

check

Independent learning program for GPs

Unit 599
November 2022

Minor wounds and injuries



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Minor wounds and injuries

Unit 599 November 2022

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About this activity

Minor wounds and injuries are common presentations to general practice, and the management of wounds has been described as a 'core foundation skill' that is 'equally applicable across the metro-rural divide'.¹

Approximately 1% of Australians seek medical assistance for a burn injury each year, and data indicate that many of those affected are children.² Patients may also present with bite injuries, with dogs, cats and humans inflicting the majority of bites that require medical attention.³

Pulled elbow is a very common injury in children aged 1–4 years; in 50% of children there is no history of arm pull.⁴ Pilonidal sinus has an incidence of 26 per 100,000 people, predominantly affecting those in their second and third decades of life.⁵

This edition of *check* considers the investigation and management of minor wounds and injuries in general practice.

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Learning outcomes

At the end of this activity, participants will be able to:

- outline the process of determining whether a tetanus injection is required for a patient presenting with a wound

- elaborate on the factors considered when determining the extent of a burn, including total body surface area
- describe the management of animal bites
- discuss the risk factors for pilonidal sinus
- explain the features on presentation that would indicate a diagnosis of pulled elbow is likely.

Authors

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Case 2

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Case 5

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Abbreviations

dT	diphtheria-tetanus
dTpa/DTPa	diphtheria-tetanus- acellular pertussis
GP	general practitioner
MRI	magnetic resonance imaging
NAI	non-accidental injury
PSD	pilonidal sinus disease
TBSA	total body surface area

CASE

1 Pearl has a red foot

Pearl, aged 66 years, presents to your surgery with a red left foot. Pearl lives alone but knows her neighbours well. She thinks she may have scratched her foot at some point in the preceding week while helping the neighbours clean up following the recent floods.

Pearl is not a regular patient of yours, but she is known to the clinic. She has type 2 diabetes that was previously well controlled. Unfortunately, over the past three years, as a result of several general practitioners (GPs) retiring from the clinic and not being replaced, Pearl has not kept up to date with chronic disease management and no longer has a 'regular family doctor'.

Pearl takes regular medication including daily metformin extended release 1 g, irbesartan 150 mg and atorvastatin 20 mg; however, she has not been able to get to the pharmacy for seven days because of the floods.

Question 1 

What further history would you like to elicit from Pearl about her presentation?

Further information

You discover that Pearl was walking through flood waters without shoes on over three days while helping the neighbours clean up. She reports that the water did not look too bad initially, but after a day or two everything was very smelly, and the State Emergency Service team had advised that sewage was in the water. Her left ankle and leg have been throbbing all night. She could see a red cut on the sole of her foot (Figure 1), which prompted her to present today. She cannot feel the area where the skin is broken. She cannot recall when her last tetanus booster was, but you can see from her medical record that she had a booster six years ago.

Pearl has not had her feet checked for two years but remembers having to go once a year to the podiatrist in the past.



Figure 1. Pearl's foot, showing the cut on the sole.

Question 2 

What examination findings are most relevant today?

Further information

On examination, Pearl's temperature is 36.5°C. Her blood pressure is 167/94 mmHg, her heart rate is 96 beats/min and regular and her blood sugar level is 19 mmol/L.

You can see a 15 mm laceration on the base of her foot, which is stained with dirt. On deeper palpation with a probe, you think you can feel a foreign body adjacent to the wound. Pearl cannot feel you pushing on or probing the wound. Her foot is warm and erythematous around the wound.

Pulses are palpable and equal bilaterally but reduced distally in both feet (dorsalis pedis). You elicit a bilateral diabetic peripheral neuropathy with monofilament testing. Pearl's foot is not swollen. There are no palpable lymph nodes.

Question 3 

What is your immediate management?

Further information

You note some new tracking erythema from Pearl's foot to the mid shin on the left side (Figure 2). Given her history

of diabetes, the retained foreign body and the spreading infection, you decide to contact the local hospital and refer Pearl for management.



Figure 2. Erythema on Pearl's foot

Question 4

How would you manage Pearl's foot if she did not have diabetes?

Further information

Pearl is admitted to hospital for five days. She goes to theatre for a wash out, receives intravenous antibiotics and is started on long-acting insulin in the evenings. She returns to you in an offloading device for ongoing care including wound management and oral antibiotics. The discharge notes indicate that Pearl may require referral to endocrinology or a vascular specialist, or the high-risk foot team.

Pearl has a photo on her phone of her medication chart so you can arrange new prescriptions.

Question 5

What is your ongoing management?

CASE 1 Answers

Answer 1

It is important to consider the presence of systemic symptoms of infection such as fever, chills, rigors and nausea. It is also necessary to understand if Pearl can feel pain in her foot near the area of redness. Any foot infection in a patient with diabetes has the potential to be significant and can lead to amputation if mismanaged.¹

Other questions relevant to this presentation include:

- Was Pearl wearing shoes?
- Was there sewage in the water?
- Does Pearl remember standing on anything sharp?
- Has Pearl been able to clean/dress her foot in the past few days?
- Does she recall her last tetanus booster?

The *Australian immunisation handbook* defines a tetanus-prone wound as any wound other than a clean minor cut, with risk increasing with retention of a foreign body or obvious contamination with soil/organic matter.² In areas affected by flooding, the risk of water-borne infection is high, especially if the water is contaminated with sewage, animal corpses and chemicals.³

It is important to ascertain if Pearl has been monitoring her blood sugar levels and blood pressure. The management of an infection in a foot of a patient with diabetes is optimised when blood sugars and blood pressure are within reference ranges.⁴

Answer 2

It is recommended to screen for signs of sepsis by checking Pearl's vital signs and inspecting the wound for erythema, oedema and exudate, as well as feeling for warmth.

As there is a skin break present, it is important to probe the wound, with consideration of osteomyelitis or retained foreign body as a complication of her injury. Patients may need local anaesthetic to allow this to occur comfortably.

A foot examination for a patient with diabetes should also include assessment of vascular and neurological supply, as the presence of either peripheral vascular disease or peripheral neuropathy influences decision making.⁵

In addition, it is advised to check Pearl's blood sugar level and perform point-of-care glycated haemoglobin testing if available.

The PEDIS classification system developed by the Infectious Diseases Society of America and the International Working Group on the Diabetic Foot classifies the severity of diabetic foot infection and is an accepted tool to aid clinical decision making.⁶

Answer 3

Immediate management for Pearl would include a tetanus booster and saline wound irrigation as per the *Australian immunisation handbook*.²

Because Pearl has high-risk feet, an active infection and a possible retained foreign body, she should be referred to the local hospital emergency department for management.⁷

Foot ulceration is a leading cause of morbidity in patients with diabetes. The presence of an ulcer or infection in a foot of a patient with peripheral vascular disease and/or diabetic neuropathy often results in hospital admission and can cause disability such as amputation.⁵

The SINBAD (Site, Ischaemia, Neuropathy, Bacterial Infection and Depth) wound classification system is a preferred method of communication between healthcare professionals.⁶

Answer 4

A traumatic breach of skin and suspected foreign body can be further investigated with a plain film X-ray. The purpose of imaging is to reveal and locate a foreign body and to screen for osteomyelitis if this is suspected,⁸ although plain radiography does not entirely exclude osteomyelitis. Magnetic resonance imaging (MRI) is considered the best investigation to identify osteomyelitis if there is a high index of suspicion (a nuclear medicine scan can be considered when MRI is not available or practical).⁹

If a foreign body is located, removal of the foreign body can be considered in the primary care setting, depending on the location.

