## Sorting instruments for sterilising and disinfecting

Instruments and equipment can be grouped for cleaning based on how they are used. See Table 9.2.

Ultrasonic cleaners **do not** disinfect or sterilise instruments but are good for cleaning most reusable instruments before sterilisation.

## Cleaning instruments

Clean instruments used on unbroken skin, and those that need to be disinfected and sterilised.

## Attention

- **If instrument can't be cleaned, it can't be disinfected or sterilised**
  - Disinfectant or sterilising agent won't be able to make contact on dirty parts of instrument
- Clean new instruments **before use**
- Clean instruments and trays straight after procedure. If not possible — cover instruments in warm water (never hot water as it sets contaminants) to make cleaning easier later
- If instruments can be taken apart — disassemble before cleaning, disinfecting, sterilising
- If instrument has sharp tips — protect tips from damage during cleaning, clean carefully to prevent injury

Table 9.2: Grouping instruments for sterilising and disinfecting

Level of risk	Used for (application)	Process	Storage	Example
<b>Critical</b>	Entry or penetration into sterile tissue, cavity or blood stream	<b>Sterilisation by</b> <ul style="list-style-type: none"> <li>• Steam under pressure</li> <li>• Low temp chemical sterilising agent</li> <li>• Liquid chemical sterilising agent</li> <li>• Ethylene oxide</li> </ul>	<ul style="list-style-type: none"> <li>• Keep sterile and dry</li> <li>• Package must be undamaged (intact)</li> <li>• Keep away from environmental contamination</li> <li>• Use straight away after unpacking</li> </ul>	<ul style="list-style-type: none"> <li>• All instruments and accessories used in invasive surgery</li> <li>• Implants and probes used in sterile body cavities</li> </ul>
<b>Semi-critical</b>	Contact with unbroken mucosa or broken skin	<b>Heat tolerant instruments</b> <ul style="list-style-type: none"> <li>• Steam sterilising</li> <li>• Thermal disinfecting</li> </ul> <b>Heat sensitive instruments</b> <ul style="list-style-type: none"> <li>• Low temp automated chemical sterilising systems</li> <li>• High level chemical disinfecting</li> </ul>	<ul style="list-style-type: none"> <li>• Prevent environmental contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Breathing circuits</li> <li>• Baby bottles</li> <li>• Flexible endoscopes</li> <li>• Ultrasound probes</li> </ul>
<b>Non-critical</b>	Contact with unbroken skin	<ul style="list-style-type: none"> <li>• Clean regularly with detergent and water</li> <li>• Decontaminate with low grade disinfectant after cleaning with detergent</li> </ul>	<ul style="list-style-type: none"> <li>• Store in clean, dry place</li> </ul>	<ul style="list-style-type: none"> <li>• Stethoscopes</li> <li>• BP cuffs and equipment</li> <li>• Thermometers</li> <li>• O<sub>2</sub> sats monitors</li> </ul>

## What you need

- Work area set aside for cleaning
- Heavy-duty household gloves
- Detergent (not household)
- Cleaning brushes/soft nylon-bristle brush. Keep separate for this purpose, wash and disinfect after use, store dry
- Lint-free cloth for drying (not paper towel)

## What you do

### Manual cleaning

- Put on personal protection, including heavy-duty gloves
- Take apart or fully open instruments. Undo all latches and clips
- Rinse under warm running water to remove dirt
- Put a few at a time in sink of warm water and detergent
- Keep below water surface to stop splashes and vapours
- Scrub with brush then rinse in warm to hot running water
- Dry instruments with lint-free cloth. **Do not** air dry
- Individually inspect each instrument — need to be visibly clean before disinfecting or sterilising
- Check all parts are there, but don't put back together if disinfecting or sterilising

### Instruments for off-site sterilisation

- Clean, then transport in clean, closed, puncture-proof container

## Disinfecting instruments

- Disinfect instruments used on broken (non-intact) skin and unbroken (intact) mucosa
- Disinfect using heat or chemicals

### Attention

- Disinfecting with heat is more efficient and costs less
  - Use chemicals when instruments can't be disinfected with heat
- All instruments that can be fully immersed in water can be disinfected in chemical disinfectant
- Instruments must not be stored in disinfectant
- Must keep signed and dated records for disinfecting

## What you need

### Chemical

- TGA-approved instrument disinfectant *OR* alcohol based disinfecting solution
  - 70% w/w ethyl alcohol
  - 80% v/v ethyl alcohol
  - 60% v/v isopropyl alcohol
- Distilled water for rinsing if possible

## What you do

- Fully cover (immerse) instruments in disinfectant
- Leave for time specified by manufacturer (no longer than 1 hour)
- Remove from disinfectant, rinse. Use distilled water if possible
- Dry with lint-free cloth
- Throw away disinfectant straight after using

## Sterilising instruments and equipment

Staff doing sterilisation must have done/be doing training in sterilisation procedures according to Australian/New Zealand Standard AS4187 or 4815.

### Attention

- Must have certified and serviced steriliser. Follow manufacturer's instructions to ensure right amount of water, timing, temperature, pressure settings used
- Must keep signed and dated records for sterilising, maintenance
- If process-recorder printer not fitted or not working — must check and record time, pressure, temperature of every cycle
- Instruments must be completely clean for temperatures and times to be accurate
- If sterilisation cycle fails — check settings and loading of instruments. Make sure steriliser not overloaded — see *Loading steriliser (p325)*
- If you think sterilisation has not worked and/or non-sterile instruments have been used — contact your local infection control unit or PHU for advice
- Use an instrument tray. Instruments will last longer

### Packing materials

- Use correct type and method of packaging for your steriliser
  - **Do not** use packaged instruments in sterilisers that don't have drying cycle
- All laminate/paper packaging is single-use only. **Do not** relabel or resterilise
- **Do not** use nylon packaging in steam steriliser
- If sterilised package damaged or contaminated (compromised) — do procedure again, starting with cleaning of instrument

### What you need

- Steriliser
- Packages — best made from laminate/paper material
- Trays — metal or plastic with holes so steam can reach all areas
- Permanent marker for labelling (not water based)
- Clean tongs
- Steriliser indicator tape
- Steriliser monitoring books

### What you do

- Clean and dry instruments (*p321*)

### Package instruments/equipment

- Put instruments on tray then into package so contents can be clearly seen through laminate side
- **Do not** bundle instruments or overfill packaging
- Protect tips of sharp instruments to keep them sharp and stop damage to packaging

- Package bowls (hollowware) separately with opening facing paper side to allow air to escape
- Tray can be used as sterile surface during procedure after one side of package removed

Always sterilise instruments as soon as possible after packaging. If not possible — keep packages away from sterile instruments and store in separate, clearly labelled cupboard or covered container.

### Label and seal package

- Label packages just before sterilising, include date and **identifying code**. Must also be recorded in monitoring book, for tracing steriliser faults
- Seal laminate/paper packages using steriliser indicator tape, or heat-sealing unit. **Do not** use staples, string, adhesive tape, elastic bands
- If package not self-sealing — fold over 2–3 times, seal with indicator tape across width of package, overlapping on each side
- Make sure no air is trapped inside, will pop seal during sterilisation

### Loading steriliser

- When loading you need to consider
  - Air being removed from chamber — don't block air vents
  - Steam being able to reach and soak (saturate) all surfaces
  - Condensation being able to drain away
- Instruments mustn't stick out of tray, touch walls of chamber
- Put **unpacked instruments** on tray in single layer. **Do not** over fill
- **Packaged instruments** are
  - Put side-by-side on their edge, paper surface facing laminate surface
  - *OR* laid flat on tray in single layer with paper side facing down
- Lay bowls (hollowware) on their side so air and condensation can drain
- Hang linen vertically. **Do not** load bowls or packages above

### Unloading steriliser

- **With drying cycle**
  - **Do not** open during drying cycle
  - Unload using tongs as soon as it is finished
  - Check load dry, indicators changed to correct colour, seals intact
  - Record time, temperature, pressure, then sign off
  - Put instruments on non-solid surface to cool down. **Do not** use fans to speed up cooling
- **Without drying cycle**
  - Instruments to be used straight away — remove using sterile gloves (aseptic technique)
  - Instruments for storage — dry with single-use lint-free cloth. Must be resterilised before use

**Note:** If packaging wet, instruments dropped, seals broken, indicators not changing colour — not sterile. Must be recleaned, repackaged, resterilised.

### Storing sterile instruments

- Instruments sterilised in clinic and commercially sterile instruments are stored in same way
- **Do not** store in ultraviolet cabinets or cardboard boxes
- Store in washable plastic containers with close-fitting lids, or in cupboards with close-fitting doors and smooth washable surfaces
  - Should be dust free and only for sterile instruments. Clean and dry cupboards weekly without disturbing instruments
- Sterile stock may be contaminated by
  - Moisture, condensation, insects, vermin
  - Temperature extremes, over exposure to sunlight or ultraviolet light
  - Puncture by sharp objects, damage caused by incorrect handling and transportation

### Cleaning large medical equipment, furniture, fittings Attention

- **Do not** use disinfectants for routine cleaning. Overuse can create resistant germs (micro-organisms)
  - Only use disinfectant if contact with blood or other body substances (contamination). Use detergent for washing off perspiration
  - Detergent and warm water can be used if contaminated spills are cleaned up straight away
- Keep lids and caps on lotions, creams etc. Bugs and dust will contaminate

### What you need

- Paper towel, lint free cloth, absorbent towel — throw away after use
- Detergent in warm (not hot) water
- Alcohol wipes
- If contamination — use hospital grade disinfectant or bleach

#### Disinfectant

- Alcohol content should be at least 70% ([p323](#))
- Make up as needed. **Do not** store. Can become contaminated and be source of infection

**Bleach (sodium hypochlorite)** — household-grade bleach with concentration of 40,000 parts per million or 4% available chlorine

- For 1:4 dilution — add 1 cup (250mL) of bleach to 3 cups (750mL) of warm water. Make as needed, deteriorates quickly
- Store bulk containers in cool dark place
- If splashing occurs — rinse affected area straight away
- Rinse off from surfaces and dry — corrosive

## What you do

- **To dust** — use damp paper towel to wipe over surfaces
- **To clean surfaces** — wipe with detergent in warm water, dry with paper towel
- **To clean contaminated surfaces** — wipe with detergent in warm water, wipe over with disinfectant or bleach according to manufacturer's instructions, rinse with clean water, dry with paper towel
- **To clean small instruments** (eg stethoscope diaphragms) — use alcohol-soaked swabs. Doesn't sterilise or disinfect

# Preparation for pandemic infections in remote communities

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- Pandemics can happen very quickly
- Pandemic infections are caused by diseases that
  - Are highly contagious — influenza, severe acute respiratory syndrome (SARS), Hendra virus
  - Spread very quickly between people — short incubation period
  - Cause serious illness and death
- Remote communities can be seriously affected due to high levels of existing lung disease and chronic illness

## Attention

- Being prepared will reduce the impact of pandemic infection — community must be involved in planning process
- Local clinic responses can
  - Slow down or stop spread of pandemic in community
  - Minimise amount of disease in community

## What you need

- Keep basic stock of
  - Duck bill (P2/N95) face masks
  - Impermeable surgical gowns
  - Gloves and goggles
  - Alcohol hand gel
  - 10% bleach for cleaning surfaces
  - Tissues
  - Thermometers
- Once outbreak confirmed — extra stocks of antibiotics, antivirals, IV fluids, paracetamol

**Note:** Respiratory antibiotics may be needed for people with flu symptoms who develop presumed secondary bacterial pneumonia.

## What you do — preparation

- Clinic staff
  - Be aware of local, state/territory, national pandemic plans
  - Know communication plan for receiving and sending information during pandemic ([p330](#))
  - Make sure community knows enough about potential impact of the disease for them to be involved in planning process
  - Take into account
    - Importance of family and culture
    - Limitations of local resources and infrastructure

- Health staff and volunteers
  - Find out which community members are likely to help as volunteers
    - School usually closed, so school staff may be a good source
  - Organise training for putting on, removing, disposing of personal protective equipment (PPE)
  - Allocate roles
  - Need to be immunised with pneumococcal and yearly flu vaccines
- Consider especially
  - Community needs and information sharing before, during, after pandemic
  - Staff — how to quickly increase health care worker numbers
  - Equipment — how to speed up delivery schedules
  - Transport — are alternate means of transport available
  - Immunisation coverage in community for influenza and pneumococcal disease
  - Hygiene — develop and maintain good hygiene standards on daily basis so easy to implement during pandemic. Include
    - Hand washing/hygiene ([p313](#))
    - Use of masks ([p316](#))
    - Correct cough etiquette, separate waiting areas for people with cough
- Practise local pandemic plan regularly as part of local disaster plans. Especially
  - Clinic layout during pandemic — reception, triage, waiting areas, clinical areas, isolation rooms etc
  - How usual day-to-day function of clinic will continue
  - Infection control standard and transmission based precautions ([p312](#)), PPE, isolation, quarantine

## What you do — in outbreak

**If you suspect an outbreak of an infectious disease contact CDC/PHU urgently.** They will provide help and further instructions for your individual situation. The information below gives a general overview of what will be needed.

**Remember:** Travel to and from community usually restricted to emergencies only.

- Contact CDC/PHU
- Call in volunteers, identify coordinator and communications officer
- Go over PPE and hand-washing techniques
- Set up
  - Outdoor undercover waiting area for patient triage
  - Field hospital
  - Area to use as a morgue

- People with pandemic flu symptoms
  - Put in field hospital separate from everyone else — **not in clinic**
  - Give standard surgical masks to reduce airborne transmission
  - Ask to cough and sneeze into tissue, put tissue in personal bin, wash hands afterwards
- Draw up roster for 24 hour cover of field hospital by health staff and volunteers
- Make sure staff, volunteers and carers looking after patients
  - Wear gowns, gloves, goggles, and masks
  - Know correct procedures for putting on and removing PPE
- Keep number of carers in field hospital to a minimum (eg only 1 parent/carer for a sick child)
- Plan for deceased bodies
  - Keep in refrigerated container or transfer to morgue as advised
  - Arrange vehicle and driver to transfer deceased to morgue

### **Communication**

Pandemics are unpredictable in progression, severity, who they affect, where they spread to.

- Find out where to get public health advice for planning and coordinating response (eg CDU/PHU)
- Central coordinators of response will want to know what is happening in primary care clinics (eg case numbers, severity)
- Communicate with community regularly
- Know what is happening in nearby communities

## 10 Medicines

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# Managing a remote clinic dispensary

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Standards for running a dispensary in a remote area.

