Dressings

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Wound management in the A&E department

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Aim and intended learning outcomes

This article examines the assessment and initial management of some of the acute minor wounds and burns commonly seen in A&E departments, minor injury units and primary healthcare settings. It aims to teach the reader about general emergency wound care and, therefore, does not include advanced wound repair such as delayed or secondary closure and tendon repair. These potentially complicated wounds usually require the advanced skills of an emergency nurse practitioner or a specialist doctor. After reading this article, you should be able to:

- Describe some common acute wounds and burn injuries.
- Outline acute wound and burn assessment.
- Discuss the considerations for acute wound cleansing.
- Identify methods of minor wound closure.
- Discuss the initial management of minor burns, bites and abrasions.
- Describe tetanus toxoid prophylaxis.

Introduction

Reforming Emergency Care (DoH 2001) has resulted in many changes for contemporary emergency nursing with resources being targeted to help to meet patients' needs and reduce department waiting times by encouraging new ways of working. In the field of emergency wound management, many patients may be seen, assessed and treated solely by a nurse. It is, therefore, essential that emergency nurses are adequately prepared to undertake such a role.

Small incised or lacerated wounds, minor burns and bites are common in A&E departments, minor injury units or walk-in centres. While the treatment of these conditions is usually straightforward, thorough assessment of the wound or burn is vital to prevent short-term and long-term complications for the patient.

Management of emergency wounds will depend on a number of considerations:

- Mechanism and time of the injury.
- Size and depth of the wound.
- Site of the wound.

Many emergency wounds will be caused by non-sterile agents (Walsh and Kent 2001) and, therefore, there is an increased risk of infection.

TIME OUT 1

To understand the aetiology of common acute wounds and burn injuries, it is essential that you know the normal anatomy of the skin. Before reading on, identify and write down the layers of the skin so you are able to understand which structure may be involved depending on the wound depth or mechanism. Then check your notes with Figure 1.

Wound healing

Wound healing is a complex sequence of cellular and molecular processes including the inflammatory response with cell migration, angiogenesis (new

In brief

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Summary
Minor wounds and burns are common presentations to A&E departments and primary care facilities. While the management of such conditions is usually straightforward, thorough assessment and treatment initiation are essential to prevent short-term and long-term complications for the patient.

Key words
- Accidents and emergencies
- Dressings
- Wounds

These key words are based on subject headings from the British Nursing Index. This article has been subject to double-blind review.

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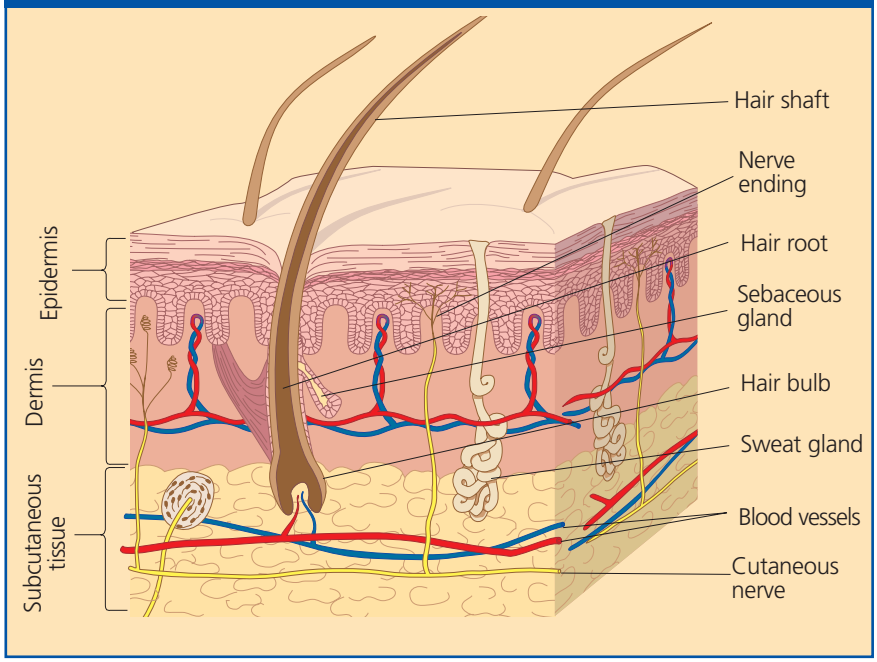
Figure 1. Cross-section of the skin



blood vessel formation), fibroblast activity, collagen deposition, and re-epithelialisation.