A heavily contaminated laceration should have all visible dirt and devitalised tissue removed; this may need to be done with a scalpel or scissors.¹⁰ Before applying a dressing, the wound must be irrigated well with normal saline under pressure via a syringe (a Cochrane review has demonstrated that irrigation with tap water is as effective).¹¹ Cleaning of the skin with antiseptic solution (iodine or chlorhexidine) should follow wound irrigation.

If a wound has been contaminated by flood water, possibly containing sewage, antibiotics are indicated. *Therapeutic guidelines* recommends the use of the following regimen for water-immersed infection associated with contaminated fresh water: trimethoprim + sulfamethoxazole 320 + 1600 mg every 12 hours + metronidazole 400 mg every eight hours, for five days.¹²

It is important to arrange follow-up to monitor for complications such as infection and poor healing.

Answer 5

Pearl's ongoing care includes closely monitoring the healing of her foot. Her dressing changes will need to occur regularly.

It is important to optimise her diabetic control; this can be facilitated through medication compliance and blood sugar level monitoring. It is also recommended for Pearl to optimise her blood pressure, cholesterol and eye health and recommence regular review of her diabetes and renal function.

GPs are advised to encourage patients with diabetes to eat a balanced diet and wear supportive shoes. An updated referral to a local podiatrist will help guide care of Pearl's high-risk feet in the future.

Allied health providers, such as a diabetic educator and a dietitian, may be necessary to assist in Pearl's chronic disease management.

The Royal Australian College of General Practitioners' *Management of type 2 diabetes: A handbook for general practice* provides comprehensive guidance on all aspects of optimising health for patient with diabetes (for clinical management goals, refer to www.racgp.org.au/getattachment/2f80b929-8b38-4674-8522-1a380624cffd/attachment.aspx?disposition=inline).⁵

Conclusion

Pearl's foot wound heals well, and she continues to see you for ongoing management of her diabetes.

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CASE

2 | Jacob has a burn injury

Jacob, aged two years, is a previously well boy who presents with his mother, Shae. Shae is concerned about a burn injury on Jacob's buttocks that occurred at home that morning.

Jacob is fully vaccinated and immunocompetent with no significant medical history. He lives with his mother, father and two older sisters.

You examine Jacob. His injury is shown in Figure 1.



Figure 1. Initial burn (day 1)

Question 1

What are the important features to ask about in the history?

Question 2

How would you assess for the possibility of non-accidental injury (NAI)? What are concerning or high-risk features on history?

Further information

Shae reports that Jacob was at home in the care of his father, Anton, this morning. After his bath, Jacob stood in front of their metal wood-burning fireplace while naked to warm up. Anton witnessed Jacob accidentally press his buttocks against the hot metal front of the fireplace. Jacob was crying and distressed. Anton pressed a cold flannel against the burn area for 10 minutes, but Jacob became upset and irritated, so Anton stopped. Anton immediately called Shae to come home and help.

When Shae arrived home, she brought Jacob directly to see you. He has no other reported injuries.

Jacob looks well and is not distressed. He is alert, smiling, active and interacting well with Shae. Jacob prefers to stand up rather than sit on his mother's lap. You know this family well and have no concerns at this stage about NAI.

Question 3

What are the steps in initial management for any child with a burn?

Question 4 

What are the important features to assess in examination of Jacob's burn?

Question 5  

How would you assess and classify the depth of Jacob's burn?

Further information

You examine Jacob's burn injury. On his right buttock, there is a large transverse area 9 cm × 0.5 cm of pale pink skin with overlying loose skin, consistent with ruptured blisters and loss of epidermis from the superior half. On his left buttock there is a similar looking, smaller 3 cm × 0.5 cm patch of pale pink

skin with some fine blistering present. On light palpation, capillary refill is brisk. The wound is quite painful to touch, even gently.

Jacob's burn size is estimated to be approximately 1% total body surface area (TBSA) using the palmar method and the Lund and Browder chart.

You perform a head-to-toe check, looking for any additional burns or injuries; there is no evidence of any additional injuries. Jacob's skin is healthy and intact at all other sites.

Question 6 

What are the burns of high concern?

Question 7 

How would you manage Jacob's burn?

Further information

You debride the burn to remove the overlying dead and loose skin from the site and clean it with saline. Figure 2 shows the burn after debridement.



Figure 2. Burn after debridement

Question 8  

What are appropriate choices for burns dressings?

Question 9  

When should a patient with a burn be reviewed and the dressing changed?

CASE 2 **Answers**

Answer 1

When considering the history of a burn, it is important to assess the following:¹⁻³

- time and place the injury occurred
- mechanism of injury, including circumstance for specific pattern of burn
 - scald (most common): estimated temperature and nature of the liquid
 - contact: estimated temperature and nature of the surface
 - friction
 - flame/explosion: product that burned/explored, location (enclosed vs open space), duration of exposure, inhalation injury
 - electrical: voltage, type of current (AC or DC), duration of contact
 - chemical: type of product
 - cold: direct contact with cold surface or exposure (frostbite)
 - radiant: sunburn
- first aid performed
 - time started (was it within three hours and maintained for 20 minutes?)
 - agents used
 - if clothes and jewellery were removed
 - decontamination method (for chemical exposure)
 - any further treatment prior to arrival in hospital
- other injuries, consider co-existing non-burn injuries
- consider NAI or vulnerable child
- immunisation status: tetanus.

Note: The above text is adapted with permission from The Royal Children's Hospital, Melbourne, Clinical Practice Guidelines: Burns – Acute management, Vic: RCH, 2018. Available at www.rch.org.au/clinicalguide/guideline_index/Burns [Accessed 22 September 2022].

Answer 2

It is important to consider NAI or neglect in the following circumstances:⁴

- inadequate history to account for the injury or examination findings
- history of unwitnessed trauma
- history of family violence
- mechanism incompatible with the child's age or developmental capabilities
- any injury in a non-ambulatory infant

- inconsistent or changing histories without reasonable explanation
- unreasonable delay in seeking medical attention
- history of another child causing significant injury
- certain injuries with high specificity for abuse (eg ear bruising, posteromedial rib fractures, scald pattern suggesting immersion)
- an infant with an unexplained encephalopathy (suspect abusive head injury and/or poisoning)
- child or young person has problematic or harmful sexual behaviours
- presence of other concerning injuries (eg unusual/unexplained bruises).