## Room design

- Big enough to store
  - Medicines for chronic disease and acute imprest separately
  - Individual patient labelled medicines and/or dose aids
- Need space for 2 fridges
- Lockable door, security screens on all windows, no public access
- Well lit
- Constant room temperature (less than 25°C) with good air circulation. Air conditioners should be connected to back-up power supply
- Shelving — clearly labelled, enough room to store and display medicines
  - If shelving above shoulder height — non-slip step or two-rung ladder
- Workbench with waterproof top, large enough for at least 2 practitioners to prepare medicines for dispensing
  - If workbench low — adjustable swivel chair on wheels
- Computer with access to internet and electronic file notes
  - Label printer
- Stainless steel sink, elbow control taps, soap dispenser, paper towel holder
- Equipment for dispensing medicines — purified water, measuring devices, medicine cups, paper cups, syringes, tablet cutters, mortar and pestle (for crushing tablets), tablet counter (eg triangle)
- Equipment for packaging medicines — dose aids, labels, cartons, bottles, time of day (sun and moon) stickers, warning labels
- Containers for return of unwanted medicines (RUM)

## Lockable safe

- Safe attached to wall, large enough to store all controlled drugs and prescription medicines that can be misused (eg benzodiazepines, codeine)
- Drug register for recording supply and use of all restricted S4 and S8 medicines
  - In some states/territories you need 2 separate books

## Cold storage areas

- 2 refrigerators — should be large enough to allow free air circulation around medicines
  - 1 for vaccine storage ([p335](#)) — purpose built vaccine refrigerator
    - Display current Vaccine Cold Chain Graph
  - 1 for all other medicines needing refrigeration
  - Both monitored twice a day for temperature — should be 2–8°C
  - Plugged into back-up power supply

## References

- Medicine specific books — print or electronic versions
- Examples include
  - *Australian Medicines Handbook* (essential)
  - *Medicines Book for Aboriginal and Torres Strait Islander Health Practitioners*
  - *Australian Therapeutic Guidelines*
  - *Australian Immunisation Handbook*
  - *Australian Injectable Drugs Handbook*
  - *Don't Rush to Crush*
- Best-practice guidelines (eg *CARPA STM*, *WBM*)

## Ordering medicines

- Most chronic diseases medicines can be ordered through PBS or S100
  - If not available, contact supply pharmacy
- Restock all imprest and prescription medicines every month
  - If medicines going out of date — consider reducing imprest size
  - Consider if you still need to keep medicine in stock before re-ordering
- Make orders for wet season or events (eg ceremonies, sports carnivals) in advance
- Talk with pharmacy about special projects (eg mass treatment programs, clinical trials) in advance to give them time to organise stock

## Stock management

**Remember:** Check medicine stocks in your emergency kit (p28) and ambulance (p30) as well.

- Store and transport medicines at recommended temperatures
  - Under 25°C for shelf medicines, 2–8°C for fridge medicines
- Unpack and store medicines as soon as possible after delivery
- Store in categories by active ingredient in alphabetical order. Label shelves with generic names of medicines
  - ATSIHP medicines can be stored separately for convenience
- Document how your medicine stock is organised to make it easier for all staff, including visiting doctors, nurses
- Work with supplying pharmacist to develop and regularly review imprest list
  - Use local guidelines and protocols to help decide what medicines to keep
  - Keep order quantities at level that reflects twice your order period usage
    - If you order monthly — keep 2 months worth of stock. This covers you for any delays in delivery or unexpected high use
- If using imprest list — keep list in same order as medicines on shelves. Makes it easy to fill your order. Fill imprest list as you check along shelf
- Keep medicine containers neat and clean so easy to find, labels easy to read

- Circle use-by/expiry date on new stock or write clearly on container
  - Put new stock behind current stock — try to make sure older stock (first to expire) is used first
  - If use-by/expiry date only printed on outer package
    - Keep stock inside package until it is going to be used
    - *OR* if items must be taken out of original packaging — write use-by/expiry date on each separate item
- Check use-by/expiry date on current stock regularly, at least once a month. Make this part of your routine clinic checklist
  - Try to use, or redistribute in region, any stock that will expire soon
  - Dispose of expired stock according to health centre policy

# Storing and transporting vaccines and medicines

## Attention

Always have **anaphylaxis kit** (*CARPA STM p32*) ready when giving vaccines.

- If you are carrying vaccines or medicines in vehicles — need to maintain cold chain

## Maintaining cold chain process — vaccines

If not stored at correct temperature — vaccines will not work and people will not be immunised.

- Cold chain process monitors vaccine storage temperatures and lets you know if there are any problems
- Many states/territories require practitioners to have formal training in how to give and store vaccines — for more information see *The National Vaccine Storage Guidelines* (Strive for 5). Keep copies available on or near fridge

## Attention

- **Never separate vaccines from cold chain monitors**
  - Monitors are put in bag with vaccines by pharmacy so you can check they are kept at right temperature (2–8°C) during travel to clinic
  - If vaccines too warm or too cold when they arrive — store where they will not be used, talk with pharmacy or state vaccine centre to find out
    - If vaccines need to be thrown away or given a shorter expiry date
    - What caused problem with temperature
- **Do not store food or other goods in vaccine fridge**
  - No medicines except blood products or antivenoms
- **Do not open fridge door**
  - During power cuts or fluctuations
  - Unless you know what you need — find it quickly, close door
- **If you know power is going off for more than a few hours — get ready**
  - Take vaccines out, close door quickly
  - Surround or wrap vaccines loosely in insulating material (eg polystyrene chips, shredded paper, bubble wrap, newspaper) put in esky
  - Put esky back in fridge with ice bricks, keep door closed, keep heat and freeze sensitive monitors with vaccines
  - Never let bare ice bricks touch vaccines — may freeze

**Note:** Extreme temperature changes (eg very hot days followed by very cold nights) affect fridge temperatures and can cause vaccines to freeze. Monitor very carefully, adjust fridge settings slightly if you need to, but don't make sudden, drastic changes. Fridge temperature controls can be tricky.

## What you need

- **Purpose built vaccine refrigerator** plugged into back-up power supply, if available
  - Label power supply 'DO NOT turn off power or disconnect this refrigerator'
- Refrigerator should have
  - Clear (glass) door, clearly labelled shelves so you can see what's inside without opening door
  - Temperature probe on inside, temperature monitor on outside
  - Cold chain protocol clearly visible
  - Minimum of one heat and one freeze monitor on each shelf
  - Vaccines stored away from sides, top and bottom to allow for circulation
  - Stock rotated (new stock behind current stock)
  - Sign on door to remind people to keep it closed
- Temperature monitor chart for recording daily temperatures
- Two types of cold chain monitor
  - **Freeze-sensitive** — turns purple if vaccine stored below freezing
  - **Heat-sensitive** — gradually turns blue if vaccine stored above 8°C
- Ice bricks and esky (in case of power or fridge failure)

## What you do

- Check and mark on cold chain monitor cards — date vaccines arrive in clinic, colour of monitors
- Monitor card will indicate freezing or heat exposure
  - Follow instructions about what to do for each vaccine
  - If vaccine not listed on card — contact supplying pharmacy
- Check cold chain cards each time you take out vaccine for use
- Check and mark cold chain cards once a week, note changes to monitors
- Check highest and lowest fridge temperatures twice a day, before opening fridge for first time and at end of the day
  - Use special thermometer, record on temperature graph chart
  - Temperature should be kept at 2–8°C. If big variations — find out why. May be the weather, power supply, fridge, thermometer/monitor
  - **Fix problems as soon as you can to stop loss of vaccines and possibility of giving vaccines that won't work**

## Storing, transporting, checking controlled drugs

### Attention

- **You must know the legal requirements** for all aspects of controlled drug management in your state/territory and your health service's policies and procedures
- **Take a lot of care with routine checking of controlled drugs.** If working alone — ask visiting medical staff to check with you as often as possible
- **Before you give controlled drug to patient** you must know your state/territory legislation and best-practice procedures. If you are alone — good idea to at least have patient check label amounts with you, if possible
- **Never leave controlled drugs in vehicles** when carrying from town. Check local requirements about transport and receipt of these drugs
- **Disposal of controlled drugs** must be done in line with state/territory legislation

### What you do

- Keep controlled drugs (and some prescription medicines) in strong metal safe attached to wall — see *Managing a remote clinic dispensary* (p332)
- When drugs arrive, ask colleague to check them into drug register with you
  - Sign and return pharmacy receipt as soon as you can
- Always do a drug check with arriving and departing relief staff
- Check drugs and record in register at least once a week or in line with your health service policy. Add this to your clinic routine checklist
- Ask your visiting pharmacist to check balances and entries each time they visit. Record this in drug register

# Giving medicines

---



**Remember:** Right patient, right medicine, right dose, right route, right time, right documentation, right to refuse.

- Make sure you are *legally* allowed to give the medicine

## What you do

### Follow the RIGHTS for giving medicines

- **RIGHT patient**
  - Make sure you have right patient and right set of records
    - Ask patient's name, date of birth, bush name, next of kin
    - Check patient's name and date on prescription
- **RIGHT medicine**
  - Check name and spelling of medicine against prescription
  - Check use-by/expiry date on package
  - Is it safe for this person
    - **Always ask about** allergies, pregnancy, breastfeeding, other medicines, medical problems (eg kidney problems)
  - Could it interact with other medicines the person is taking
  - Is medicine in your protocol manual (eg *CARPA STM*, *WBM*)
  - Look up in reference manual (eg *AMH*, *Medicines Book*). What is it, how does it work, what is it used for
  - Are you allowed to give medicine or do you need to contact doctor or pharmacist
- **RIGHT dose**
  - Check dose on prescription and in reference manual (eg *AMH*, *CARPA STM*, *WBM*)
  - Check strength — medicine can be packaged in a range of different strengths and forms
  - Measure dose carefully using proper equipment
  - If dose is by weight — check person's weight. **Always weigh children**
  - Watch and help parent/carer give first dose to children
- **RIGHT route**
  - Check how to give (administer) medicine
    - Oral — tablets, syrups, sublingual, buccal
    - Injection — IM, IV, subcut
    - On the skin — transdermal, topical
- **RIGHT time**
  - Check how and when medicine should be taken — night, morning, with food, on empty stomach
  - Use times that are meaningful to the person

- **RIGHT documentation**

- Record medicine administered/supplied in file notes. Include active ingredient, dose, frequency, quantity supplied (eg dicloxacillin 500mg 4 times a day [qid], 24 caps)

- **RIGHT to refuse**

- Person may not want to take medicine you give them
- Make sure person knows reason for the medicine so they can make an informed decision
- If person doesn't want to take medicine — try to find out why, a different medicine may be appropriate
- If person still doesn't want to take medicine — always document this

### Label medicine

See example of completed medicine label — F 10.1

- Written in red on white background — **KEEP OUT OF REACH OF CHILDREN**
- Name (active ingredient) of medicine
- Strength (eg microgram, mg, g) and form (eg liquid, tablet, capsule)
- Total number of tablets or amount of liquid in package
- How to take. Dose and number of times a day — 'Take 2 tablets 3 times a day'
- Name of patient
- Name, address, phone number of clinic
- Your name or initials
- Date you gave out medicine
- Medicine use-by/expiry date — take from original packet
- Prescription reference number (if your clinic uses these)
- Special directions — 'Take with food', 'Keep in fridge'
  - Use warning stickers (*MED p298*) if your dispensary has them

<b>KEEP OUT OF REACH OF CHILDREN</b>	
DRUG <i>Metformin</i>	STRENGTH <i>500mg</i>
Take <i>one (1)</i> tablets/capsules/mL <i>three (3)</i> times a day <del>or</del>	
<i>with food</i>	
as directed.	
Patient <i>Peter Jones</i>	
Issued by <i>Ross Colins ATSIHP</i>	Date <i>20/4/18</i>
CLINIC <i>Mt Eagle Clinic NT ph8912 3456</i>	Qty <i>100 tabs</i>
<i>Use by Aug 2020</i>	

10.1

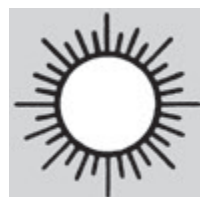
- Use medicine time stickers for people with poor English or eyesight
  - Morning/evening — F 10.2
  - Middle of the day — F 10.3
  - Night time, before bed — F 10.4



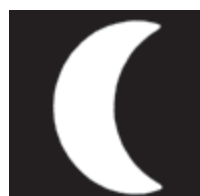
10.2

### Check what you have done and record

- Record in file notes, hand-held record for travellers, in register (eg Schedule 8), if needed
- Make sure file notes include
  - Name of medicine, date and time of supply
  - Reasons for giving
  - Name of person ordering medicine, or protocol used
  - Strength and amount (quantity) given (eg 2mg in 4mL, 20 x 500mg tabs)
  - Way it is given (route)
    - *Examples:* By mouth (oral), by injection into muscle (IM)
  - Dosing instructions — ‘Take 2 tablets 3 times a day’
  - Counselling given, including any possible side effects
  - Name and designation of person supplying medicine



10.3



10.4

### Before giving medicine make sure person knows

- Why they are taking the medicine
  - Possible side effects and what to do about them
  - When and how to take it
  - How to store it (eg in fridge, away from children)
- Ask them to repeat what you told them to make sure they understand.

### Check

- Are tests needed (eg blood tests)
- Does person need to come back to clinic, and when

## Dose administration aids

Includes dosette boxes, blister packs, sachets.

### Filling dose administration aids (dose aids)

#### Attention

- **Do not** get distracted when filling dose aid. Focus on the job
- **Do not** use dose aid label to refill aid — it may have an old prescription
- Dose aid must be labelled KEEP OUT OF REACH OF CHILDREN
- For medicine safety — best to have dose aids filled by pharmacy if possible (eg sachets, blister packs)
- If person visiting from another community — ask if they have a copy of their prescription/s. If not — ask their clinic to send current copy (eg fax, scan)

## What you need

- Up-to-date prescription or file notes
- Dose aid
- Pen
- Medicine/s — from medicine basket in pharmacy, or stored under person's name. Take **extra care** to collect right medicine

## What you do

- **Check**
  - Right person and right prescription or file notes
  - Reusable dose aid must be clean. Most slide out at side for easier cleaning, refilling
  - Preparation area clean and tidy, hands clean
  - **Dose aid label** — you must check every time dose aid is filled
    - Full name of person
    - Name and strength of medicine
    - Amount to give, how to give, how often
    - Name of clinic where usually filled
    - Label and any changes to medicines are clear. If not — use new label
- **Fill dose aid.** Put in medicines one at a time. Follow current prescription in same order
- Put medicine packet back into basket or move to one side
  - **Do not** put packets back onto shelves or throw away empty containers until dose aid has been checked
- Record in file notes — date, your name and designation, name of person checking, whether dose aid was given to person or stored for later collection
- Check again you have right person, they understand how to use dose aid
- **Check** filled dose aid by following procedure below
- Before sealing, ask another staff member to check medicine/s in dose aid. If not possible — make a second check yourself
- Write on sticker across end of dose aid — date, your name, clinic name

## Checking filled dose aid

### What you do

- **Check**
  - Medicine used has not expired
  - Both original medicine packet and label on dose aid match prescription
  - One full day's medicine by emptying out cell/s and refilling from prescription, checking colours from original packets if needed
  - Each of the other cells for **same number and colour** (eg 2 small white + 2 large white + 1 yellow + 1 blue/white capsule = 6)
- **Sign and date** record of dose aid check in file notes, or on prescription. Make sure person filling dose aid has also signed file notes or prescription

- Document number of doses given and expected completion date (when refill needed)
- **Close dose aid**, seal if possible. Some reusable dose aids can be sealed by putting a sticker across opening end. Initial and date sticker

### Medicine by delivery type

#### Attention

- If medicine bitter — have person suck on an ice cube before taking
- Give children sultanas, fruit, orange juice to help cover unpleasant taste

#### Giving tablets

##### Attention

- **Do not crush enteric-coated tablets or slow-release tablets.** If not sure — check prescription or refer to a reference manual

##### What you do

- **To halve tablets**
  - Only halve tablets that have a line — F 10.5
  - Use a tablet cutter or sharp knife on clean piece of paper towel
- **To crush tablets**
  - Check manufacturer's instructions to see if this is OK
  - Crush between 2 spoons or use pestle and mortar. Mix with honey and/or give with a drink of water



10.5

#### Giving syrups

##### What you do

- If syrup not premixed — add exact amount of sterile water prescribed on bottle. If sterile water not available — use clean tap water
  - Use graduated measure or syringe for exact measurements
- Shake syrup bottle to mix well. Watch for powdery lumps
- Put medicine cup on bench and bend down so cup at eye level to check you are pouring out exact amount. If amount small — use syringe

#### Giving medicines under tongue (sublingual) or inside cheek (buccal)

##### Attention

- Sublingual medicines may only be effective for a certain period of time after opening (eg 3 months)
  - **Do not** use if packet open and has no date, or has been open too long
- When opening new packet, write today's date on it
- Get person to wet tablet with saliva and put under tongue. Wait for it to dissolve. If any tingling — tell them to put in cheek instead

## Putting medicine patches onto skin (transdermal)

### Attention

- Follow instructions for individual patches — see *AMH*
- Make sure **old** transdermal patch removed
  - Some are replaced straight away, others need to stay off for 10–12 hours (eg glyceryl trinitrate)
- Rotate site used for patches
- Check how long new patch should stay on — may be hours or days
- Wear gloves *OR* if too difficult to put on patch wearing gloves — wash hands straight afterwards so you don't absorb any medicine yourself
- Dispose of patch safely — follow policy for medicine type in the patch

### What you do

- Clean, carefully dry new site. If person hairy — shave area so patch sticks
- Write time and date applied on edge of patch
- Take foil off patch, smooth patch onto site sticky-side down
- If person very sweaty or weather hot or humid — put plastic see-through dressing or paper tape over patch to keep in place

## Giving medicine through nasogastric tube

See *Putting in nasogastric tube* ([p81](#)).