Normal wound healing is thought to occur in three stages:

- Inflammation – migration of neutrophils, monocytes, and keratinocytes into the wound over the first two to three days.
- Proliferation – macrophages, mesenchymal cell and fibroblast activity resulting in the formation of granulation tissue and re-epithelialisation from day two or three to about a week.
- Maturation – remodelling with active collagen maturation from two weeks to months post-wounding, depending on the condition of the patient and the wound's size and depth.

More information about wound healing can be gained from a standard anatomy and physiology text book. It is also comprehensively covered in Gould (2001).

TIME OUT 2

Analyse your knowledge of wound healing. Reflect on:

- The inflammatory phase – how would you tell the difference between an inflamed healing wound and an infected wound?
- How do you know when a wound is granulating? What does it look like?
- What colour are the wound edges when they are healed and epithelialisation has occurred? How do you know the wound is healed?

Discuss your answers with a colleague.

Common acute wounds and burn injuries

Incised wound An injury to the skin, superficial or deep, caused by a sharp-cutting implement such as a knife or broken glass (Milroy and Rutty 1997). This type of injury is usually relatively clean; however, contamination, such as from a dirty knife, should be considered.

Laceration A tearing or splitting of the skin, superficial or deep, caused by blunt trauma (Milroy and Rutty 1997). Causative agents include a direct or indirect blow to the skin with a heavy object or against a solid structure.

Pre-tibial laceration The pre-tibial area has a poor blood supply (Moulton and Yates 1999) and heals slowly in older people. A pre-tibial flap must not be allowed to dry out and shrink while awaiting treatment, therefore a moist water or saline soak should be applied. Ultimately, cleansing to remove debris and haematomas is needed followed by an application of Steri-Strips®.

Puncture or penetrating wound A small opening where an object has penetrated the skin. Careful assessment by a suitably qualified practitioner is essential to determine if the wound is deep and there is underlying injury to an important structure or a foreign body (De Souza *et al* 2002).

Abrasion A superficial removal of the skin (Jones 2003), caused by rubbing or friction. This can be painful and may have dirt embedded into the skin, which should be removed by irrigation and scrubbing.

Crush injury Tissue, usually a digit, is crushed and the force of the impact causes the soft tissue and skin to be split open (Walsh and Kent 2001). This type of wound could be associated with an underlying fracture or skin/tissue loss, and is prone to infection.

Bites Teeth can produce dirty, ragged contused wounds (Moulton and Yates 1999). There is a high risk of localised infection, especially with bites to the hand.

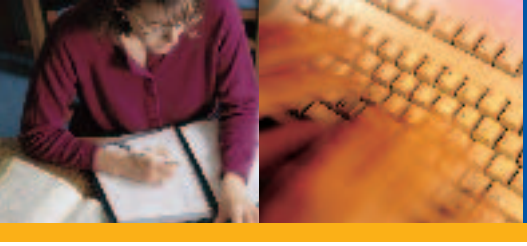
Burns These can be caused by:

- Thermal sources – intense heat or cold, hot liquids or substances, steam, flame, exposure to the sun, friction, radiation.
- Chemical sources – acids or alkalis. Specialist advice should be sought for chemical burns as an antidote may be needed or copious irrigation.
- Electrical currents – where there is a risk of underlying tissue damage.

Treatment of a burn will depend on the site, its size and depth.

Wound assessment

Before initiating treatment to an emergency wound, a number of questions should be asked to carry



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out an accurate wound assessment. This needs to be legibly documented in the patient's record.

What? What type of wound is it? What was the mechanism of injury? Is the history consistent with the type of wound – consider non-accidental injury in paediatric, vulnerable or older adult patients.

When? When did it happen? Wounds older than six hours are more prone to infection (Moulton and Yates 1999).

Where? The site of the injury on the body – could there be underlying damage? Is it the patient's dominant hand? Is there an increased risk of infection because of the place where the wound has occurred?

How? How does it look? Is it oozing blood suggesting a venous bleed or spurting blood suggesting an arterial bleed that needs to have pressure applied, elevation and expert help? How deep is the wound? Do the distal neurovascular and tendon functions need assessing? Could a foreign body be present? The presence of glass or metal suggests the need for an X-ray to locate or exclude this (Holt 2000) before dressing or closure. How wide is the wound? A diagram with measurements may be useful (Holt 2000). How does it feel? Wounds and burns can be very painful (Moulton and Yates 1999). Does the patient need analgesia?

The assessment should also include a record of the patient's:

- Past medical and medication history to determine if there is anything that may affect wound healing, such as anticoagulant therapy or immunosuppression.
- Allergies to drugs and dressings.
- Tetanus immunisation status.

Rings or other items of jewellery should be removed from the affected area, and, if appropriate, the site of the wound should be elevated.

TIME OUT 3

Think about the way you assess emergency wounds. Do you use a systematic approach to assessment?