Answer 3

As with all traumas, paediatric burn assessments require a primary and secondary survey with the initial aim of identifying and managing immediate life threats. It is important not to get distracted by the burn injury.^{2,5}

The initial steps are to follow the usual emergency trauma and resuscitation approach of ABCDE and manage issues as they are identified. Assessment of Airway, Breathing, Circulation and Disability will not be discussed in this case. E for Exposure includes burn assessment and initial management.^{2,5}

Fluid management is unlikely to be required for burns <10% TBSA; burns resuscitation fluid is given for burns ≥10% TBSA.²

Answer 4

Burns are dynamic wounds, and it is difficult to accurately estimate the true depth and extent of the wound in the first 48-72 hours; an assessment of the extent (size) of the burn is more important initially.^{1,2,6,7}

- Assessment of burn depth (refer to question 5)
- Assessment of burn size as a percentage of TBSA
 - Do **not** include area with epidermal burn (erythema only)
 - Expose whole body – remove clothing and log roll to visualise posterior surfaces
 - Use the Lund and Browder chart (Figure 3); it is recommended for assessment of children because it allows for the varying rates of growth in the head, thigh and lower leg of different age groups^{2,6}
 - The ‘Rule of 9s’ is inaccurate for paediatric patients – there is a modified ‘Rule of 9s’ for paediatric use (<9 years)^{2,6}
 - The palmar method may also be used – the palmar surface of the child’s hand (including fingers) represents approximately 1% of TBSA^{1,2}

- Distribution of burn(s): note pattern of burns

- Specific information
 - Burns in special areas (eg face, neck, hands, feet, perineum)
 - Assessment for inhalation burns: singed nasal/eyebrow hairs, swelling of mouth/face, stridor, hoarse voice, cough, respiratory distress, any facial, oral or neck burns, black sputum
 - Circumferential or almost circumferential burn areas

Clinical photography can facilitate communication and assessment of injury; however, it is necessary to ensure photographic consent is obtained and documented.¹

Answer 5

It can be difficult to tell the difference between partial and full-thickness burns.^{1,2} The depth of a burn is not critical in the initial treatment but largely determines the healing potential and the need for surgical grafting.⁶

Burns are classified into five categories by the Australian and New Zealand Burn Association (Table 1):^{2,3}

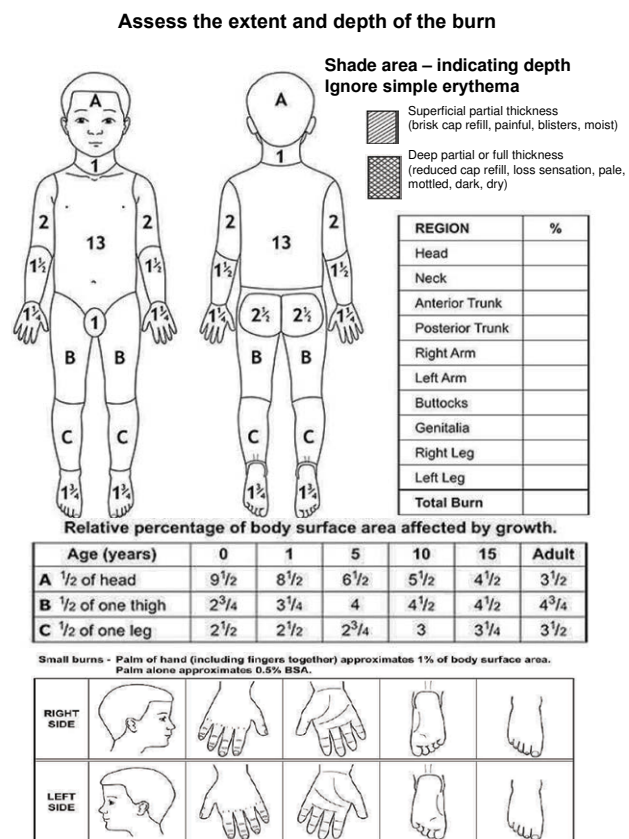


Figure 3. Lund and Browder Chart

Reproduced with permission from The Royal Children’s Hospital, Melbourne, Clinical Practice Guidelines: Burns – Acute management, Vic: RCH, 2018. Available at www.rch.org.au/clinicalguide/guideline_index/Burns [Accessed 22 September 2022].

Table 1. Depth classification and appearance of burns^{2,3,7}

Depth	Colour	Blisters	Capillary refill	Sensation	Healing time
Epidermal (erythema; eg sunburn)	Red, hyperaemic	No	Brisk	Present Painful +	Within seven days Does not scar
Superficial dermal	Pale pink	+	Brisk (under blisters)	Present Painful +++	Usually heal spontaneously within 14 days Pigmentation change, low risk of scar
Mid dermal	Dark pink-red	+	Sluggish	May be reduced Less painful	Hard to predict healing times
Deep dermal	Blotchy red/white	++ Extensive, early blisters that rupture	Very sluggish/absent	Reduced sensation Painful to pressure only	>21 days High chance of hypertrophic scarring
Full thickness	Dense, white, waxy, charred appearance	No	Absent	Absent Painless	>21 days High chance of hypertrophic scarring

- epidermal (not included in TBSA percentage), also called 'superficial': damage to epidermis only
- superficial dermal: damage to upper layer of dermis
- mid dermal: damage into mid dermis
- deep dermal: extends into deeper layers of dermis but not through entire dermis
- full thickness: destruction of entire dermis, and sometimes underlying tissue.

The American Burn Association classifies cutaneous burns slightly differently as superficial (involves the epidermis), partial thickness (incorporates superficial dermal, mid dermal and deep dermal) and full thickness (involves epidermis and entire dermis); this classification is still used occasionally in Australia.^{1,6}

Answer 6

Burns with any of the following features should be discussed with the specialist burns team to consider inpatient admission (which may be under the general paediatric team) or transfer to specialist care:^{1-3,5}

- >5% TBSA in children, >10% TBSA in adults
- suspected NAI, self-inflicted burns or assault
- burns affecting children <12 months of age
- concern regarding ability to care for burns at home
- any full-thickness burn
- inhalation burn
- special area burns – face, ears, eyes, neck, hands, feet, genitalia, perineum, major joint, airway
- concurrent injuries or comorbidities, associated trauma

- circumferential burns (potential need for escharotomy)
- chemical and electrical burns
- infected burns
- pain control issues; consider transfer when the child requires care beyond the comfort level of the hospital.²

Answer 7

The general management of burns follows the **FACADE** (**F**irst aid, **A**nalgesia, **C**lean, **A**ssess, **D**ress, **E**levate) mnemonic as follows:^{2,3}

- First aid⁸
 - Stop the burning process.
 - Cool the burn with running cold tap water for 20 minutes (this is useful for up to three hours after the burn).
 - Cover the burn area with a clean dressing or cling wrap.
 - Do **not** use ice to cool a burn.
- Analgesia – appropriate analgesia will depend on the healthcare setting. In general practice, provide oral analgesia, which may include paracetamol, ibuprofen and oxycodone.^{2,3}
- Clean
 - Wipe away clearly loose/blistered skin with gauze.
 - Always use aseptic technique to minimise risk of infection.⁹
 - De-roof large blisters with moist gauze or forceps and scissors if >5 mm or crossing joints.^{2,3}
 - Clean burn wound and surrounding surface with sterile water; do not use sodium chloride 0.9% on the wound as it de-activates silver dressings.^{1,7}
 - Reassess burn; take photos with appropriate consent.

Table 2. Recommended dressings for burns^{3,7,9}

Depth	Primary dressing	Secondary dressing	Fixation	Follow-up
Epidermal burn (erythema)	Face/perineum: simple moisturisers (eg white soft paraffin twice daily). Other areas: may not required dressing; consider covering with protective, low-adherent dressing for comfort.	Not required	Not required	Should not be required
Superficial dermal burn	Paraffin gauze Silicone dressings Silver products, especially if burn is potentially contaminated or delayed presentation	May produce significant exudate in first 72 hours Consider absorbent dressings (eg gauze, foam) to manage excess exudate	Tubular or crepe bandage Tape	In 24–48 hours by general practitioner or appropriate service Refer appropriately if wound is infected or healing delayed (>14 days)
Mid dermal burn	Silver products Silicone dressings			As above, plus refer to surgeon early if excision and skin grafting should be considered
Deep dermal burn	Silver products			
Full thickness burn	Silver products			

- Assess for concurrent injuries – perform a head-to-toe examination for concurrent injuries and consider the possibility of NAI. Estimate the TBSA percentage and document on the Lund and Browder chart.
- Dress – apply an appropriate occlusive non-adherent dressing.
- Elevate the area if possible.