### Attention

Tube **must** be in right place before you start giving medicine.

### What you need

- pH test strip to test tube's position
- 10–20mL syringe barrel — you don't need plunger
- Medicine in a medicine cup
- 20mL of tap water in a cup

### What you do

- Test that tube is in stomach ([p83](#))
- Fold small piece of nasogastric tube over to clamp it off
- Take out tube stopper/plug, connect syringe barrel to tube
- Pour dose of medicine into syringe barrel
- Unfold tube, hold tube and syringe up high to let medicine flow down tube.  
**Do not** force with syringe plunger
- When empty, add 10–20mL of water to syringe barrel, hold it up to flush.  
When empty, fold tube over again to clamp it off
- Take off syringe, unfold tube, put back stopper/plug

## Giving rectal suppositories

### Attention

- **Do not** let suppository get too warm, will soften and be hard to put in

### What you do

- Lie person on left side, ensure privacy
- Take suppository out of packet, lubricate pointy end
- Separate buttocks, ask person to breathe deeply and try to relax
- Gently push suppository into anus (pointed end first), to length of your finger — F 10.6
  - Adults and older children — use forefinger
  - Younger children and infants — use little finger
- Do again if second suppository needed
- Take out finger, gently hold buttocks together until urge to pass faeces stops
- Wipe area with tissues



10.6

# Giving injections

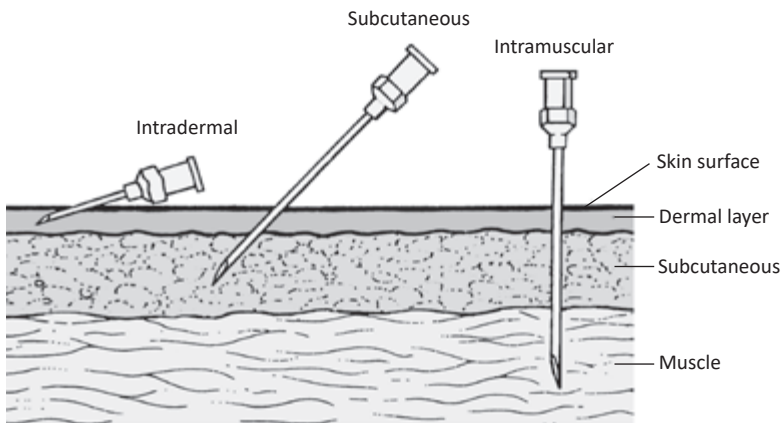


## Attention

To prevent needle stick injuries, always carry injections in plastic tray or kidney dish, and have a sharps container close by.

- **Before giving injection**
  - Always check file notes, ask person about allergies or adverse reactions
  - Remember the RIGHTS before giving any medicine ([p338](#))
  - Always check manufacturer's instructions
  - If injection site dirty or bloody — wash with soap and water
- **Preparing injection**
  - Draw up solution, put draw up needle in sharps container
    - Except insulin syringes — needles can't be removed
  - Put on fresh, sterile needle to give injection
- **To stop injection stinging**
  - Before giving — clean site with alcohol wipe, let dry completely
  - After giving — use gauze or cotton wool to press down firmly on site
  - Check manufacturer's guidelines

## Angle and depth of injections — F 10.7

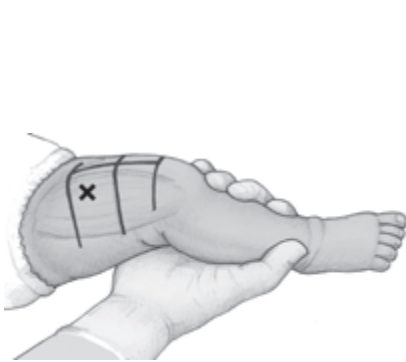


10.7

## Injection sites

### Subcut or IM injection sites

- Outside (anterolateral) thigh (vastus lateralis), baby or toddler — F 10.8
- Outside (anterolateral) thigh (vastus lateralis), child or adult — F 10.9
- Upper arm (deltoid) — F 10.10
  - **Do not** use for children under 12 months
  - Best site for small injections in adults



10.8



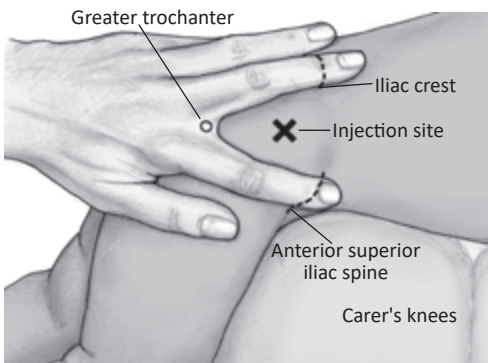
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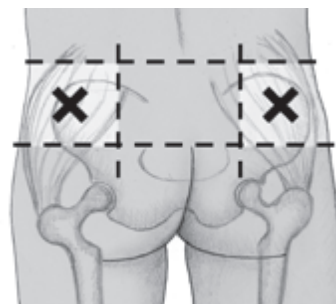
10.10

### IM injection sites

- Ventrogluteal — F 10.11
  - Better than buttocks (gluteal) as less risk of damage to nerves or blood vessels
  - Best site for large injections in adults
  - Child — lie over carer's knee, upper leg flexed
  - Adult — lie on side, upper leg flexed and forward
- Buttock (gluteal) — F 10.12
  - **Do not** use for babies, toddlers, small preschool children



10.11



10.12

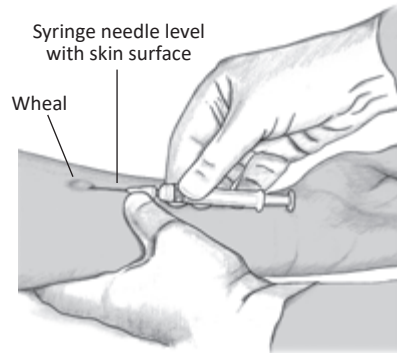
## Intradermal injections

### Attention

- Used for Mantoux test or Mycobacterium bovis (Bacillus Calmette and Guerin [BCG] strain) vaccine

### What you need

- Injection tray
- Insulin syringe
- Gauze swab
- Injection solution



10.13

### What you do

- Choose injection site, clean if needed, let dry completely
- Draw up solution
- Hold syringe with needle lying flat to skin and bevel edge facing up
- Slide needle under skin until it disappears, then a **little** further so it goes into intradermal tissue. **Keep level with skin** — F 10.13
- Slowly inject solution until you see raised area (wheal)
- **If wheal is not appearing** — adjust needle position and continue injection
  - **Do not** repeat dose
- **Do not** put pressure on site after taking out needle. Ask person to blow on area until it dries
- **Do not** rub site or put on sticking plaster. Leave open to air

### Mantoux test or Mycobacterium bovis (Bacillus Calmette and Guerin [BCG] strain) immunisation

- First check person's Mantoux status
- Only give Mantoux test or BCG immunisation if authorised to do so
- Mantoux test — usually given in inner forearm — F 10.13
- BCG immunisation
  - Give in upper arm (deltoid area)
  - Check regional guidelines to see if right or left arm used
- **Never** cover Mantoux test or BCG immunisation injection site with dressing

## Subcut injections

### Attention

- If person has daily injections (eg insulin for diabetes) — change injection site often

### What you do

- For angle and depth of injection — see F 10.7
- For injection sites — see F 10.8 – F 10.10
  - Fatty pad below umbilicus can also be used in diabetes

## Subcut cannula

### Attention

- Used for people in palliative care or who can't swallow medicines
  - More comfortable than repeated IM or IV injections
  - Less likely to become infected
- **Do not** use metal butterfly needles. Less comfortable and site needs to be changed more often
- Subcut catheter system (eg *Intima*) — F 10.14 allows regular administration of medicine by
  - Injecting into side portal
  - *OR* continuous infusion through syringe driver
- If catheter system not available — use 22–24G cannula



10.14

### What you do

#### Choose site

- Rotate sites. Make a plan using sites that allow person the most movement. Consider these sites
  - Intercostal spaces on anterior chest wall
  - Above pectoralis muscle
  - Anterior abdominal wall — **do not** use if ascites, abdominal disease, oedema
  - Upper arm — **do not** use if bed-bound and needs frequent turning
  - Outer thigh
  - Above shoulder blades — good if person restless or disorientated
- **Do not use**
  - Breast tissue or skin folds
  - Portacath or CVC sites
  - Stoma sites
  - Tumour masses, tumour nodules, oedematous areas
  - Scar tissue, mastectomy sites
  - Bony areas

#### Insert subcut catheter system or cannula

- Trim hairs if needed. Clean site with alcohol swab, allow to dry
- Lift fold of skin between forefinger and thumb, insert full length of cannula at 30° angle
- Tape down butterfly flaps with transparent film dressing
- Remove metal insert, put in sharps container
- Attach injectable bungs to outlets (if not already there)
- Prime line with sterile water or normal saline before injecting medicine

**Follow-up**

- Label site with date of insertion, record site in file notes
- Check site before giving injection
- Check site regularly for swelling, redness, leakage when injection given
  - If present — change site straight away
  - If not present — change site in 7–10 days

**IM injections****Attention**

- Using small bore needle **causes more pain**, as more pressure needed
- Usually use 25mm long needle. Use 16mm for small babies
  - For ventrogluteal or buttocks — use 38mm if obese
  - For gluteal — use 50.8mm if very obese

**What you do**

- Choose site — F 10.8 – F 10.12
  - If repeat injection — use different site to last time
- Position limb so muscle being injected into is relaxed
  - Ventrogluteal
    - Child — lie over carer's knee, upper leg flexed
    - Adult — lie on side, upper leg flexed and forward
  - Buttock — stand bent forward with hands on bed *OR* lie on stomach (prone) with foot on same side turned inward
    - If person large or tall — suggest lying down, won't hurt themselves or you if they faint
  - Outside thigh — lie on back (supine) with toes pointing straight up
  - Upper arm — sit with elbow bent and forearm supported
- Clean site if needed, let air dry
- Pull skin tight, or use Z-track method ([p350](#)) — insert needle quickly at 90° to skin
- Only if giving in buttock — pull back plunger a little to make sure you are not in blood vessel. If blood seen — change site
- Slow steady injection
- Remove needle quickly, apply pressure to injection site

**To lessen pain of thick injections — benzathine penicillin (penicillin G), procaine benzylpenicillin (procaine penicillin)**

- Mix well by shaking
- *OR* warm and mix by rolling syringe in your hands for 1 minute
- Use needle provided with pre-loaded syringe
  - **Do not** change to smaller bore needle, more likely to get blocked
  - **Do not** pre-load needle — leave hollow of needle empty

- Before injecting
  - Put ice pack on site
  - Press **hard** on site with thumb and count to thirty (30–60 seconds)
- These injections are very painful. Best to have helper, patient may try to grab syringe

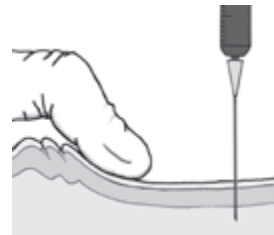
## Z-track injections

### Attention

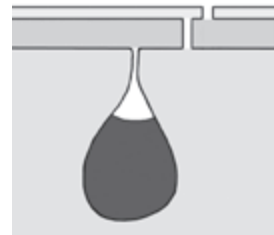
- Use for
  - Thick injection fluids (eg benzathine penicillin [penicillin G]) — can leak out through large bore needle track
  - Iron injections — can permanently stain skin if solution leaks out

### What you do

- Choose site
  - Larger/older children and adults — IM into
    - Ventrogluteal — F 10.11
    - *OR* buttocks — F 10.12
  - Small children — IM into
    - Outside (anterolateral) thigh — F 10.8, F 10.9
    - *OR* ventrogluteal — F 10.11
- Pull skin down from chosen site, hold in this spot — F 10.15
- Put needle into muscle and give injection slowly
- When finished, leave needle in place for about 10 seconds. This stops medicine solution leaking out onto skin surface
- Take needle out, let go of skin — this will make Z-track — F 10.16



10.15



10.16

# Giving medicines and injections to babies and young children



## Attention

- One option may be to have parent give medicine with adequate training

## What you do

### For infants

- Use dropper or syringe to put one drop at a time onto tongue and wait for them to swallow — F 10.17
- *OR* use syringe nozzle between gums and cheek to give small amounts at a time — wait for swallow reflex
- *OR* if breast fed — use syringe nozzle between breast and side of baby's mouth to give small amounts at a time — F 10.18



10.17



10.18

### For young children

- Hold in positions shown — F 10.19, F 10.20, F 10.21
  - If kicking — put legs between carer's thighs and ask carer to hold tight
- For medicine — keep medicine cup to lips, so if child spits out syrup you can catch it and give it to them again



10.19



10.20



10.21

# Giving IV medicines by injection

---



Many different plastic connections are used to give IV medicines through cannula bung. These instructions are general principles only.