Answer 8

The overall aims of any burn dressing are to:^{7,9}

- limit fluid loss
- prevent infection
- promote moist wound healing
- prevent conversion to a deeper burn
- reduce pain
- allow for movement and function
- assist in decreasing swelling.

The size, depth, area of the burn and amount of moisture required for optimal healing are considered when selecting a dressing type (Table 2).^{7,9}

In Australia, acute burns are initially covered with both:

- a primary dressing on the wound – examples include a nanocrystalline silver-impregnated antimicrobial barrier dressing or medicated paraffin dressings; and
- a secondary dressing over the primary dressing to absorb exudate and secure the primary dressing in place – examples include gauze, foam, low-adherent or crepe dressings.^{7,9}

The microbiology and infection risk in Australia is unique because of the very variable climate and prolonged transfer times in some rural areas to medical attention. The use

of antimicrobial dressings, such as nanocrystalline silver dressings, in such an environment has been shown to improve outcomes by reducing infection.⁷

Dressing advice and options can be obtained from a local paediatric burns unit, especially if these products are not available.

It is important to ensure the child has had adequate analgesia before applying or changing burns dressings.

A wide area adhesive wound tape should not be the primary dressing on any burns.

A silver dressing can stay intact for 2–7 days, depending on the specific product used; product instructions should be followed for use with the dressing.⁹

Answer 9

Dressing changes and review recommendations are as follows:^{1,7,9}

- Daily dressing changes are not advised. Dressing changes may not necessarily be 'painful'; however, the emotional and psychological distress can be enormous. The number of dressings required should be kept to as few as possible.^{1,9}
- As burn wounds are dynamic and change in appearance, particularly in the first 48 hours, it is good practice to review the burn after 48 hours before decisions regarding definitive dressings or surgery are made.⁷
- Timing of further dressing changes relates to assessment of the burn and the dressing applied; refer to the dressing product instructions for use with the dressing. Appropriate dressings can usually be left intact for 2–7 days.
- If there are concerns about poor wound healing, particularly if there are no signs of healing within 10 days, the patient should be referred to the paediatric burn service for assessment.

Conclusion

You discuss Jacob's case with the children's hospital burns clinical nurse, who advises you to dress the wound with a nanocrystalline silver-impregnated antimicrobial barrier dressing and a conforming adhesive wound dressing on top to secure it. Jacob and his family are advised to attend your practice again in 48 hours' time for review, with oral paracetamol to be given 30 minutes prior to attendance.

You review Jacob at your practice two days later, at which time the burn is clean, healing well, dry and with no signs of infection or exudate. A thin hydrocolloid dressing is applied over both wounds.

You review Jacob again five days later. At this time, the area is still light pink but is so well healed that no further dressing is required.

Jacob returns for review six months later, at which time there is no evidence of the burn (Figure 4).



Figure 4. Appearance of Jacob's buttocks six months after injury

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CASE

3 Raquel has been bitten by a dog

Raquel, aged nine years, is brought in by her grandparents with a dog bite on her face. Raquel has been staying with her grandparents during the school holidays. Two days ago, Raquel was playing with her grandparents' usually friendly dog when it bit her face (Figure 1). Her grandparents' home is located 60 km from the nearest medical centre, hence her delay in presentation.



Figure 1. Dog bite injuries on Raquel's face
Image courtesy of Wikimedia Commons, Tanner Ford, TRF Photography

Question 1

How would you approach this presentation? What information would you like to obtain from Raquel?

Further information

Raquel's history reveals that the injury occurred two days before her presentation. She fell on the dog while playing fetch, which resulted in the dog biting her. Her grandparents washed the wounds with soap and water immediately after the injury, and there was minimal bleeding. Raquel has a history of seasonal asthma, for which she uses a salbutamol pressurised metered-dose inhaler as needed, but she has no other medical conditions. She has no history of allergies, and her immunisations are up to date. She usually lives with her parents but is in the care of her grandparents during the school holidays.

Question 2

What physical assessment would you perform at this time? What initial investigations would you arrange?

Further information

Raquel's vital signs are normal, including a temperature of 36.5°C. There are several lacerations on the right side of her face around the mandibular area. A few wounds are oozing and beginning to turn yellow with pustules. There is slight swelling of the injury site and mild submandibular lymph node enlargement, but no contamination is detected at this stage. Her body weight is 32 kg.

Question 3

How would you perform wound management in this and similar cases?

Further information

Raquel's wounds are infected. There are no signs of contamination or foreign bodies. You undertake proper cleaning of the wounds using normal saline. Her wounds do not warrant suturing.

Question 4 

Would you consider antibiotics for Raquel?

Further information

Raquel commences amoxicillin and clavulanate twice daily for five days because of early signs of infection in the facial laceration. A dry dressing is applied over the wound.

Question 5 

Would you offer tetanus toxoid?

Further information

Raquel has a facial injury, the initial wound was not clean, and her last dose of tetanus toxoid was five years ago. Therefore, she is given the diphtheria-tetanus-acellular pertussis (DTPa) vaccine.

Question 6 

Would you consider giving rabies post-exposure prophylaxis?

CASE 3 **Answers**

Answer 1

It is critical to obtain a focused history for any injury presentation. When obtaining the history of any laceration, it is important to determine the following:

- the time and date of the injury¹ – this may be of medico-legal importance
- the injury's mechanism¹
 - injuries caused by sharp or blunt instruments provide information about potential contamination and deeper structural damage
 - crush injuries can be associated with external contamination, bone fractures and devitalisation of adjacent tissues/organs
 - animal/human bites are at risk of infection
- the circumstances surrounding the attack² – relating to animal species
- the amount of blood loss¹ – to assess the need for fluid/blood products
- medical/surgical history (eg diabetes and vascular diseases delay wound healing)
- a list of current medications – anticoagulants or platelet inhibitors pose a problem for haemostasis
- allergies²
- immunisation status² – tetanus, rabies, etc
- hand dominance²
- social history – to exclude domestic violence, child abuse and negligence.

Answer 2

For major lacerations, measuring vital signs such as pulse rate and blood pressure are essential to assess significant blood loss.¹ In addition, a delayed presentation may result in infection and lead to sepsis. Furthermore, a detailed examination and documentation of the laceration must be conducted, including the anatomical location of the wound, its length, likely depth and the degree of external contamination.^{1,2} Testing for distal sensation, motor function and vascularity should also be performed in limb lacerations to exclude damage to sensory, motor and vascular functions,^{1,2} in addition to an assessment of penetration of the bones, joints or tendons.² Penetration injuries to the trunk need full abdominal and chest examinations to exclude internal structural damage.¹ Wound exploration to detect foreign bodies and established infections such as cellulitis, purulence or abscesses may be required. Wound debridement should be performed if required. Finally, it is important to obtain photographs (with patient consent) or draw diagrams.² Children with head and neck bites require cervical spine stabilisation until cervical lesions are excluded.²

Taking a swab (Gram staining aerobic and anaerobic cultures³) from the clinically infected wound and recording animal bites in the clinical notes are essential.² An X-ray may be required for a puncture or penetrating injury near a bone, joint or scalp.² Ultrasonography can be used if soft tissue injury is suspected.²

Answer 3

The primary wound should be cleaned with sterile water/normal saline to safely remove any foreign bodies detected in the wound and lower the risk of infection by reducing the bacterial concentration.² Any associated abscesses need to be incised and drained appropriately.² If bleeding occurs, a clean towel or gauze should be pressed to slow or stop the bleeding,⁴ which may be aided with high-pressure irrigation using a 19/20-gauge needle.² Wound debridement may be needed depending on the nature of the wound.²

No clear evidence exists to support primary closure in preference to no closure for animal-inflicted wounds.^{2,4,5} Primary suturing is not recommended for wounds at high risk of infection, and delayed suturing is warranted.² Elevation (during the first 48–72 hours) and immobilisation are recommended for bite wounds.^{2,3} Hand wounds may benefit from 3–5 days of immobilisation.

Answer 4

Infected bites necessitate antibiotic therapy. Mammalian oral flora includes *Pasteurella* spp., *Staphylococcus aureus*, *Capnocytophaga canimorsus*, *Streptococcus* spp. and anaerobic bacteria.^{2,3} Cat bites have a higher incidence of deeper tissue infection when compared with dog bites, because cats inflict puncture wounds with their long, slender incisor teeth.^{2,3} *Therapeutic guidelines* outlines empirical antibiotic choice for localised bite infection with no signs of systemic symptoms or involving deeper tissues (Box 1).³

Box 1. Empirical antibiotic choice for localised infection³

Amoxicillin + clavulanate 875 + 125 mg (child ≥2 months: 22.5 mg + 3.2 mg/kg up to 875 + 125 mg) orally, 12-hourly for five days.

For patients with a penicillin allergy or at risk of methicillin-resistant *Staphylococcus aureus* infection:

1. Metronidazole 400 mg (child: 10 mg/kg up to 400 mg) orally, 12-hourly for five days*.

+

A. Doxycycline orally, 12-hourly for five days.* (Adult: 100 mg; child ≥8 years and <26 kg: 50 mg; child ≥8 years and 26–35 kg: 75 mg; child ≥8 years and >35 kg: 100 mg)

or

B. Trimethoprim + sulfamethoxazole 160 mg + 800 mg (child ≥1 month: 4 + 20 mg/kg up to 160 + 800 mg) orally, 12-hourly for five days.*

OR

2. A combination of ciprofloxacin 500 mg (child: 12.5 mg/kg up to 500 mg) orally, 12-hourly for five days.*

+

Clindamycin 450 mg (child: 10 mg/kg up to 450 mg) orally, eight-hourly for five days.*

*Depending on the clinical response, a longer duration of treatment may be required.

Antibiotic treatment is unnecessary for bites that are not infected if the risk of wound infection is low. However, a presumptive antibiotic is required if the risk of wound infection is high, for instance, through:

- a delay in seeking medical attention
- a puncture wound that cannot be adequately debrided
- the wound being on the hands, feet or face (if the infection progresses despite antibiotic therapy, consider surgical consultation)
- deeper tissue involvement (bones, joints, tendons)
- the presence of an open fracture
- the wound being caused by a cat bite
- the patient being immunocompromised (eg diabetes or liver disease).

The antibiotic of choice for presumptive therapy is the same as outlined in Box 1. In a community setting, an immediate dose of intramuscular procaine benzylpenicillin can be given if oral therapy has been delayed.

Oral empirical or intravenous antibiotics must be considered if the patient presents with systemic failures or deeper tissue damage. Refer to the Australian *Therapeutic guidelines* for more information about intravenous antibiotic options.³

Answer 5

Wounds other than clean, minor cuts are considered tetanus prone. The following types of injuries can encourage the growth of *Clostridium tetani*:^{3,6}

- compound fractures
- bites
- wounds that contain foreign bodies (eg wood splinters) or that have been contaminated with soil, dust or horse manure (especially if topical disinfection is delayed more than four hours)
- wounds that are complicated by pyogenic infections
- deep, penetrating wounds or extensive tissue damage
- reimplantation of an avulsed tooth
- depot injections or drug injection sites.

Regardless of tetanus vaccination, all tetanus-prone wounds must be disinfected and, where appropriate, surgically treated.⁶ DTPa or a DTPa combination vaccine is recommended for children aged <10 years with a tetanus-prone wound.⁶ Anyone aged ≥10 years with tetanus-prone wounds should receive a booster dose of dT or dTpa if their last dose was >5 years ago (Table 1).⁶

Table 1. Tetanus prophylaxis in wound management^{3,6}

Previous tetanus vaccination	Type of wound	Is tetanus toxoid vaccine indicated? DTPa, DTPa combinations, dT, dTpa, as appropriate	Is tetanus immunoglobulin indicated?
≥3 doses in the past			
<5 years since the last dose	Clean minor	No	No
	All other	No	No*
5–10 years since the last dose	Clean minor	No	No
	All other	Yes	No*
>10 years since the last dose	Clean minor	Yes	No
	All other	Yes	No*
<3 doses or uncertain			
Uncertain date of the last dose	Clean minor	Yes	No
	All other	Yes	Yes

*Tetanus immunoglobulin should be given to people with humoral immune deficiencies and human immunodeficiency virus (regardless of CD4⁺ count) if they have a tetanus-prone injury, regardless of the time since their last dose of tetanus vaccine. dT, diphtheria-tetanus; dTpa/DTPa, diphtheria-tetanus-acellular pertussis

Answer 6

Australia is not a rabies-enzootic country.⁷ Post-exposure prophylaxis should be administered to people who have bat bites, travellers returning from rabies-enzootic countries who have mammalian bite wounds² and laboratory workers who work with live lyssaviruses.^{2,7} Raquel does not meet the criteria for receiving a rabies vaccine or immunoglobulins.

Conclusion

Raquel and her grandparents are educated on the importance of adhering to the antibiotic regimen for five days. Furthermore, they are advised about general wound care, including daily inspection for infection and signs and symptoms of deterioration. Raquel's grandparents are given clear instructions on when and where to return for wound re-evaluation. Raquel is reviewed in the clinic two days later, and the wound is healing well. To avoid repeat incidences, all dog attacks should be reported to the appropriate council as soon as possible by the victim.

Resources for doctors

- Therapeutic Guidelines – Post-traumatic wound infections, <https://tgldcdp.tg.org.au/viewTopic?etgAccess=true&guidelinPage=Antibiotic&topicfile=post-traumatic-wound-infections>
- Australian Technical Advisory Group on Immunisation – *Australian immunisation handbook*, www.health.gov.au/resources/publications/the-australian-immunisation-handbook

Resources for patients

- UpToDate – Animal and human bites (beyond the basics), www.uptodate.com/contents/animal-and-human-bites-beyond-the-basics

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CASE

4

Saanvika is embarrassed about her bottom

Saanvika, aged 23 years, is a female schoolteacher who presents with a problematic area of skin in her natal fold that is itchy and painful at times. She is embarrassed by this and cannot see or reach the area properly to examine it. Saanvika reports that fluid sometimes leaks onto her underwear. She has tried a few things to fix her condition, but nothing has helped.

Question 1 📖

What further history and examination would be helpful when assessing Saanvika?

Further information

On further history-taking, Saanvika reports having this problem for six years. She remembers it first occurred as a child (possibly when she was aged 10 years) when her mother noticed a small pit on her lower tailbone. She recalls it did not cause her any problems then and remembers seeing a doctor who advised no further action was required.