## Attention

- **Do not** give medicine if cannula site painful, red, swollen — resite cannula
- Some IV medicines should be given very slowly — check before use

## What you need

- Injection tray with 2 syringes
  - One with medicine to be given (drawn up ready)
  - One with IV flush (usually **normal saline**)
- Needles *OR* connections that go into IV bung, if needed
- Chlorhexidine 2% in isopropyl alcohol 70% wipes
- Medicine label — to be put on paediatric chamber or in-line burette

## What you do

- Find IV bung — under bandage or on IV line
- Clean bung with chlorhexidine 2% in isopropyl alcohol 70% wipe for 30 seconds, let dry
- If using IV cannula — flush to make sure cannula is clear
- If IV running — stop flow using plastic clamp
- Pierce IV bung with needle/connection on medicine syringe
- Give medicine at right speed
  - If using paediatric chamber — set drip rate you need, put medicine label onto chamber
- **Watch person closely** for signs of reaction to medicine or pain around cannula. If either happen — **stop immediately**
- When finished — take needle/connection out of bung
- If using IV cannula — use IV flush to clear cannula of medicine
- If using IV line — restart IV slowly to flush, then return to drip rate needed
- Stay with person for a few minutes to make sure they feel alright
  - Check temp, pulse, RR, BP

# Giving iron by IV infusion



## Attention

- **Procedure only applies to giving ferric carboxymaltose (eg *Ferinject*)**
  - Available in 2mL (100mg iron) and 10mL (500mg iron) vials
- Doctor, nurse, midwife or ATSIHP trained in life support must stay with person during infusion
- Have anaphylaxis kit and emergency equipment ready in case of reaction (rare)
  - If any signs of adverse reactions — **stop** infusion straight away
- Infusion pump must be used
- **Do not** use in first 3 months of pregnancy

## What you need

- Ferric carboxymaltose (eg *Ferinject*)
- Normal saline infusion bag
- 10mL normal saline ampoule
- Drawing up equipment — 10mL syringe, 18G needles x 2
- IV giving set
- IV infusion pump
- Additive labels/IV bag sticker
- Chlorhexidine 2% in isopropyl alcohol 70% wipes
- Tape
- Bluey
- Tourniquet
- IV cannula — 18G–20G for adult, 22G–24G infants and children
- See-through dressing

## What you do

- Check temp, pulse, BP, RR, cannula site
    - Before starting infusion
    - 5 minutes after starting infusion
    - Every 15 minutes during infusion
    - When infusion complete
  - If pregnant — also check fetal heart rate before starting and after procedure
- 
- Work out dose of ferric carboxymaltose, amount of normal saline needed, infusion rate
    - Adult— see relevant anaemia protocol
      - Adult ([CARPA STM p304](#))
      - Pregnant woman ([WBM p134](#))
    - Child — **medical consult**

- Ask another practitioner to check
  - Dose, infusion rate
  - That you have correct form of iron solution — **do not** use iron polymaltose
- Check vials have no sediment
- Wash hands and put on gloves
- Draw up dose of **ferric carboxymaltose**, remove needle
- Add dose of **ferric carboxymaltose** to correct sized **normal saline** infusion bag
  - Clean bung with chlorhexidine 2% in isopropyl alcohol 70% wipe for 30 seconds, let dry
  - Use new needle
- Tip bag up and down (invert) several times to make sure the contents are well mixed
- Fill out additive label and stick onto infusion bag
- Put together IV giving set, prime line with fluid, let out any air bubbles
- Attach giving set to IV infusion pump
- Put in IV cannula ([p84](#)), check and secure with tape
  - Flush with 5–10mL normal saline to make sure you are in vein. Should be no swelling above cannula site
- Connect and run iron infusion
- Put see-through dressing over cannula
  - Signs of irritation around cannula may mean dose or infusion rate needs to be changed — **medical consult** if not sure
- Person should stay at clinic for at least 30 minutes after end of infusion
  - Check temp, pulse, BP, RR before they leave clinic
  - If pregnant — also check fetal heart rate

# Giving oxygen

Table 10.1: Oxygen flow rates

Oxygen delivery system	Oxygen flow rate Infant under 1 year	Oxygen flow rate Child 1–9 years	Oxygen flow rate 10 years and over	Examples of medical conditions
Nasal prongs / cannula (not humidified)	1–2L/min	1–2L/min	2–4L/min	<ul style="list-style-type: none"> <li>• Bronchiolitis</li> <li>• Mild pneumonia</li> <li>• COPD</li> </ul>
	Target O <sub>2</sub> sats — 94–98%			
Simple mask (eg Hudson mask)	5–10L/min			<ul style="list-style-type: none"> <li>• Bronchiolitis</li> <li>• Pneumonia</li> <li>• Chest pain with hypoxia or breathlessness</li> <li>• Moderate asthma</li> </ul>
	Target O <sub>2</sub> sats — 94–98%			
Non-rebreather mask	10L/min	10–15L/min	15L/min or more	<ul style="list-style-type: none"> <li>• Critically ill but adequate breathing — shock, major trauma, sepsis</li> </ul>
	Target O <sub>2</sub> sats — 94–98%			
	Make sure flow from wall/cylinder to mask is enough to keep reservoir bag fully inflated during whole respiratory cycle (inspiration and expiration).			
Air-entrainment (venturi) mask	Variable L/min	Variable L/min	Variable L/min	<ul style="list-style-type: none"> <li>• COPD</li> <li>• Bronchiectasis</li> <li>• Morbid obesity</li> </ul>
	Target O <sub>2</sub> sats — 88–92%			
Bag-valve-mask (BVM)	8L/min	8L/min	15L/min	<ul style="list-style-type: none"> <li>• Respiratory arrest</li> <li>• Cardiac arrest</li> <li>• Inadequate spontaneous ventilation</li> </ul>
	Target O <sub>2</sub> sats — 100%			

## How much oxygen to give (adult and child)

- Important to check person's response to oxygen treatment often, and increase or decrease if needed. **Medical consult** if not sure
- If not breathing, or very poor respiratory effort — use bag-valve-mask at 8–15L/min
- If critically unwell — use non-breather mask at 10–15L/min
  - Aim for O<sub>2</sub> sats of 94–98%
- If condition such as chest pain or respiratory condition (eg pneumonia, asthma) — first use simple oxygen mask (eg Hudson mask) at 5–10L/min
  - Aim for O<sub>2</sub> sats of 94–98%
  - If improving — use less oxygen via nasal prongs

- If moderate/severe COPD — use nasal prongs or air-entrainment (venturi) mask and less oxygen
  - Aim for O<sub>2</sub> sats of 88–92%

## Oxygen delivery devices

### Nasal prongs/cannula — F 10.22

- Uses
  - Oxygen needed for long periods. Lets patient eat, drink, talk
  - Babies/young children with pneumonia who won't tolerate face mask
- Flow rate
  - 2L/min = 28% inspired oxygen concentration
  - 4L/min = 36% inspired oxygen concentration



10.22

### Simple mask — F 10.23

- Uses
  - Adults/older children with pneumonia or other moderate respiratory illness
- Flow rate
  - 5–6L/min = 40% inspired oxygen concentration
  - 7–8L/min = 60% inspired oxygen concentration
  - Give over 4L/min (child) or 6L/min (adult) to remove expired air from mask and prevent rebreathing of CO<sub>2</sub>
  - Giving over 10L/min will not increase percentage of oxygen given



10.23

### Non-rebreather mask — F 10.24

- Uses (for high flow oxygen)
  - Critically ill but adequate breathing — shock, major trauma, sepsis
- Flow rate
  - 15L/min = 85–90% inspired oxygen concentration
- Before using — make sure
  - Reservoir bag full
  - Mask seals properly around mouth and nose (strap tight)



10.24

### Air-entrainment (venturi) mask — F 10.25

- Uses
  - Acute exacerbation of COPD
- Flow rate
  - Gives 24%, 28%, 31%, 35%, 40%, or 60% inspired oxygen concentration
  - Oxygen must be set at recommended flow rate for required concentration
    - Flow rate listed on valve



10.25

**Bag-valve-mask — F10.26**

- Uses (for positive pressure ventilation)
  - Not breathing (apnoea), cardiac arrest, inadequate respiratory effort
- Flow rate
  - 15L/min = 90–100% inspired oxygen concentration
- Before using — make sure
  - Valve opens properly
  - Reservoir bag full
  - Mask seals properly around mouth and nose (essential)
  - Airway open (essential)

**10.26**

# Calculating medicine doses and drip rates

## Dose calculations

- Dosages often written as amount/kg/dose (eg 25mg/kg/dose)
  - This means a dose is made up of 25mg for each kg of body weight
- **Dose needed = amount of mg/kg x weight of person in kg**
  - Example:
    - Amount in mg/kg is 25mg/kg, weight of person is 12kg
    - Dose needed = 25mg/kg x 12kg = 300mg

**Table 10.2: Calculating doses**

TABLETS	
Number of tablets needed = dose needed [a] ÷ strength of tablet [b]	<i>Example:</i> Dose needed is 15mg [a] Strength of tablet is 10mg [b] <b>Number of tablets =</b> 15mg ÷ 10mg = 1.5 (1½) tablets
MIXTURES OR INJECTIONS — small volume IM or IV push	
Volume needed (mL) = (dose needed [a] ÷ strength of mixture or injection [b]) x volume this strength is in mL [c]	<i>Example 1:</i> Dose needed is 300mg [a] Strength is 250mg/5mL [b/c] <b>Volume needed =</b> (300mg ÷ 250mg) x 5mL = 1.2mg x 5mL = 6mL
	<i>Example 2:</i> Dose needed is 20mg [a] Strength is 30mg/mL [b/c] <b>Volume needed =</b> (20mg ÷ 30mg) x 1mL = 0.67mg x 1mL = 0.67mL

**Note:** Dosage examples given in mg, but same formulas can be used for other strengths (eg microgram). Must use same unit for strength and for dose needed (eg mg and mg, microgram and microgram).

## Quick calculations

- **Dose needed** = amount of medicine per kg x body weight (kg)
- **Number of tablets needed** = dose needed ÷ strength of tablet
- **Volume of mixture or injection needed (mL) =**  

$$\frac{\text{dose needed}}{\text{strength of mixture or injection}} \times \text{volume this strength is in (mL)}$$

**Table 10.3: Calculating drip rates and infusion rates for IV fluids**

<b>GRAVITY ADMINISTRATION SET</b>	
<b>Remember:</b> Check drop rate on infusion set packet (eg 20 drop/mL, 60 drop/mL)	
Rate (drops/min) = (total volume of solution (mL) [a] x number of drops/mL [b]) ÷ time in minutes [c]	<i>Example:</i> Volume of fluid to give is 1000mL (1L) [a] Set delivers 20 drop/mL [b] Time to give is 5 hours = 5 x 60 = 300 minutes [c] <b>Rate</b> (drops/min) = (1000mL x 20 drops/mL) ÷ 300 min = 20,000 drops ÷ 300 minutes = 67 drops/min
<b>INFUSION PUMP — setting dials</b>	
<b>Remember:</b> Always check instructions for your machine	
Rate (mL/hr) = volume of solution (mL) [a] ÷ time in hours [b]	<i>Example:</i> Volume of medicine is 5mL, volume of fluid is 1000mL (1L). Total volume of solution to give is 1005mL [a] Time to give is 5 hours [b] <b>Rate</b> (mL/hr) = 1005mL ÷ 5 hours = 201mL/hr

## Units and concentrations

- 1 litre (L) = 1000 millilitres (mL)
- 1 milligram (mg) = 1000 micrograms
- 1 gram (g) = 1000 milligrams (mg)
- 1% solution = 1g of solute dissolved in 100mL of solution
- 1:1000 = 1g solute dissolved in 1000mL of solution = 1mg solute dissolved in 1mL of solution

## Converting units

- Grams (g) to milligrams (mg) = g x 1000
  - OR move decimal point 3 numbers to right
- Milligrams (mg) to grams (g) = mg ÷ 1000
  - OR move decimal point 3 numbers to left
- Milligrams (mg) to micrograms = mg x 1000
  - OR move decimal point 3 numbers to right
- Micrograms to milligrams (mg) = microgram ÷ 1000
  - OR move decimal point 3 numbers to left
- Litres (L) to millilitres (mL) = L x 1000
  - OR move decimal point 3 numbers to right

# Inhalation devices for respiratory medicines



- See *National Asthma Council* website ([www.nationalasthma.org.au](http://www.nationalasthma.org.au)) for
  - Videos and guides demonstrating use of commonly used delivery devices
  - Asthma and COPD medicines chart

## Attention

- Help person become familiar with their own medicine
- Always check package insert for specific instructions about person's device
- Make sure your clinic always has emergency supply of extra inhalation devices for people living and travelling in remote and rural communities
- If person's condition doesn't improve with normal medicine — follow **asthma or COPD action plan**
  - If they don't have plan — talk with health team about developing one

## Puffer (metered dose inhaler/MDI)

Aerosol inhaler that gives medicine straight to airways as fine mist — F 10.27. Many different medicines in aerosol form.



10.27

## Attention

- Best if used with a spacer ([p364](#))
- Tell person — when device empty
  - Throw away in sealed bag or container
  - **Do not** throw on fire. Pressurised — could explode
- To clean — take metal canister out. Wash plastic holder/mouthpiece in warm soapy water, rinse, air dry. Put canister back
  - Some inhalers (eg *Intal*, *Tilade*) need daily washing to stop them clogging

## What you do

### Using without a spacer

- Take cap off mouthpiece, shake inhaler for 10 seconds
- Breathe out completely, tilt head back slightly
- Put mouthpiece between teeth without biting, close lips to form good seal
- Put finger on top of canister, press once firmly and **at same time** take a slow deep breath all the way in
- Hold breath for 10 seconds, while taking mouthpiece out of mouth
- Breathe out slowly away from mouthpiece
- If another dose (puff) needed — wait 1 minute then repeat
- Put mouthpiece cap back on, store inhaler in cool place

### Using with a spacer

- See *Spacer devices for respiratory medicines* ([p364](#))

## Turbuhaler

Dry powder inhaler — F 10.28.

### Attention

- **Do not** get *Turbuhaler* wet
- **Do not** blow into *Turbuhaler*. Breathe out away from mouthpiece
- To clean — use dry clean cloth to wipe device and mouthpiece. **Do not** get wet



10.28

### What you do

- Remove cover, check dose counter
- Hold *Turbuhaler* upright while priming — twist grip right around and then back until click heard
- Breathe out away from mouthpiece
- Put mouthpiece between teeth without biting, close lips to feel good seal
- Breathe in strongly and deeply, remove inhaler from mouth
- Breathe out gently away from mouthpiece, replace cover

## Nebuliser

Used in clinic with oxygen for severe and life threatening asthma — F 10.29.

### Attention

- Relievers (bronchodilators) work as well with puffer and spacer as with nebuliser. Only use nebuliser for severe cases
  - 12 puffs salbutamol = 5mg salbutamol



10.29

### What you do

- Check strength of medicine in nebule to be used with nebuliser — most come in more than one strength
- Different nebuliser solutions can be mixed in bowl (eg salbutamol with ipratropium)
- Dilute with **normal saline** if needed

## HandiHaler

Used to deliver tiotropium powder from capsule — F 10.30.

### Attention

- **Do not** swallow capsules. Breathe in contents using *HandiHaler* — F 10.30
- **Do not** breathe into device
- To clean — wipe daily with clean dry cloth. Wash complete device as needed, allow to air dry



10.30

## What you do

- Open cap, open mouthpiece, put fresh capsule in chamber
- Close mouthpiece until it clicks, to pierce capsule
- Breathe out gently away from mouthpiece
- Put mouthpiece between teeth without biting and close lips to form good seal
- Breathe in slowly and deeply, so capsule vibrates
- Hold your breath while taking mouthpiece out of your mouth
- Breathe out gently away from mouthpiece
- Put mouthpiece back into mouth and repeat
- Open mouthpiece, remove used capsule, close mouthpiece and cap

## Accuhaler

Dry powder inhaler — F 10.31.