Subsequently, approximately six years ago, Saanvika developed a painful swelling that would spontaneously burst open, and she noticed a large amount of fluid leaking from it that soaked her underwear. She remembers this well as it occurred around the time of her friend’s twenty-first birthday and she recalls the embarrassment she experienced when walking and sitting in discomfort at her friend’s party. She did not tell any of her friends about this at the time because she thought they would think she was dirty. She saw her general practitioner (GP) and was given a course of oral antibiotics. Saanvika also used a barrier cream that she purchased from the pharmacy and has taken vitamins that included zinc, collagen and vitamin D to help it heal.

She has no other relevant medical history. Her only regular medications are a contraceptive and paracetamol for pain as needed.

You perform a physical examination of the area and find a wound that is proximal to her anus but overlying the coccygeal area approximately 5 cm × 1.5 cm × 0.5 cm deep with red gelatinous tissue (Figure 1). The area is tender to touch, and her surrounding skin is moist. There is no oedema, induration, malodour, warmth or erythema.



Figure 1. Saanvika’s wound

Question 2 📖

What is the likely diagnosis?

Question 3 📖

What other diagnoses would you consider at this stage?

Question 4 📖

What investigations would you consider for Saanvika?

Further information

You discuss a diagnosis of pilonidal sinus disease (PSD) with Saanvika. In Saanvika’s case, PSD likely evolved from an asymptomatic pit to acute abscess with spontaneous drainage and has now resulted in chronic PSD. Having listened to your detailed explanation, Saanvika tells you that one of her brothers had a similar condition and needed an operation followed by a prolonged period of dressings for nearly a year before the wound completely healed.

Question 5 🗣️

What are the risk factors for PSD?

Further information

Saanvika asks you if her current situation could have been avoided if the pit on her bottom was removed when she was a

child or later when she had the abscess. She feels she should have undergone an operation for her abscess.

Question 6 🧠📖

What would you tell Saanvika?

Further information

Saanvika asks you about your plan to treat her chronic PSD, as she has been living with the condition for almost six years and she is very irritable and anxious and tearful at times. She also mentions that she has a new partner and her relationship with him is strained because of her present condition, which she has not shared with him.

Question 7 📖

What would be your management plan to treat Saanvika’s PSD and her psychosocial issue?

Question 8  

What would you discuss with Saanvika ahead of selecting a treatment option?

CASE 4 **Answers****Answer 1**

When assessing a wound, further information will confirm or assist with establishing aetiology. Examination of a chronic wound such as this should be holistic and include:

- local examination of tissue, inflammation, moisture, edges
- regional examination of pain, oedema, temperature, texture and colour.

Systemic examination of the patient's medication, comorbidities, nutrition, mobility and financial and social situation is also important.

The wound assessment mnemonic HEIDI (**H**istory, **E**xamination, **I**nvigation, **D**iagnosis and **I**mplementation)¹ is helpful to conduct a holistic assessment and aid in collecting such information.

Answer 2

Chronic PSD is most likely. There is a hypergranular pit in the middle of the natal cleft, which over time causes waxing and waning of inflammation that results in cystic cavities within a sinus. This often branches outwards and is lined with haemosiderin laden macrophages that give the appearance of a gelatinous and friable granulation tissue that bleeds readily.²

Answer 3

The differential diagnoses of chronic PSD in the natal cleft are:

- anorectal fistula – tracks toward the anus whereas pilonidal sinus tracks toward the natal cleft. Digital rectal examination and anoscopy would help to make a definitive diagnosis.
- Crohn's disease with associated anal fistula – occurs around the anus rather than the natal cleft area. History of

Crohn's disease and investigations such as contrast studies of the gastrointestinal tract and endoscopy may be indicated in complex perianal fistulas.

- hidradenitis suppurativa – shares some common features with PSD, but its typical location in the perineal or inguinal area is the differentiating feature.

Answer 4

Complementary investigations are seldom required because of typical clinical features of PSD in the natal cleft. It is important to note that that PSD can also occur in areas other than the natal cleft (eg in the interdigital spaces in barbers' hands).

However, ultrasonography and/or magnetic resonance imaging are sometimes indicated to differentiate PSD from anorectal fistula, sacral osteomyelitis and posterior anorectal tumour. Wound swabs and biopsy of the sinus tract can be useful in the diagnosis of rare causes of PSD, such as tuberculosis and actinomycosis.³

Answer 5

PSD can be familial and is more often seen in males who are overweight and sweat excessively, have increased hair density around the natal cleft area and are engaged in occupations requiring prolonged sitting positions.⁴

Answer 6

Pilonidal sinuses are now widely accepted to be acquired abnormalities. However, absence of coalescence of the primitive ectoderm leading to typical pits can be seen in children, and the possibility of a rare sinus to the neural canal and dura should be considered, in which case they usually present in childhood and are in the lumbar rather than sacral region.⁴ Familial history of pilonidal sinus with earlier onset has been reported.⁵ As Saanvika had no complications arising from the pit-like depression, there was no need for any treatment at that stage. Prophylactic surgery in this group of patients does not show benefit over surgical intervention for symptomatic disease.⁶ Therefore, nonoperative strategies, such as hygiene, hair control and observation, are appropriate for this group.⁶ However, the optimal method of hair removal (eg mechanical shaving, depilatory cream or laser) has not been well established.

Most abscesses develop well beneath the skin and require a general anaesthetic for drainage. However, a pointing abscess with a soft, tender fluctuant area at the skin surface can be drained by a GP under a local anaesthetic with an incision 1 cm off the midline,⁷ and following drainage of the pus, removal of hairs and debris is undertaken without irrigation or packing.⁸ Antibiotics alone will not cure the abscess and are recommended for patients who have an abscess and significant cellulitis. Considering the organisms most commonly isolated from PSD abscesses, antibiotic choice should be first-generation cephalosporin in addition to concurrent metronidazole.⁹

Answer 7

PSD, being a disease of young adults, contributes to disruptions to social activities, friendships, relationships, school and work, significantly increasing the complexity of managing their chronic wounds.

A small phenomenological study of patients with one or more episodes of PSD found that participants had many psychosocial and psychological effects in living with the disease, such as inability to be active and enjoy holidays, beach sport activities with friends or swimming.¹⁰ People with PSD also experienced limitations arising from the wounds while sleeping, driving, bending and performing activities such as tying shoelaces. They may have ongoing concerns of financial implications, inconvenience of dressing changes, pain and fear of hospitalisation. Patients also reported that they were not given enough information about the disease. They wanted the clinician to have open and honest discussions about different treatment options and operation types with postoperative self-care strategies.

Encouraging and empowering Saanvika to provide self-care would enable her to have some control, which can reduce anxiety and time away from her work.¹⁰ Psychological management involves taking time to listen to patients and providing explanation about the nature of the disease and the treatment options.¹⁰

The definitive treatment is surgical, which involves destruction of all sinus tracts and skin pores (pits). However, the optimal technique is debated. The rotational flaps introduced by Karyadakis and by Limberg are the two most well-known techniques, with the lowest recurrence rates reported with the latter technique (27% vs 47%).¹¹

Answer 8

As Saanvika's GP, it is recommended that you discuss with her the different treatment options and provide information about surgical procedures, including preoperative and postoperative care. The ideal method of PSD treatment should have a low recurrence rate with minimum excision. Patients should be informed that a short hospitalisation time and a rapid return to their normal life with minimal scar formation is anticipated. In the event of availability of a modern minimally invasive endoscopic procedure,¹² Saanvika should be offered the choice, as long-term results are not known.⁹

Early referral to a wound nurse specialist and/or community nursing involvement for weekly assessment may further improve patient outcomes. A suggested wound care plan follows:

- daily showering and pat drying the area, topical application of barrier cream to the peri-wound (that the patient can do using a small hand-held mirror)
- topical application on the wound with nystatin twice daily for 7–10 days and application of a secondary dressing with a light non-occlusive dressing to absorb exudate, reduce soiling of clothes and reduce pain
- after 7–10 days cease nystatin and instead use an antimicrobial dressing.