### Attention

- Hold accuhaler horizontally when loading and taking dose, or medicine may be dislodged
- **Do not** breathe into device or leave cover open — moisture will get in
- To clean — use dry clean cloth to wipe device and mouthpiece. **Do not** get wet



10.31

## What you do

- Check dose counter
- Open using thumb grip
- Holding horizontally, load dose by sliding lever until it clicks
- Breathe out gently away from mouthpiece
- Put mouthpiece in mouth and seal lips, breathe in steadily and deeply
- Hold breath for about 10 seconds or as long as comfortable
- While holding breath, remove inhaler from mouth
- Breathe out gently away from mouthpiece
- Close cover to click shut

## Ellipta

Dry powder inhaler — F 10.32.

### Attention

- Every time you slide cover down a dose is loaded
  - Dose is lost if you open and close cover without inhaling the medicine
- **Do not** breathe out into device
- Dispose of device 6 weeks after opening
- To clean — use dry clean cloth to wipe device and mouthpiece. **Do not** get wet



10.32

## What you do

- Check dose counter
- Slide cover down to see the mouthpiece. Should hear a click
- Breathe out fully away from mouthpiece
- Close your lips firmly around mouthpiece so lips fit over curved shape of mouthpiece
  - Don't block air vents with your fingers
- Take 1 long, steady, deep breath in through mouth
- Remove inhaler from your mouth and hold your breath for 3–4 seconds
- Breathe out slowly and gently away from mouthpiece
- Slide cover up over the mouthpiece
- If another dose (puff) needed — wait 30 seconds then repeat
- After use — rinse mouth thoroughly with water then spit out

# Spacer devices for respiratory medicines



Helps person using puffer (metered dose inhaler/MDI) (p360) to get correct dose of medicine. Encourage for all users, especially children and the elderly. Reduces side effects (eg oral thrush, hoarse voice).

- Puffer and spacer as effective as nebulisers for reliever medicines

## Attention

Everyone using a spacer needs to know how to make bush spacer (p365) — may save a life.

- If inhaler won't fit spacer — use a different spacer or ask your pharmacist about a mouthpiece adapter
- Keep spacers of each size in clinic for people to practise with

**Remember:** Only spray 1 puff at a time into spacer.

- Each puff is sprayed into spacer and inhaled for a few breaths before next puff

All spacers (including bush spacers) should be

- **Primed before first use** — reduces static charge on inside so medicine won't stick, works more effectively
  - Wash spacer in warm water with a little dishwashing detergent
  - **Do not** rinse
  - Leave to air dry
- **Maintained**
  - Wipe mouthpiece/mask with damp cloth — daily or after each use
  - Wash in warm soapy water, don't rinse, leave to air dry — once a month
    - Don't wash more often or more medicine will stick to walls of spacer

## What you need

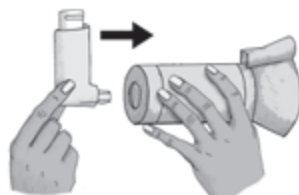
- Spacer — check best size for person, one they will use/carry with them
- Person's puffer/aerosol inhaler with prescribed medicine
- Mouthpiece adaptor if needed



10.33

## What you do

- Take mouthpiece cap off puffer, shake puffer for 10 seconds — F 10.33
- Put puffer mouthpiece into hole in spacer opposite spacer mask or mouthpiece — F 10.34
- Hold spacer long ways (horizontally) with one hand and puffer with other hand — F 10.35
- Seal lips around spacer mouthpiece, or fit mask



10.34

- Press puffer canister once only — F 10.36
- Take a few breaths — F 10.37
- Do this for as many puffs as prescription says
- Take puffer off spacer, put cap back on puffer mouthpiece



10.35



10.36



10.37

## To make emergency bush spacer

### What you need

- 1 x 500–600mL plastic water or soft drink bottle — F 10.38
- Scissors or soldering iron

### What you do

- Soften bottom plastic soft drink/water bottle in hot water
- Cut or melt hole the same size and shape as inhaler mouthpiece into bottom of bottle
- Fit inhaler into hole — F 10.39. Use as above



10.38



10.39



# 11 Pathology

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# Storing and transporting pathology specimens



## Attention

- **To collect, store and transport pathology correctly you MUST be in contact with your laboratory** — visit them when in town and find out about particular issues for your region or clinic
- Remember:** All pathology specimens must be treated as a **biohazard** during collection, storage and transport. Always wear gloves and goggles.

- **Do not** collect specimens
  - That are not needed (eg test already done in past 3 months)
  - That can't be transported to pathology in a reasonable time
- **Collection of pathology is part of providing a service to patients** — take care to do it right
  - Right person, Right test, Right tube, Right process, Right storage, Right transport, Right recall system
    - Results need to be followed up whether you are there or not — especially abnormal results
- All specimens **must be labelled correctly** or laboratory will throw them away
- Must use packing and specially made container to transport specimen samples by air (IATA packing instructions 650)
  - Commercial airlines and air retrieval services must abide by these regulations
  - Check and follow your local protocols, or courier may refuse to take them
- If samples need to be transported under refrigeration — try to collect 6 hours beforehand to allow time for temperature to drop

## What you do

- Label all specimens
  - Follow instructions on sticky label on tube/swab container/slide holder
  - Minimum information needed
    - Full name including skin/bush names etc as recorded on file notes
    - Date of birth
    - Exactly what specimen is (eg blood, wound swab)
    - Date specimen collected

**Note:** If using pre-printed identification labels — make sure you add **exactly** what the specimen is (eg swab from left eye)

- Make sure all screw/push tops are firmly in place
- All specimens are stored in sealed biohazard plastic bag inside sealed container
  - Store as needed at room temperature *OR* refrigerated (in fridge) *OR* frozen (in freezer)

- Completed pathology forms must be kept with specimens, but not in same compartment in case of leakage. Use plastic sleeve on side of pathology bag

### To transport specimens

- Fridge or freezer specimens in sealed bags**
  - Put absorbent material (such as blueys) in biohazard bags with specimens in case of leakage — F 11.1
  - Put into recommended transport container/esky with wrapped ice brick in base and another on top
  - Seal lid as instructed or with waterproof tape
- Room temperature specimens in sealed bags**
  - As above — without ice bricks
- Label all containers clearly with**
  - Place, date, time of packing, and destination
  - Biohazard sticker (in Australia UN3373) — F 11.2. If no sticker — write it in big letters using black marker
- Make sure courier knows what contents are — so they will not be left in a hot place, will be delivered to laboratory as soon as possible



11.1



11.2

# Collecting blood samples



Taking blood samples using needles, cuvettes, test strips etc.

## Attention

*Vacutainer* barrel and needle safest way to take blood — helps prevent needle stick injuries.

- Warm cloth will improve blood flow to needle site
- **Do not** use cuff or tourniquet for more than 1 minute
  - Instead of using tourniquet on small children, can ask helper to squeeze evenly around limb with hands
- If person had mastectomy or fistula — use other side
- Always let skin dry completely after wiping with alcohol

**Note:** If you don't have *Vacutainer* equipment, or veins thin or difficult to find — use ordinary 21G needle and syringe, or butterfly needle. Both hard to control with wriggling child, you will need help.

## What you need

- Tourniquet, blood pressure cuff, or helper's hand
- Alcohol wipes
- *Vacutainer* barrel and needle
  - *OR* syringe and 21–25G needle
  - *OR* butterfly (scalp vein) needle, 21–25G with screw-top bung
- Blood tubes — type depends on test/s
- Tray for standing tubes upright
- Gauze swab or cotton wool ball
- Small sticking plaster
- Centrifuge for spin (if needed)
- Sharps container

## What you do

- If taking more than one sample — follow Table 11.1

### 4 ways to take blood from vein

#### 1. Using *Vacutainer* needle and barrel

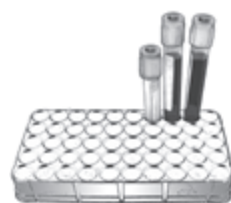
- Connect needle to barrel — F 11.3
- Choose site
  - If elbow crease — put arm straight, rest on pillow/table covered with bluey
- Put on tourniquet *OR* squeeze with helper's hand *OR* use adult/paediatric cuff inflated to 80mmHg



11.3



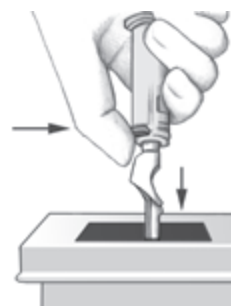
- Some blood tubes need mixing straight away, so invert tube once and stand up in tray — F 11.6 before putting next tube in barrel
- Do this until all tubes have been filled
- Take last tube out of barrel — unless also making a blood slide (p374)
- **Then** undo tourniquet
- Now take needle out of vein
- Put pressure over bleeding site using dry gauze swab or cotton wool ball
- Ask person to press on site. If using arm — keep straight to prevent bruising
- **Do not** take used needle off a syringe or *Vacutainer* barrel with your fingers
  - Use needle release device if *Vacutainer* has one — F 11.7, F 11.8
  - *OR* use groove at top of sharps container to unwind or pull off needle
  - *OR* put both syringe or barrel and needle straight in to sharps container
- When bleeding from needle site stopped, put on small sticky plaster or cotton wool ball and paper tape



11.6



11.7



11.8

## 2. Using butterfly needle

- See *Butterfly needle* (p86)

## 3. Using ordinary needle and syringe

- Connect needle and syringe — size according to vein
  - 25G for small children, 21G for adult
- Put needle into vein. See *Using Vacutainer needle and barrel* (p370)
- Take amount of blood you need to fill blood tubes, then undo tourniquet
- Take out needle, put pressure over bleeding site using gauze swab or cotton wool ball, ask person to press on site
- Carefully push needle through rubber stopper of first tube. Blood will flow into tube by itself
- Wait until flow stops, take needle out, invert tube, stand tube upright in tray. Do this until all tubes filled
- When bleeding from needle site stopped, put on small sticky plaster or cotton wool ball and paper tape

## 4. Using needle — good for small veins in children or the elderly

- Take rubber stoppers off tubes (be careful not to tip them), stand in tray
- Put needle into vein — F 11.9. See also *Using Vacutainer needle and barrel* (p370)



11.9

- Let blood drop into tube — F 11.10 until you have amount needed
- Undo tourniquet, take out needle and press firmly on site with cotton wool ball
- Put stoppers back into tubes, make sure they are tight, invert tubes, stand tubes upright in tray
- When bleeding from needle site stopped, put on small sticky plaster or cotton wool ball and paper tape



11.10

### For all 4 methods

- Make sure all tubes are correctly labelled
- Spin (centrifuge) tubes if needed, put in pathology bag
- Check pathology form/s, put in bag with labelled tubes
- Store and transport as needed. Some samples may need to be refrigerated

## Common blood tests

### Whole blood (eg FBC)

- Use EDTA tubes, usually purple or pink top
- As soon as blood taken, mix well by inverting tube
- Store and transport under refrigeration — try to send same or next day

### Plasma

#### • PTH

- Use special white top PPT tube containing EDTA
- Mix well by inverting tube several times
- If more than 1 day delay getting tube to pathology — spin (centrifuge) tube
  - **Do not** separate or freeze the plasma
- Collect 1 SST tube for calcium testing at the same time — even if not requested

#### • INR

- Use blue sodium citrate tubes
- For test to work properly you **must**
  - Collect right amount of blood — fill to line indicated on tube
  - Make sure tube is in date — old tubes are not accurate
- If using butterfly needle —
  - First draw blood down empty butterfly tubing using any tube (plain one will do) then discard tube. Otherwise some blood remains in butterfly tubing and you won't collect right amount
  - Change to blue top tube
- As soon as blood taken, mix well by inverting tube
- You have 4 hours to get blood to pathology. If any chance of delay — sample must be spun, plasma separated and frozen
  - Spin (centrifuge) as soon as you can for 20 minutes
  - Lift **carefully** out of centrifuge so plasma stays separated

- Take tube top off, gently pipette clear yellowy plasma into 5mL plain screw cap tube. Be careful not to collect any red cells. If you do — put plasma back, re-spin
- To protect label during freezing — put sticky tape over label *OR* cut finger off disposable rubber glove and put 5mL container inside
- Put tube into yellow top urine jar, fill with cold water, freeze
- Transport tube in jar between 2 ice bricks — **must stay frozen in transit**

### Serum separated test (eg UEC)

- Use plain/white top or SST/yellow top (gel-filled) tubes
- **After collection** stand bloods for at least 10 minutes. Bloods need to stand upright first to clot before being spun or may get false results
- **Spin** (centrifuge) at 4200RPM for 10 minutes until serum completely separated from gel. Properly separated serum/cells in tubes will last up to 1 week if stored correctly
- **Store** in fridge and transport with ice bricks
- If you can't spin — stand or hold tube upright, pipette off serum and freeze, see INR ([p373](#)). Transport frozen

### Blood for testing glucose levels, including OGTT

- Use sodium fluoride–potassium oxalate/grey top tubes
- As soon as blood taken, mix well by inverting tube 6–8 times
- Store and transport under refrigeration as soon as you can

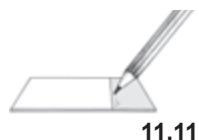
## Making a blood slide

### What you need

- Pencil and pen
- Clean, dust free glass slide with frosted end
- Another slide to use as spreader
- Slide holder

### What you do

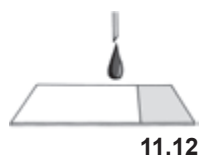
- Label slide holder with pen, label frosted end of slide with pencil — F 11.11



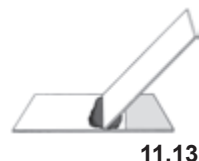
11.11

### For thin film

- Need enough blood to make thin 4cm smear
- **If using Vacutainer** — leave tube on needle as you take it out of arm, drop blood from needle tip onto slide — F 11.12
- **If using syringe** — put drop of blood from needle onto slide before filling tubes
- Holding spreader at 45° angle, gather blood into one spot — F 11.13
- Using **just one movement**, push blood steadily back down slide — F 11.14



11.12



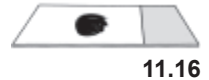
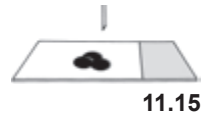
11.13



11.14

**For thick film (eg malaria parasites)**

- Using *Vacutainer* or syringe put 3 drops of blood on slide — 1 in middle, 1 on either side in a triangle shape — F 11.15
- In 1 circular movement, use corner of spreader to join drops up and make round shape about 1cm (10mm) across — F 11.16

**For both thin and thick smear**

- **Leave slide to air dry**, put into slide holder
- Make sure it is correctly labelled
- Store and transport under refrigeration

**Blood cultures****Attention**

If collecting blood cultures to send to hospital with person — write in letter/referral, ring hospital to let them know it is coming.