Summary

Care strategies for PSD should commence at first presentation and include discussion relating to conservative and surgical management, ensuring both verbal and written information are provided. GPs can recommend a wound management plan that promotes self-management and antimicrobial properties. Early referral to a wound specialist and involving community nurses are also highly desirable. It is important that GPs assess and manage pain and consider other strategies to alleviate anxiety and fear in this chronic debilitating disease that interrupts daily life. The prevention of penetration of hair into the wound is essential during the healing period and several months postoperatively to limit the risk of recurrence.

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CASE

5

Suzan refuses to use her arm

Suzan, aged four years, is brought in by her mother, Alina. Alina says Suzan has not been using her right upper limb since midday today.

Question 1 

What further questions would you ask Alina to help in assessing Suzan?

Further information

Suzan is a generally well child, with no previous medical history. She lives with her parents and has no siblings. Alina says Suzan is always happy and active. Suzan attends four-year-old kinder and is very happy there with her friends. She goes to swimming classes twice every week.

Suzan was born at full term with a normal vaginal delivery after an uneventful pregnancy. Her immunisations are up to date. She is not taking any medications and has no allergies.

Alina explains that she noticed Suzan refusing to use her right arm at lunchtime today when Alina gave her a sandwich and Suzan used her left arm to hold it. When Alina tried to check her arm, Suzan became distressed. Despite this, Suzan had a good appetite and finished all her lunch today.

Alina tells you Suzan has not experienced trauma or a fall.

On examination, Suzan looks well. Her temperature is 36.5°C and her weight is 15 kg. Her elbow is extended, and the forearm is in pronation. There is no swelling, redness, hotness, bruises or deformity of the elbow, wrist or shoulder. There is no tenderness on palpation. Suzan refuses to use the affected limb and becomes distressed only on elbow movement.

When you ask Suzan how her arm feels, she says that she felt the pain while she was drawing and since then she cannot move her arm.

Question 2 

What is your working differential diagnosis?

Question 3 

What is the likely diagnosis in Suzan’s case?

Question 4 

What investigations can differentiate conditions that cause a loss of upper limb function?

Question 5 

How would you manage Suzan's condition?

Question 6 

Do you need to refer Suzan anywhere?

Question 7 

What is the prognosis of Suzan's condition?

Question 8 

Is this condition preventable?

CASE 5 **Answers**

Answer 1

It is important to take a full medical history including Alina's pregnancy and Suzan's birth history, past medical problems, family history, immunisations, allergies and current medications.

Answer 2

Differential diagnosis of acute loss of upper limb function usually reflects local pathology such as:

- fracture
- pulled elbow
- joint pathology
- infective process
- neurological lesion.

It is important to remember to examine the clavicle. A diagnostic pathway for a child not using their upper limb is shown in Figure 1.

Answer 3

The most likely diagnosis of Suzan's presentation is pulled elbow. Subluxation or partial dislocation of the radial head, commonly called pulled elbow, nursemaids' elbow or babysitters' elbow, is a common injury in children aged 1–4 years as a result of a sudden pull on the arm (usually by an adult), which pulls the radius under the annular ligament (Figure 2).^{1,2}

The child usually presents with sudden pain and loss of function of the arm with no history of a fall; the elbow is in extension and the forearm is in pronation or held against the body.

Diagnosis can usually be established on history and examination.^{3,4} Manipulating the arm during examination will often reduce the injury.

Answer 4

Pulled elbow is a clinically established diagnosis with a classic history and examination.³ Plain radiographs are indicated when a differential diagnosis is suspected; for example, if there is significant tenderness, swelling, bruising or deformity, or if reduction fails.

Answer 5

Pulled elbow can be managed by performing a reduction manoeuvre. Either of the following methods may be effective.

Pronation manoeuvre

- Have the child sit on the parent’s lap.
- Apply pressure over the radial head with one hand and hold the child’s hand with your other hand (Figure 3).
- Fully pronate the forearm and flex the elbow (you may feel a click over the radial head; Figure 4).
- Review after 10 minutes.

If reduction fails after two attempts using pronation, then supination can be attempted (1–2 times).⁵

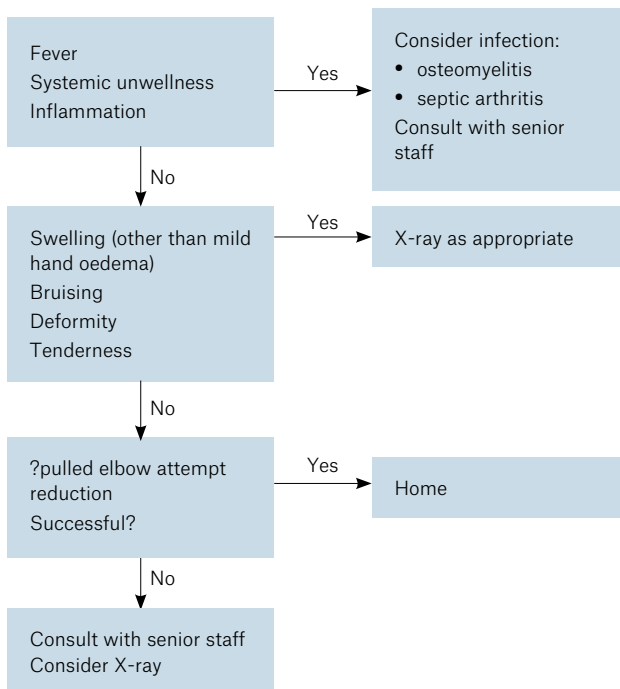


Figure 1. Assessment of a child not using their upper limb

Republished with permission from The Royal Children’s Hospital, Melbourne, Clinical Practice Guideline: Upper limb non-use, Parkville, Vic: RCH, [date unknown]. Available at www.rch.org.au/clinicalguide/guideline_index/Upper_Limb_NonUse [Accessed 22 September 2022].

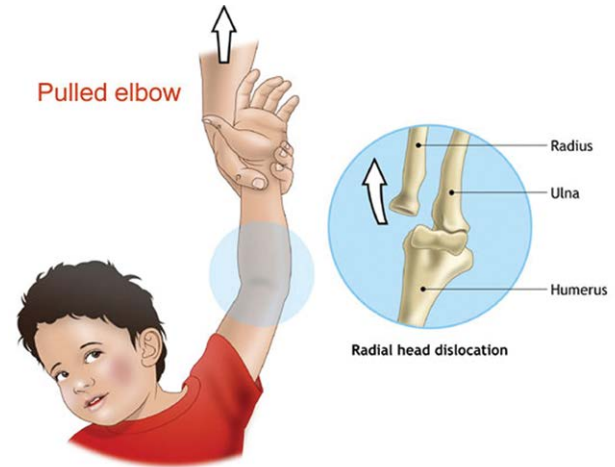


Figure 2. Pulled elbow

Republished with permission from The Royal Children’s Hospital, Melbourne, Fact sheets: Pulled elbow, Parkville, Vic: RCH, 2018. Available at www.rch.org.au/kidsinfo/fact_sheets/Pulled_elbow [Accessed 22 September 2022]. Images subject to copyright.