- Blood culture bottles for adults may be larger than those for small children, depending on brand — need to stock both
- Store bottle in cool place, less than 25°C (eg pharmacy or fridge)
- On each bottle, check use-by/expiry date, colour of fluid, rubber stopper intact
- Use new, clean needle for each bottle

**What you need**

- 2 blood culture bottles (10mL or child size), aerobic and anaerobic
- Alcohol swab
- 20mL syringe
- 3 x 21G needles — 1 for taking blood, other 2 for putting blood into 2 bottles
- Artery forceps to take needle off syringe
- Tray for standing bottles upright

**What you do**

- Take off metal or plastic seals/caps
- Wipe rubber stoppers with alcohol wipe, let dry completely
- Choose injection site, take blood using 20mL syringe and 21G needle ([p372](#))
- Take enough blood for both bottles — about 15mL (6–8mL each) for 10mL bottles
- Using forceps or sharps container lid device, carefully take needle off syringe. Don't contaminate end of syringe. Put needle in sharps container
- **Put on new sterile 21G needle**, pierce rubber stopper to fill first blood culture bottle. If bottle not vacuum sealed — push blood into bottle **gently**
- **Change needle again**, fill second bottle the same way

- Mix well by inverting each bottle, stand upright in tray
- Make sure bottles are correctly labelled
- Store and transport at room temperature — remember to send with person in emergency

### Oral glucose tolerance test

75g oral glucose tolerance test (OGTT).

#### Attention

**Remember:** People who are acutely unwell (eg have a fever) may show incorrect reading.

- Record any medicines person is taking, these may affect test
- Do **fasting test** in morning. Tell person
  - Not to eat or drink anything except water for 8–12 hours before test
  - They will have to wait in clinic for 2 hours
  - Not to eat or smoke during test — water is OK, but no tea, coffee, snacks
  - To rest for 30 minutes before test, keep resting during test

#### What you need

- Pathology form
- Blood collection equipment ([p370](#))
- Calibrated glucose meter
- Pre-mixed solution containing 75g glucose *OR* 75g Glucose Challenge solution in 300mL water
- 2–3 grey top/sodium fluoride–potassium oxalate tubes, label with time collected and
  - Fasting or 0 hour
  - At 1 hour, if needed (eg 24–28 weeks pregnant)
  - At 2 hours

#### What you do

##### Collecting blood — each time

- Collect blood specimen in tube, add time taken to label
- Put drop of blood from tip of needle on glucose meter testing strip to check blood glucose levels. If higher than 12 mmol/L — see *Testing for diabetes mellitus* ([p381](#))
- On pathology form — record glucose meter BGL test result, note if fasting

##### Conducting test

- Take first blood specimen in tube labelled ‘Fasting’ or ‘0 hour’
- Give person glucose solution to drink in front of you. Should drink it all within 5 minutes
- At 1 hour if needed (eg 24–28 weeks pregnant), take second blood specimen in ‘At 1 hour’ labelled tube

- Mix well with oxalate by inverting 5–10 times
- At 2 hours, take second/third blood specimen in tube labelled 'At 2 hours'
  - Mix well with oxalate by inverting 5–10 times
- Give person a cup of tea and something to eat

**Then**

- Make sure tubes are correctly labelled
- Store and transport blood tubes under refrigeration

# Collecting blood from babies and children



## Attention

### 3 ways to collect blood from babies and children

- Skin prick — heel or finger
- From arm, hand, foot, ankle site using *Vacutainer*, ordinary needle and syringe, butterfly needle — see *Collecting blood samples* (p370)
- From scalp or jugular vein using butterfly needle

## Skin puncture — heel or finger

### Attention

**Do not** do finger prick tests on children less than 6 months old — use heel instead.

- Make sure finger or heel pink and warm so blood flows easily — keep lower than body
- If cold and blood won't flow — warm finger or heel with warm water
- **Do not** squeeze/milk heel or finger — can change results of some tests. Just let blood drip out
- See F 11.17 for correct place to prick heel or finger

### What you need

- Someone to hold child
- Lancet or lancet pen to prick skin
- Alcohol wipe
- Depending on test — cuvette, collection blotter, test strip or microtainer blood tubes (for small babies)
- Gauze swab or cotton wool ball
- Small sticking plaster



11.17

### What you do

- Choose site — see F 11.17
- Wipe site with swab and let dry completely
- Firmly hold finger/heel, prick with lancet
- Wipe away first drop of blood with gauze swab or cotton wool ball

**Note:** Pressing **firmly against skin** will help get a better puncture and blood flow

### For haematology tests

- Make a blood slide (p374)
- If more than 1 day delay getting blood slide to pathology — also take tube of blood and send in with slide

**For microtainer**

- Hold end of vent (on top of tube) up to blood drop on finger/heel, wait until blood flows in. Stop for a few seconds, then do it again
- Roll microtainer between your palms to mix anticoagulant with the blood, so it doesn't clot

**For test strip/blotter**

- Put single drop of blood on strip/blotter. Make sure test area doesn't touch skin. For blotter, fill circles using as many drops as needed
- Gently press puncture site with dry gauze swab or cotton wool ball for a few seconds, cover with sticking plaster if needed

**Using cuvette**

- See *Testing haemoglobin* (p383)

**Collecting jugular vein blood****Attention**

- Can be done safely on children of any age so long as vein can be seen clearly and child can be held securely
- Wrap child tightly (p82)
- Make sure you explain procedure carefully to carer. Can be frightening to watch, child will cry. Carer may want to wait outside
- Child's crying will make vein easier to see
- Puncture site usually bleeds heavily after procedure, hold dry gauze swab or cotton wool ball firmly against it for about 2 minutes

**What you need**

- Helper to wrap and hold child
- Sterile dressing pack
- Alcohol swab
- 5–10mL syringe
- 23G butterfly needle with screw bung
- Blood tubes — type depends on test/s
- Tray for standing tubes upright
- 2 dry gauze swabs or cotton balls
- Tape (may need)
- Small sticky plaster
- Nerves of steel (a steady hand)

## What you do

- Lay out dressing pack and equipment
- Wipe site with alcohol wipe, let dry completely
- Put on sterile gloves
- Ask helper to lie child on couch/bed with head tipped slightly downward over a pillow. Helper holds child's hands down and head back — F 11.18
- Wait for jugular vein to swell — usually very easy to see
- Make sure bung is screwed up tightly before putting needle into vein
- Fold up wings of butterfly to get a good grip
- Hold needle, bevel upward, parallel to skin, then angle down slightly and put into vein — F 11.18
- Unscrew bung on plastic tubing — blood **only flows back into tubing when bung unscrewed**. Don't forget this or you might think you are in wrong place
- Take screw top off bung, connect syringe. May need to tape butterfly to skin to stop any movement
- Take enough blood for all tests. If blood cultures needed — take separate tube of blood and give to helper to process in culture bottles
- Use dry gauze swab or cotton wool ball to apply firm (but not painful) pressure as needle is taken out
- Sit child up, comfort them while pressing on dry swab for at least 2 minutes
- **Carefully** push needle through rubber stopper of first tube. Blood will flow into tube by itself
- Wait until flow stops, take needle out, invert tube, stand tube upright in tray. Do this until all tubes filled
- Make sure tubes are correctly labelled
- Store and transport blood tubes under refrigeration. Store blood culture at room temperature



11.18

# Testing for diabetes mellitus — blood glucose and HbA1c



## Attention

**Do not** do finger prick tests on children under 6 months — use heel instead.

- Make sure you know how your machines work, how to prepare sample and read result. Read manufacturer's instructions
- Finger/heel must be very clean and dry
- Let blood drop form on its own, or apply gentle pressure if needed. Squeezing will give incorrect results

## Testing BGL with glucose meter

### Attention

- Work through these steps when teaching person to self-monitor BGL with a glucose meter

### What you need

- Warm water and soap to wash finger/heel
- Test strip
- Glucose meter — calibrated if needed
- Lancet and lancet devices *OR* single use lancet
- Gauze swab or cotton wool ball
- Small sticking plaster



### What you do

- Wash finger/heel with soap and warm water, rinse, dry well. Must be completely dry
- Hold finger/heel pointing downward, prick with lancet — F 11.19
  - Pressing firmly against skin beforehand may help get better puncture and blood flow
- Let a drop of blood form
- Put test strip in glucose meter and wait for machine to register it is ready for blood
- Being careful not to touch skin — touch test strip to drop of blood and let strip fill completely
- Put firm pressure on puncture site to stop bleeding, put on sticking plaster
- If screen shows an error *OR* very high or low reading — do test again

## Testing HbA1c with point of care (POC) test

### Attention

- Only staff who have been trained should do POC testing

### What you need

- Warm water and soap to wash finger
- POC testing machine
- HbA1c testing cartridges
- HbA1c sample holder
- Single use lancet *OR* lancet and lancet device
- Tissue
- Cotton wool

### What you do

- Have person wash hands with soap and water, dry thoroughly
- Prick finger — F 13.19. Let drop of blood form
- Touch tip of sample holder to drop of blood until capillary tube is completely full
- Wipe away any extra blood on outside of tube with edge of a folded tissue
- On flat surface, push sample holder into testing cartridge until it clicks into place — curved edge must face outward
- When machine shows 'ready' — calibrate cartridge. Run bar code down channel
- Open door of machine, put testing cartridge into slot — bar code must face right. Press down on cartridge with 2 fingers until it clicks into place
- Result will display on screen in about 6 minutes (depending on model of machine)

# Testing haemoglobin



Testing Hb with haemoglobinometer and cuvette — adults and children.

## Attention

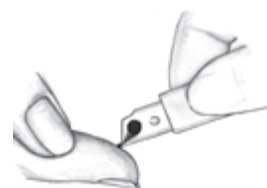
- **Do not** do finger prick tests on children under 6 months — use heel instead. For healthy children first routine Hb test is at 6 months
  - **Do** ask for help from a more experienced practitioner if you are having trouble getting enough blood to do this procedure — you need a full drop of blood for the test to work properly
  - Follow instrument manufacturer's recommendations
- Finger/heel must be very clean and dry — See F 11.20 for correct place to prick
    - Use third or fourth (middle or ring) finger — skin is not as tough as on thumb and index finger
  - Let blood drop form on its own. **Do not** squeeze
  - Haemoglobinometer reads Hb by colour of blood. If you squeeze to get blood you have extra serum, if skin left wet you have extra water — **reading will be wrong**
  - For reliable results use cuvettes from bottle
    - Opened less than 3 months ago. Write use-by date on bottle when you open
    - With lid firmly on. If lid off — throw bottle away



11.20

## What you need

- Lancet
- Swab and/or warm water to clean finger/heel
- Calibrated haemoglobinometer
- Clean cuvette
- Clean gauze swab or cotton wool ball
- Small sticky plaster



11.21

## What you do

- If site dirty — wipe with swab and/or clean water, **let dry completely**
- Loosely hold finger or heel pointing downward — **do not** squeeze
- Prick finger or heel using lancet. Let drop of blood form
  - Pressing firmly against skin can give better puncture and blood flow
- Wipe away first 3 drops of blood
- Let fourth drop form, put cuvette tip into middle of drop, let cuvette fill by itself — F 11.21. Blood will flow easily into collection area
- If drop not big enough the first time — **do not add to it**. Start again with different finger or heel

- Check there are no air bubbles
- Wipe excess blood off outside of cuvette, quickly put into Hb machine, wait for reading
- Put firm pressure on puncture site to stop bleeding, put on sticking plaster
- If screen shows error *OR* unexpected reading — do test again. May be bubble in blood in cuvette chamber or dirty monitor in machine
  - If still unsure about result — recalibrate machine or take venous blood

# Collecting body fluids, viral cultures, skin specimens

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## Collecting sputum specimens

### Attention

- **Remember, fresh is best! Send to town within 3 days (72 hours)**
- **Sputum** is thick and slimy — coughed from deep in throat and lungs
  - If specimen thin and watery or contains bits of food — throw away
- Take **3 samples over 24 hours** (morning, afternoon and morning) for
  - Cytology for cancer testing
  - AFB for tuberculosis (TB) testing

### What you need

- Sterile specimen jars

### What you do

#### For MC&S and/or bacteriology (1 sample)

- Label specimen jar 'MC&S' or 'bacteriology'
- Ask person to take several deep breaths, cough hard and spit into specimen jar. Do first thing in morning, or at time of consultation if urgent
- Store and transport at room temperature — within 3 days (72 hours)

#### For AFB or cytology (3 samples)

- Give person 3 specimen jars labelled (AFB or cytology)
  - Day 1 — Morning
  - Day 1 — Afternoon
  - Day 2 — Morning
- Ask person to take several deep breaths, cough hard and spit into specimen jar
- **AFB**
  - Keep specimens out of sunlight. If room bright — put in brown paper bag then in biohazard bag
  - Store and transport at room temperature within 3 days (72 hours)
- **Cytology**
  - Store and transport **under refrigeration** within 3 days (72 hours)

## Viral culture/smear

### Attention

- Keep viral collection kit in fridge. Check use-by date and colour, should be pink. If yellow — contaminated or out of date

## What you need

- Viral collection kit — cotton swab, glass slide and holder, viral transport medium (VTM), sterile No. 23 scalpel blade
- Pencil and pen

## What you do

- Label glass slide with pencil, label transport medium container with pen
- Lift top off blisters, pustules or scabs with point of scalpel blade
- Rub base of sore (lesion) with cotton swab, then roll swab onto 2 wells (indents) on glass slide
- Let swab air dry, put into VTM
- Check slide is correctly labelled
- Store and transport VTM at room temperature
- Store and transport slide under refrigeration

## Skin scrapings

### Attention

- To find scabies mite you need to find burrows and track marks
- Sores usually called scabies don't contain mite or its eggs — they are part of the allergic reaction

## What you need

- Pencil and pen
- Glass slide and holder
- Blunt blade or wooden spatula
- Paraffin oil
- Magnifying glass

## What you do

- Label glass slide with pencil, label holder with pen
- **Do not** scrape sore/pustule
- Use magnifying glass to find burrow and track mark sites
  - Scrape firmly from edge of site, collect as much skin as possible
  - May have to scrape hard to take off top of lump
  - Keep scraping until tiny flecks of blood are seen
- Repeat in at least 3 different places
- Put scrapings onto slide, leave to air dry, cover with a few drops of paraffin oil
- Check slide is correctly labelled
- On pathology request form — 'Scabies microscopy'
- Store and transport at room temperature

## Fungal lesions

### What you need

- Yellow top (urine) container, labelled
- Pen
- Sterile scalpel blade

### What you do

- With blade at right angles to skin, scrape scaly edge of sore/lesion. Hold open container underneath to catch flakes
- For large or multiple sores/lesions scrape in several places
- Put lid on container, check it is correctly labelled
- Store and transport at room temperature
- On pathology request form — 'Fungal M&C on skin scrapings' can also request 'Scabies microscopy' if suspected

# Collecting swabs



## Making slides

### Attention

- Take slides out of holders, make sure they are 'frosted side up'
- Write on frosted end of glass slide **in pencil** — pen ink will rub off or smear, fixative spray will wash ink off
- Be gentle — pressing too hard or rubbing backward and forward can destroy microscopic cells
- Make sure slides are dry before putting back into holders and snapping them shut — use rubber band or tape if catch won't hold

### What you need

- Clean glass slide with frosted end
- Sharp lead pencil, pen
- Cardboard or plastic slide holder
- Swab

### What you do

- Label frosted end of slide with pencil, label slide holder with pen
- Take specimen, gently **roll swab once only** along glass slide — F 11.22, F 11.23. Don't press down or rub backward and forward
  - **Always leave to air dry**
- When dry, put slide into holder, secure catch. Make sure slide correctly labelled



11.22



11.23

## Wound swabs

### What you need

- Sharp pencil, pen

### MC&S

- Transport medium swab
- 0.5mL sterile **normal saline**
- Glass slide with frosted end, slide holder

### NAAT/PCR

- *Aptima* or sterile dry swab

### What you do

- Label frosted end of slide with pencil, label slide holder and swab container with pen

**MC&S**

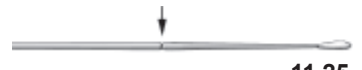
- If wound dry (no pus) — wet tip of swab with sterile **normal saline**
- Starting at centre of wound, roll dry swab gently to edges, collecting any discharge on the way
- Gently **roll** swab **once** along glass slide — F 11.22 (*p388*), leave to air dry
- Put swab into transport medium container, close firmly
- When slide dry, put into holder and secure. Make sure slide correctly labelled
- Store and transport at room temperature

**NAAT**

- Start at centre of wound, roll dry swab gently to edges. Collect any discharge
- Put swab back into container
  - If using *Aptima* swab — remove lid, put swab in tube — F 11.24. Break off handle at groove — F 11.25, leaving swab in tube
- Make sure swab container correctly labelled, closed tightly
- Store and transport at room temperature



11.24



11.25

**Collecting eye, ear, nose, throat swabs****Attention**

- Do throat swabs as quickly as you can so person doesn't gag
- If swabbing both eyes, ears or nostrils — need separate swabs and clearly labelled slide for each side (eg 'left eye', 'right eye')

**What you need****MC&S**

- Wooden spatula/tongue depressor (for throat)
- Transport medium swab
- 0.5mL sterile **normal saline**
- Pencil and pen
- Glass slide with frosted end, slide holder
- Penlight torch

**PCR/NAAT for eye, nose or throat**

- Wooden spatula/tongue depressor (for throat)
- Penlight torch (for throat)
- *Aptima* or dry swab (flocked if available)

**Nasal PCR for influenza and other respiratory viruses**

- Dry swab (flocked if available)

## What you do

- Label frosted end of slide with pencil, label slide holder and swab container with pen

## MC&S

- Wet tip of swab with sterile **normal saline**

### For eye

- Tilt head back
- Hold lower eyelid down, ask person to look upward
- Run swab tip very gently along inside of bottom eyelid, from inner to outer corner of eye — F 11.26



11.26

### For ear

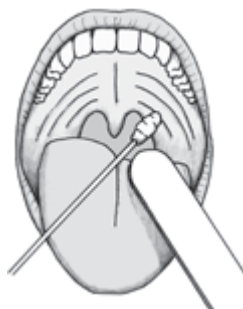
- Tilt head to one side
- Straighten ear canal ([p159](#))
- Put swab about 0.5–1cm into ear canal
- Gently turn it around (rotate), take it out



11.27

### For nose

- Push nose upward as shown — F 11.27
- Put swab up into nostril about 3cm, **parallel to roof of mouth** not to outside of nose
- Gently turn swab around twice, take out



11.28

### For throat

- Tilt head back a little
- Hold down tongue with spatula/tongue depressor
- Look at throat with penlight to pick site/s — pus or red area
- Ask them to say 'aaghhh'
- Quickly rub swab over any pus or red areas on back of throat — F 11.28

### For all

- Gently **roll** swab **once** along glass slide — F 11.22 ([p388](#)), leave to **air dry**
- Put swab into transport medium container, close firmly
- When slide dry put into holder and secure
- Make sure all labelling is correct, store and transport swab and slide at room temperature

## NAAT

- Roll swab for eye, nose or throat on slide as above
- Put swab back into container
  - If using *Aptima* swab — remove lid, put swab in tube — F 11.24 ([p389](#)). Break off handle at groove — F 11.25 ([p389](#)), leaving swab in tube
- Make sure swab containers correctly labelled, closed tightly
- Store and transport at room temperature

## Vaginal and cervical swabs

- Lower vaginal — see *Self-collected lower vaginal swabs* ([WBM p264](#))
- High vaginal and cervical — see *Collecting samples – Swabs for STI tests* ([WBM p274](#)), *Cervical Screening Test* ([WBM p275](#))

## Collecting penile swabs

### What you do

- Swab can be collected by practitioner or patient
- Swab opening of penis as for collecting wound swabs ([p388](#))

## Genital sore (ulcer) swabs

### What you need

- *Aptima* or dry swab
- Sterile needle (for herpes-like sores)

### What you do

- Swab base of sore or scab
- For herpes-like sores (blisters) gently burst with sterile needle, swab fluid
- Put swab back into container
  - If using *Aptima* swab — remove lid, put swab in tube — F 11.24 ([p389](#)). Break off handle at groove — F 11.25 ([p289](#)), leaving swab in tube
- Make sure swab container correctly labelled, closed tightly
- Request ‘Genital ulcer – herpes, syphilis, donovanosis NAAT’

## Collecting anal swabs for STIs

### What you need

- **2 swabs**
  - **NAAT** — *Aptima* or dry swab
  - **MC&S** — amies transport medium swab
- Clean paper sheet or bluey

### What you do

#### Both swabs

- Put clean paper sheet or bluey on bed
- Ask person to lie on left side with knees drawn up
- Gently put end of swab 1–2cm inside anus just past anal ring
- Run swab once around inside of anus
- Avoid faecal contamination as much as possible
- Put swab back into container
  - If using *Aptima* swab — remove lid, put swab in tube — F 11.24 ([p389](#)). Break off handle at groove — F 11.25 ([p389](#)), leaving swab in tube
- Make sure swab containers correctly labelled, closed tightly

### Self-collected swabs

- For swab with transport medium (eg *Aptima*, amies)
  - Remove container, leave swab in original packet
  - **Do not** give container to person
- For dry swab — leave swab in original container, break seal
- Give swabs to person and explain
  - Wash hands
  - Squat down, stand with one leg up on toilet seat or chair, or sit on toilet with legs apart and lean forward
  - Take first swab from container or packet — **do not** touch swab tip with hands or any other object
  - Put tip of swab 1–2cm inside anus just past anal ring
  - Run swab once around inside of anus
  - Remove swab, put back into container or packet
  - Take second swab from container
  - Repeat specimen collection with second swab, put swab back into container
  - Wash hands, return swabs
- When person returns swabs
  - If swab in packet — put into transport tube
  - Make sure swab containers correctly labelled, closed tightly

# Collecting urine



## Two types of urine specimens collected

- **First-void urine**
  - First 20mL of urine stream. Can be collected any time of day but best collected first thing in the morning or at least 4 hours after last urination
  - NAAT to test for gonorrhoea, chlamydia, and trichomonas
- **Mid-stream urine (MSU)**
  - Urine collected after allowing first part of urine stream to pass into the toilet. Usually need about 20mL
  - Albumin creatinine ratio (ACR) — protein secreted into urine from kidneys
  - Microscopy, culture and sensitivity (MC&S) — shows bacteria in urine

**Note:** If collecting urine for drug screening — follow same procedure as MC&S (doesn't have to be mid-stream)

## Attention

- Store urine dipsticks at less than 30°C and low humidity. May need to be in air-conditioned room
- **If it takes 12 hours or more for urine sample to reach pathology** — also use dip slide for MC&S
- Do ACR when person well. Best in morning after fasting — less false positive results from protein meals, exercise, infection
- For MC&S you need plain urine, may also need dip slide, stained sample
- Won't need all these tests every time — check which ones you need
- Give person paper bag to carry urine containers through public areas in clinic

## Collecting specimens from older children and adults

### What you need

- Private toilet area for person to pass urine
- Clean gauze swabs/sterile saline wipes
- Sterile water
- Clean paper towel
- 2 x yellow top sterile specimen jars labelled '1' and '2' — F 11.29
- Paper bag for patient to carry collected specimen
- If delay of 12 hours or more before reaching pathology
  - Dip slide
  - 5mL plain sterile container
  - Formalin solution
  - Pipette



11.29

## What you do

- **Ask person to**
  - Wash genital area with gauze swabs or sterile saline wipes, rinse with sterile water, dry with clean paper towel
  - Catch first lot of urine in jar 1 (about 20mL)
  - Catch second lot of urine in jar 2 (about 20mL)
- **For NAAT to test for gonorrhoea, chlamydia, trichomonas (jar 1)**
  - At least 8mL of urine in jar 1
  - Store and transport under refrigeration
- **For MC&S (jar 2)**
  - **Plain sample** — at least 8mL of urine in jar 2
  - **Dip slide** (if needed) — pipette small amount of urine from jar 2 over dip slide, screw top on tightly
  - **Stained sample** (if needed)
    - Pipette 5mL urine from jar 2 into 5mL plain sterile container, add 3 drops of formalin, screw top on tightly
    - *OR* pipette urine into urine stain tube if available
  - Make sure all samples are correctly labelled
  - Store and transport jar 2 and the 5mL container under refrigeration
  - Store and transport dip slide at room temperature

## Bag specimen from babies and young children

**It is possible** to collect reliable urine specimen if procedure followed carefully.

### Attention

- Babies often wee when genital area cleaned — be ready to catch some!
- Best to use double compartment collection bags (eg *Hollister U-Bag*). Not as likely to spill or get contaminated

### What you need

- Soap and water for washing genitals
- Clean gauze swabs or cotton wool balls
- Sterile water for rinsing
- Clean paper towel
- Paediatric urine collection bag
- Alcohol wipes
- 20mL syringe and 21G needle
- Sterile specimen jar
- If delay of 12 hours or more before reaching laboratory —
  - Dip slide
  - 5mL plain sterile container
  - Formalin solution
  - Pipette

## What you do

- Wash genital area well with soap and water using clean swabs or cotton wool balls — F 11.30
  - For boys — gently pull back foreskin (don't force it)
  - For girls — clean gently around labial folds
- Rinse well with sterile water, dry well with clean gauze swab or paper towel
- Wash and rinse from top to bottom, front to back
- Take urine bag out of packet — **do not** touch inside (it's sterile) — F 11.31
- **Peel paper off area, put over genital area**
  - For boys — put opening all the way around penis and ball bag (scrotum) so they are inside bag
  - For girls — start at perineum to make sure it sticks flat and evenly, then fit around genitalia
- Put on loose nappy — or a bluey folded into a triangle
- Give child something to drink and wait ...



11.30



11.31

## When you see urine

- Take urine bag off straight away
- Clean small area on outside of bag with alcohol wipe, let dry completely
- Pierce cleaned area with needle and syringe and suck out urine
- **If delay in transport —**
  - Squirt small amount of urine over dip slide and screw top on tightly
  - Put 5mL of urine into 5mL sterile plain container, add 3 drops of formalin, screw top on tightly
    - *OR* squirt urine into urine stain tube if available
- Put rest of urine into sterile specimen jar, screw lid on tightly
- Make sure containers and dip slide are correctly labelled
- Store and transport jar and 5mL container under refrigeration
- Store and transport dip slide at room temperature

## Finger tap method for newborns and young babies

- Safe and easy method of urine collection using bladder stimulation
- Can use for babies up to 6 months old — depending on how heavy they are

## Attention

- **Baby should have a good feed 15–20 minutes before trying this procedure**
- Babies often wee when genital area cleaned — be ready to catch some!

## What you need

- 2 practitioners
- Soap and water for washing genitals

- Clean gauze swabs or cotton wool balls
- Sterile water for rinsing
- Clean paper towel
- Sterile specimen jar
- If delay of 12 hours or more before reaching pathology —
  - Dip slide
  - 5mL plain sterile container
  - Formalin solution
  - Pipette

### What you do

- Wash genital area well with soap and water using clean swabs or cotton wool balls — F 11.30
  - For boys — gently pull back foreskin (don't force it)
  - For girls — clean gently around labial folds
- Rinse well with sterile water, dry well with clean gauze swab or paper towel
- First practitioner holds baby up by underarms, legs dangling
- Second practitioner uses 1 or 2 fingers to gently tap the suprapubic area at a rate of 100 taps per minute for 30 seconds — F 11.32
- If baby doesn't pass urine — gently rub lower back (lumbar area) in circular motion for 30 seconds — F 11.33
- Repeat until mid-stream sample is caught — F 11.34. Usually within 5 minutes
- If delay in transport — follow same procedure as for bag specimens ([p395](#))
- If finger tap method doesn't work —
  - Give baby another feed and try again
  - Consider doing suprapubic bladder puncture/tap (*below*) if skilled



11.32



11.33



11.34

### Suprapubic bladder puncture/tap

#### Attention

- Done to get sterile urine sample in children less than 2 years of age when bag or finger tap sample can't be collected
- Child's bladder must be full. **Do not** do tap if child has passed urine less than 1 hour before

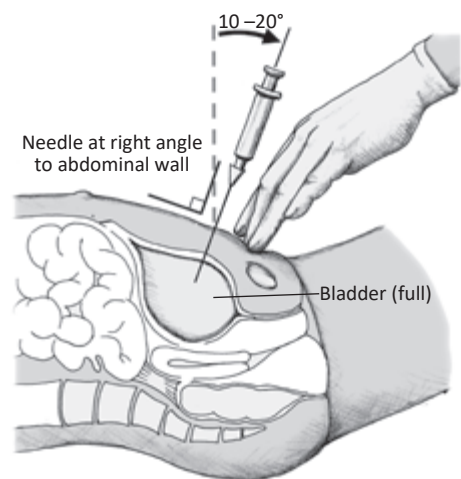
#### What you need

- Helper to wrap and hold baby
- Paediatric urine bag

- Sterile dressing pack
- Povidone-iodine cleaning solution
- 5–10mL syringe — depends on size of child
- 23G needle
- Sterile gloves
- Sterile sticky dressing pad
- Sterile specimen jar
- If delay of 12 hours or more before reaching pathology —
  - Dip slide
  - 5mL plain sterile container
  - Formalin solution
  - Pipette

## What you do

- Label containers and dip slide
- Clean child's genitalia and put on paediatric urine bag (p394) in case they pass urine during preparation
- Wrap child's upper body, leaving legs and lower abdomen uncovered
- Lie child on back with legs dropped outward in 'frog' position. Ask helper to hold child in this position with hands around thighs
- Feel for (palpate) (p201) and percuss (p200) bladder
- Lay out dressing pack and equipment
- Wash hands, put on sterile gloves
- Clean site and drape area with sterile towels
- Connect needle to syringe
- Holding syringe **at right angle (90°) to stomach wall** (usually 10–20° from true vertical) — F 11.35
  - Put needle into skin 1–2cm above pubic bone and in middle (midline)
  - Keeping syringe at this angle, pull back gently on plunger while pushing needle slowly until urine appears in syringe, but no more than 2.5cm
  - Collect amount of urine needed, take out needle
- Press gently on puncture site for a few seconds
- Put on sterile dressing pad
- If delay in transport — follow same procedure as for bag specimens (p395)



11.35

# Collecting faeces and parasites

---



## Faeces specimens

### Attention

- **Remember, 'fresh is best' — must send to town within 3 days (72 hours)**
- Usually 3 specimens collected over 3 days, from separate bowel movements. If transport a problem — may only be able to collect 1 or 2
- **Do not** contaminate specimen with urine
- If person menstruating or has bleeding piles (haemorrhoids) — **do not** collect specimens
- If using faecal occult blood test (FOBT) tubes — **do not** empty out liquid already in tubes

**Note:** Not all communities have daily transport services. Try to collect each specimen in the 24 hours before transport leaves. Repeat 3 times, or as needed.