Supination manoeuvre

- Have the child sit on the parent’s lap.
- Apply pressure over the radial head with one hand and hold the child’s hand with the other (Figure 3).
- Fully supinate the forearm and flex the elbow (you may feel a click over the radial head; Figures 5 and 6).
- Review after 10 minutes.

Practitioners should expect the patient to experience distress and pain during reduction manoeuvres. This should pass rapidly, with the child returning to using the arm without pain within approximately five minutes.⁶

The pronation method might be more effective and less painful.^{7,8}

The supination/pronation movement nearly always reduces this kind of laxation. If it does not occur, it is important to consider a different pathology other than pulled elbow. However, manipulation may fail on the first try.⁶

If the reduction fails with both pronation and supination, consideration of referral for radiographs and reduction under anaesthetic is recommended.⁶

Answer 6

Referral may be considered:

- if reduction fails with both pronation and supination for radiographs and/or reduction under anaesthesia⁴
- if significant tenderness, swelling, bruising or deformity is detected.⁴



Figure 3. Applying pressure over the radial head



Figure 5. Supination of the forearm



Figure 4. Pronation of the forearm



Figure 6. A and B. Flexing the elbow

Figures 3–6 republished with permission from The Royal Children's Hospital, Melbourne, Clinical Practice Guidelines: Pulled elbow, Parkville, Vic: RCH, [date unknown]. Available at www.rch.org.au/clinicalguide/guideline_index/Pulled_elbow [Accessed 22 September 2022]. Images subject to copyright.

Answer 7

A pulled elbow will not cause any long-term damage to the child, but it is recommended to advise parents of possible recurrence (typically within a month).^{6,9}

Answer 8

Although the name indicates that the pathology involves pulling of the elbow or a fall, for up to 50% of presentations of pulled elbow there is no known (or reported) pull to the arm.⁹

Some children are more likely than others to experience a pulled elbow. It can happen more than once, and it may occur several times in children who have particularly loose joints.

To prevent a pulled elbow, parents should avoid picking the child up by the lower arms or wrists – children should be lifted using their armpits instead. Others who care for the child, such as grandparents and childcare workers, should also be taught the correct way to pick up the child.⁹

It is unusual for children older than five years to have a pulled elbow, as their joints are stronger than those of younger children.

Conclusion

You ask Alina to hold Suzan on her lap and you undertake the pronation manoeuvre, with reduction of the elbow achieved on the second attempt. Suzan cries during the procedure but is soon feeling better and playing happily after a few minutes.

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ACTIVITY ID 371360

Minor wounds and injuries

This unit of *check* is approved for six CPD Activity points in the RACGP CPD Program. The expected time to complete this activity is three hours and consists of:

- reading and completing the questions for each case study
 - you can do this on hard copy or by logging on to the RACGP website (www.racgp.org.au), clicking on the My Account button and selecting the *gplearning 2020* link from the drop-down
- answering the following multiple choice questions (MCQs) by logging on to the RACGP website (www.racgp.org.au), clicking on the My Account button and selecting the *gplearning 2020* link from the drop-down
 - you must score $\geq 80\%$ before you can mark the activity as 'Complete'
- completing the online evaluation form.

You can only qualify for CPD points by completing the MCQs online; we cannot process hard copy answers.

If you have any technical issues accessing this activity online, please contact the *gplearning* helpdesk on 1800 284 789.

If you are not an RACGP member and would like to access the *check* program, please contact the *gplearning* helpdesk on 1800 284 789 to purchase access to the program.

Case 1 – Jake

Jake, aged 10 years, presents with a cat bite on his big toe that occurred two hours ago. There is a clean puncture wound on the medial side of the big toe, 0.5 cm proximal to the distal interphalangeal joint. You thoroughly irrigate the wound with normal saline and explore for foreign bodies.

Question 1

Which one of the following statements is **true**?

- A. Cat bites may appear minor at the skin's surface but possess a higher risk of deeper tissue infection than dog bites.
- B. Jake requires rabies post-exposure prophylaxis because the injury occurred on his feet.
- C. Jake does not require a presumptive antibiotic because it is a clean injury.
- D. There is no need to check sensorimotor and vascular function in the toe as it is a minor bite injury.

Question 2

Which one of the following statements regarding Jake's presentation is **false**?

- A. Cat bites can encourage the growth of *Clostridium tetani*.
- B. Cat bites can cause structural damage to deeper tissue such as tendons, nerves, and blood vessels.
- C. Recording the anatomical site and the time of the injury is not always important.
- D. Jake should receive a booster dose of the tetanus vaccine (diphtheria-tetanus [dT] or diphtheria-tetanus-acellular pertussis [DTPa]).

Case 2 – Mirka

Mirka, aged three years, presents with her father after accidentally tipping over a pot of boiling water on the stove a few hours ago. The water ran over her torso, which is red and has started to blister. You assess her burn injury urgently as a percentage of her total body surface area (TBSA).

Question 3

A child's palm equates to roughly what percentage of the child's TBSA?

- A. 10%
- B. 2%
- C. 1%
- D. 0.5%

Question 4

Which one of the following 'burn details' in a child requires immediate telephone referral and advice from a specialist burns unit?

- A. Circumferential or nearly circumferential burns
- B. Burn depth is superficial or partial thickness
- C. The child is five years old
- D. Burn size is $< 5\%$ TBSA

Case 3 – Vishan

Vishan, aged four years, is brought in by his mother, Aish, who has noticed Vishan has started to use his non-dominant arm. Aish mentions that this began after she quickly pulled Vishan away from the pool at home. You suspect Vishan may have a pulled elbow.

Question 5

Which one of the following is a sign or symptom that suggests pulled elbow?

- A. Inability to use the arm
- B. Rash

- C. Swollen elbow
- D. Fever

Question 6

Which one of the following methods would you use to diagnose pulled elbow?

- A. X-ray
- B. Ultrasonography
- C. History and examination
- D. Magnetic resonance imaging (MRI)

Case 4 – Tiago

Tiago, aged 24 years, is an office worker who presents with chronic pilonidal sinus disease (PSD) in the natal cleft. He has been seeing you over the past few years for management of his condition.

Question 7

Which one of the following is **true** with regards to PSD?

- A. PSD is a congenital disease.
- B. Incidence of PSD increases with advancing age.
- C. PSD is more common in young girls.
- D. PSD may present as an abscess.

Question 8

Which one of the following is an effective management option for PSD in the natal cleft?

- A. Treatment with antibiotics as early as possible is recommended
- B. MRI to confirm the diagnosis
- C. Prophylactic surgery when patients present with asymptomatic pit
- D. Encouraging patients to self-care

Case 5 – Nick

Nick, aged 35 years, comes to see you complaining of a sore right hand. He thinks he may have pierced the skin with a rusty nail this morning while tidying up the shed. He is otherwise well and is not on any medications. The wound is mid palm and is not bleeding.

Question 9

Which one of the following management steps is the most important for this presentation?

- A. Prescription of a broad-spectrum antibiotic
- B. Administration of a tetanus booster

- C. Referral to hospital for specialist management
- D. Wound closure with sutures

Further information

Nick returns to see you two days later with his daughter Floss, aged seven years. She was helping him in the yard and is now limping, with a sore left foot. You examine her and think perhaps she has a foreign body embedded. Nick reports that there was some broken glass lying around.

Question 10

Which one of the following options is the most likely next step to further assess this injury?

- A. Refer the family to the local children's hospital
- B. Arrange an X-ray of her foot
- C. Anaesthetise the area to allow for examination
- D. Politely ask Nick to hold Floss still so you can probe the wound

check

Independent learning program for GPs