### What you need

- Sterile brown top faeces jar, or tube with scoop (usually built into lid), or use ordinary sterile specimen jar and wooden spatula
- Bed pan (disposable if you have one), nappy, plastic container or cling wrap
- Brown top tube for routine OC&P or MC&S
  - Use OC&P pot containing preservative if available

### What you do

- Label jars/tubes
- For infection (diarrhoea)
  - Scoop some faeces from pan, nappy or container into tube — about the size of a cherry *OR* pour in if runny
  - Screw lid on tightly
  - If you suspect worms — request 'OCP, MC&S, strongyloides'
- For possible cancer — faecal occult blood test (FOBT)
  - Collect 3 specimens for occult bloods
    - From 3 separate bowel movements
    - Put in 3 separate, labelled tubes
- Store and transport as soon as possible at room temperature. Send in esky

## Anal swabs for threadworm

### Attention

- Arrange to collect samples early in morning before person uses toilet or washes

### What you need

- Clean paper sheet or bluey
- See through (transparent) sticky tape
- Wooden tongue depressor
- Immersion oil (transparent oil used in microscopy)
- Microscope
- Microscope slide

### What you do

- Put clean paper sheet or bluey onto bed
- Ask person to lie on left side with knees drawn up
- Fold strip of tape over end of wooden tongue depressor, sticky side out
- Separate person's buttocks. Press end of tongue depressor against skin around anus in several places
- Lift tape up off depressor, put drop of immersion oil under middle, then replace. Will make tape more transparent
- Threadworms can be seen with naked eye
  - 2–13mm long, oval, slightly asymmetrical, cream or pearly-white in colour
- If you have microscope — put tape on slide, sticky side down
  - Look for threadworm eggs using 40x objective

# Collecting semen

---

To check male fertility.

## Attention

- If collected semen can't be delivered to pathology within 1 hour — arrange for man to go to town for procedure
- Pathology forms and collection container can be provided by male or female practitioners but a male practitioner (ATSIHP, RAN, doctor) should explain procedure
- Ring pathology to arrange a time to bring semen in — it must reach pathology within **1 hour** of being collected
  - Make sure pathology knows it is for **infertility studies** — some only do post-vasectomy sperm clearance

## What you need

- Yellow capped sterile container

## What you do

- **Tell the man**
  - **Do not** ejaculate for 3 days before collection — no sex or masturbation of any kind
  - **Do not** have too much alcohol, caffeine, or other drugs for 2–5 days before collection
  - **Do not** use condom, saliva, lubricant, lotion, gel of any kind during collection
  - Use masturbation to collect ejaculate
  - Wash your hands with soap and water
  - Ejaculate directly into yellow capped sterile container
    - Try to catch all ejaculated semen including first part
    - **Do not** try to collect any spilled semen
  - Put lid on container as soon as you have finished
- Make sure container is correctly labelled
- Make sure collection time is written on pathology request form
- Transport at room temperature. **Do not** refrigerate

## Estimating kidney function

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'eGFR' is an **estimate** of kidney function. Not accurate in pregnancy, for babies or children, if very undernourished (including advanced liver disease) or if result above 90mL/min/1.73m<sup>2</sup>.

If using point of care (POC) creatinine —

- 'CKD-EPI' formula more accurate than 'MDRD' or 'Cockcroft-Gault' formulas for all Australians, including Indigenous people
- Complicated, best done by computer, see the calculator at [www.kidney.org.au](http://www.kidney.org.au)



## 12 Reference section

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## Mnemonics

Mnemonic	Meaning
<b>5As</b> (brief interventions <a href="#">p141</a> )	<b>A</b> sk, <b>A</b> ssess, <b>A</b> dvice, <b>A</b> ssist, <b>A</b> rrange
<b>A M P L E</b> (assessing trauma <a href="#">p41</a> )	<b>A</b> llergies, <b>M</b> edicines or current illness, <b>P</b> ast history, <b>L</b> ast time they ate or drank, <b>E</b> vent – what happened to cause the injuries
<b>A V P U</b> (assessing trauma <a href="#">p40</a> )	<b>A</b> lert, <b>V</b> oice, <b>P</b> ain, <b>U</b> nresponsive
<b>B U R P</b> (intubation <a href="#">p53</a> )	<b>B</b> ackward, <b>U</b> pward, <b>R</b> ightward Pressure
<b>C A R E</b> (at accident sites <a href="#">p33</a> )	<b>C</b> autious, <b>C</b> arry, <b>C</b> are, <b>A</b> nimals, <b>R</b> oad traffic management, <b>E</b> nvironment
<b>De M I S T</b> (assessing trauma <a href="#">p41</a> )	<b>D</b> escription of incident, <b>M</b> echanism of injury, <b>I</b> njuries sustained, <b>S</b> igns and symptoms, <b>T</b> reatment so far
<b>DRS ABC</b> (life support <a href="#">CARPA p10</a> )	<b>D</b> anger, <b>R</b> esponse, <b>S</b> end for help, <b>A</b> irway, <b>B</b> reathing, <b>C</b> irculation
<b>DRS ABC DE</b> (assessing trauma <a href="#">p35</a> )	<b>D</b> anger, <b>R</b> esponse, <b>S</b> end for help, <b>A</b> irway, <b>B</b> reathing, <b>C</b> irculation, <b>D</b> isability, <b>E</b> xpose and <b>E</b> xamine
<b>FRAMES</b> (brief interventions <a href="#">p140</a> )	<b>F</b> eedback, <b>R</b> esponsibility, <b>A</b> dvice, <b>M</b> enu, <b>E</b> mpathy, <b>S</b> upport self-efficacy
<b>H A R M</b> (avoid for 48 hours) (soft tissue injuries <a href="#">p219</a> )	<b>H</b> eat, <b>A</b> lcohol/ <b>A</b> spirin/ <b>A</b> nti-inflammatories, <b>R</b> unning/ strong exercise, <b>M</b> assage
<b>HEADSS</b> (interview guide for young people <a href="#">p102</a> )	<b>H</b> ome, <b>E</b> ducation/ <b>E</b> mployment/ <b>E</b> ating/ <b>E</b> xercise, <b>A</b> ctivities and peers, <b>D</b> rugs, <b>S</b> exuality/ <b>S</b> uicide/ <b>S</b> afety/ <b>S</b> trengths/ <b>S</b> pirituality
<b>I S B A R</b> (phone consultation <a href="#">p13</a> )	<b>I</b> dentify, <b>S</b> ituation, <b>B</b> ackground, <b>A</b> ssessment, <b>R</b> equest
<b>O L D C A R T S</b> (presenting complaint — history taking <a href="#">p95</a> , skin examination <a href="#">p266</a> )	<b>O</b> nset, <b>L</b> ocation, <b>D</b> uration, <b>C</b> haracteristics, <b>A</b> ggravating factors, <b>R</b> elieving factors, <b>T</b> reatments, <b>S</b> igns and <b>S</b> ymptoms
<b>Ps</b> (compartment syndrome <a href="#">p218</a> )	<b>P</b> ain gets worse, <b>P</b> assive movements, <b>P</b> aresthesia and <b>P</b> rogressive <b>P</b> aralysis, <b>P</b> oor circulation, loss of <b>P</b> eripheral <b>P</b> ulses
<b>P Q R S T</b> (assessing trauma <a href="#">p41</a> )	<b>P</b> rovoking/ <b>P</b> alliating factors, <b>Q</b> uality, <b>R</b> egion and <b>R</b> adiation, <b>S</b> everity, <b>T</b> iming
<b>R I C E</b> (soft tissue injuries <a href="#">p220</a> )	<b>R</b> est, <b>I</b> ce, <b>C</b> ompression, <b>E</b> levation (use in first 48 hours)
<b>S N A P E</b> (current health status <a href="#">p126</a> )	<b>S</b> moking, <b>N</b> utrition, <b>A</b> lcohol and drugs, <b>P</b> hysical activity, <b>E</b> motional wellbeing
<b>S O O D A – F</b> (writing in file notes <a href="#">p117</a> )	<b>S</b> tory of presenting problem, <b>O</b> ngoing health problem, <b>O</b> bservations and clinical examination, <b>D</b> iagnosis, <b>A</b> ction/management plan, <b>F</b> ollow-up

# Abbreviations

°	degree	cm	centimetre
%	percent	CMV	cytomegalovirus
ABC	airway, breathing, circulation	CO <sub>2</sub>	carbon dioxide
ABCDE	airway, breathing, circulation, disability, expose	COPD	chronic obstructive pulmonary disease
ACR	albumin creatinine ratio	CPM	<i>Clinical Procedures Manual</i>
ACTH	adrenocorticotrophic hormone	CPR	cardiopulmonary resuscitation
AFB	acid fast bacilli	CRP	c-reactive protein
AIMhi	Australian Integrated Mental Health Initiative	CSOM	chronic suppurative otitis media
APTT	activated partial thromboplastin time	CT	computed tomography
ATSIHP	Aboriginal and Torres Strait Islander Health Practitioner	CVC	central venous catheter
AV	arteriovenous	DNA	deoxyribonucleic acid
BCG	Bacille Calmette–Guérin	Dr	doctor
BGL	blood glucose level	DVT	deep vein thrombosis
BIG	bone injection gun	EBV	Epstein-Barr virus
BMI	body mass index	ECG	electrocardiogram
BP	blood pressure	EDTA	ethylenediaminetetraacetic acid
BVM	bag-valve-mask	eg	exempli gratia – for example
C	centigrade	eGFR	estimated glomerular filtration rate
Ca	calcium	ENT	ear, nose and throat
CAA	Civil Aviation Authority	EPG	electrophoresis
CAPD	continuous ambulatory peritoneal dialysis	EPIRB	emergency positioning infra-red beacon
CARPA	Central Australian Rural Practitioners Association	ESR	erythrocyte sedimentation rate
CARPA STM	<i>CARPA Standard Treatment Manual</i>	ETA	estimated time of arrival
CASA	Civil Aviation Safety Authority	etc	et cetera – and so forth
CBT	cognitive behavioural therapy	ETD	estimated time of departure
CDC	Centre for Disease Control, Communicable Disease Control Branch, Communicable Disease Control Directorate	F	figure
CF	count fingers	FBC	full blood count
CK	creatine kinase	FEV <sub>1</sub>	forced expiratory volume in 1 second
		FOBT	faecal occult blood test
		Fr	French gauge
		FVC	forced vital capacity
		FVC <sub>6</sub>	forced vital capacity in 6 seconds
		G	gauge

## Abbreviations

<b>g</b>	gram	<b>min</b>	minute
<b>HACC</b>	home and community care	<b>mL</b>	millilitre
<b>Hb</b>	haemoglobin	<b>mm</b>	millimetre
<b>HbA1c</b>	glycated haemoglobin	<b>mmHg</b>	millimetre of mercury
<b>HF</b>	high frequency	<b>MMS</b>	multimedia messaging service
<b>HM</b>	hand movement	<b>MMSE</b>	Mini Mental State Exam
<b>hr</b>	hour	<b>MRSA</b>	methicillin-resistant <i>Staphylococcus aureus</i>
<b>Hz</b>	hertz	<b>MSU</b>	mid-stream urine
<b>IATA</b>	International Air Transport Association	<b>NAAT</b>	nucleic acid amplification test
<b>ICC</b>	intercostal catheter	<b>NDIS</b>	National Disability Insurance Scheme
<b>id</b>	internal diameter	<b>NGT</b>	nasogastric tube
<b>ie</b>	id est – that is	<b>NLP</b>	no light perception
<b>IGT</b>	impaired glucose tolerance	<b>No.</b>	number
<b>IM</b>	intramuscular (in the muscle)	<b>NSAID</b>	non-steroidal anti-inflammatory drug
<b>INR</b>	international normalised ratio	<b>NT</b>	Northern territory
<b>IO</b>	intraosseous (in the bone)	<b>O<sub>2</sub></b>	oxygen
<b>IPP</b>	intermittent positive pressure	<b>O<sub>2</sub> sats</b>	oxygen saturation
<b>IV</b>	intravenous (in the vein)	<b>OC&amp;P</b>	ova, cysts, and parasites
<b>kg</b>	kilogram	<b>OGTT</b>	oral glucose tolerance test
<b>KICA-COG</b>	Kimberley Indigenous Cognitive Assessment: cognitive component	<b>ORS</b>	oral rehydration salts
<b>km</b>	kilometre	<b>OSA</b>	obstructive sleep apnoea
<b>L</b>	left	<b>OT</b>	occupational therapist
<b>L</b>	litre	<b>P</b>	pulse
<b>LA</b>	local anaesthetic	<b>PBS</b>	Pharmaceutical Benefits Scheme
<b>LD</b>	lactate dehydrogenase	<b>PCB</b>	polychlorinated biphenyl
<b>LFT</b>	liver function test	<b>PCEHR</b>	personally controlled electronic health record
<b>LMA</b>	laryngeal mask airway	<b>PCR</b>	polymerase chain reaction
<b>LP</b>	light perception	<b>PD</b>	peritoneal dialysis
<b>m</b>	metre	<b>PE</b>	pulmonary embolus
<b>M&amp;C</b>	microscopy and culture	<b>PEA</b>	pulseless electrical activity
<b>MC&amp;S</b>	microscopy, culture and sensitivity	<b>PEP</b>	positive expiratory pressure
<b>MDI</b>	metered dose inhaler	<b>pH</b>	potential hydrogen
<b>MED</b>	<i>Medicines Book</i>	<b>PH</b>	pinhole
<b>mg</b>	milligram		

<b>PHC</b>	primary health care	<b>TV</b>	television
<b>PHQ</b>	patient health questionnaire	<b>U/A</b>	urinalysis (with dipstick)
<b>PHU</b>	Public Health Unit	<b>UEC</b>	urea, electrolytes, creatinine
<b>physio</b>	physiotherapist	<b>UHF</b>	ultra high frequency
<b>pm</b>	post meridiem – afternoon	<b>UTI</b>	urinary tract infection
<b>POC</b>	point of care	<b>v</b>	volume
<b>POP</b>	plaster of Paris	<b>VA</b>	visual acuity
<b>PPE</b>	personal protective equipment	<b>VTM</b>	viral transport medium
<b>PPT</b>	plasma preparation tube	<b>w</b>	weight
<b>PSA</b>	prostate specific antigen	<b>WBC</b>	white blood count
<b>PT</b>	prothrombin time	<b>WBM</b>	<i>Women's Business Manual</i>
<b>PTH</b>	parathyroid hormone	<b>WHO</b>	World Health Organisation
<b>qid</b>	quarter in die – 4 times a day		
<b>R</b>	right		
<b>RAN</b>	remote area nurse		
<b>REWS</b>	remote early warning score		
<b>RFDS</b>	Royal Flying Doctor Service		
<b>RHD</b>	rheumatic heart disease		
<b>RM</b>	remote midwife		
<b>RN</b>	registered nurse		
<b>RNA</b>	ribonucleic acid		
<b>RPM</b>	revolutions per minute		
<b>RR</b>	respiratory rate		
<b>RUM</b>	return of unwanted medicines		
<b>SARS</b>	severe acute respiratory syndrome		
<b>SES</b>	State Emergency Service		
<b>SIDS</b>	sudden infant death syndrome		
<b>SOS</b>	distress signal		
<b>SST</b>	serum separated test		
<b>STI</b>	sexually transmitted infection		
<b>subcut</b>	subcutaneous		
<b>T</b>	temperature		
<b>TB</b>	tuberculosis		
<b>temp</b>	temperature		
<b>TFT</b>	thyroid function test		
<b>TGA</b>	Therapeutic Goods Administration		

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