Using the 'What? When? Where? and How?' approach, think about the assessment of:

- A 22-year-old chef with a hand wound.
- A 75-year-old retired teacher with a pre-tibial wound on her left leg.
- A nine-year-old boy who has burnt his right thigh at home.

Discuss your assessment with a colleague.

Wound cleansing

Wound cleansing is an area of care where there are differing opinions on best practice. Many authors agree with the need for thorough cleansing of emergency wounds (Bianchi 2000, Holt 2000, O'Neill 2002, Riyat and Quinton 1997, Thompson and Lecky 1999, Walsh and Kent 2001) as most are treated initially as contaminated (Small 2000). Additionally, there is a consensus that wounds need to be irrigated rather than swabbed or wiped clean. Dirty wounds should be thoroughly washed with soap and running water to remove excess contaminants before a more formal cleaning.

Cotton wool This should not be used to clean emergency wounds because of the risk of fibres being shed into the wound (Gould 1999, Pudner 1997).

Gauze swabs Cleansing of acute emergency wounds with non-woven gauze swabs carries the risk of redistributing bacteria around the wound and causing tissue damage (Towler 2001).

Irrigation This is an effective method to remove debris and reduce the risk of infection in an acute wound. There is little research into the efficacy of this method in humans, but animal studies have shown the benefits of high-pressure irrigation as a method to reduce bacterial contamination (Madden *et al* 1971, Rodeheaver *et al* 1975). High pressure irrigation can be achieved by using a 35ml syringe and a 19g needle (Towler 2001), however this degree of pressure can damage tissue and, therefore, force should be used with caution unless the wound is highly contaminated. Consideration should be given to the risk of needle stick injury, blood splashes and needle-phobic patients. More gentle irrigation using a saline-filled canister or Steripod® is advocated by Towler (2001), however, if water is to be used, a syringe without a needle could be selected as an alternative method of delivery.

Cleansing solutions *Normal saline* – This is often recommended for wound cleansing as it is an isotonic solution that does not interfere with wound healing. It is relatively cost effective and readily available in a sterile form for use in wound care where asepsis is paramount, such as with burns.

Water – Many authors discuss the use of clean, drinkable water for use in traumatic wound cleansing (Bianchi 2000, Fernandez *et al* 2003, Griffiths *et al* 2001, O'Neill 2002, Riyat and Quinton 1997, Towler 2001). A variety of studies on animals and humans have demonstrated that water is an easy, cost-effective method of cleaning emergency wounds that has comparable or, in some cases, better infection rates to normal saline. Water should be drawn from a tap that is used frequently, has a direct water supply and with a nozzle that is regularly swabbed for contamination (Lawrence 1997).

Antiseptics – There is much debate about the use of antiseptics, such as chlorhexidine, in emergency wound management. Bianchi (2000) cites reports of toxicity to fibroblasts and keratinocytes when using antiseptics, thus delaying wound healing.

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Additionally, many antiseptics are not left in contact with the skin for enough time (about 20 minutes) to decolonise the bacteria (Dealey 1999). Povidone-iodine is a broad spectrum antiseptic that has been subjected to a number of animal research studies with a variety of results. Many authors question its use and, as with other antiseptics, povidone-iodine has been found to be toxic to fibroblasts increasing wound healing times (Dealey 1999, Pudner 1997). Additionally, Kaysinger *et al* (1995) report that povidone-iodine is toxic to osteoblasts, which has led to a questioning of its use in deep wounds where bone tissue may be involved. Therefore, povidone-iodine is not recommended for routine wound cleansing. Nevertheless, many clinicians request the use of povidone-iodine as a broad spectrum antiseptic for contaminated wounds. Here, consideration should be given to whether the risk of tissue damage outweighs the benefits that an antiseptic may provide. Holt (2000) suggests that povidone-iodine should be diluted to 5 per cent from its 7.5 per cent commercially prepared form for use in short-term cleansing of contaminated wounds.

TIME OUT 4

Reflect on the methods you use to clean a wound and think about the rationale for your choice. Do you consider the needs of the patient and the wound, or do you follow tradition or ritual? Read your local wound cleansing policy.

Wound closure

To improve wound healing and cosmetic appearance, many emergency wounds need primary closure. Here, the wound edges are brought together and held in place with glue, hair ties, Steri-Strips®, staples or sutures. Some wounds, such as abrasions, wounds with tissue loss or bites, may not be suitable for primary closure and these will be left to heal by secondary closure – inflammation, granulation and epithelialisation. Before closing any wound, tendon and neurovascular damage must be excluded by a suitably qualified practitioner and the wound thoroughly cleansed.

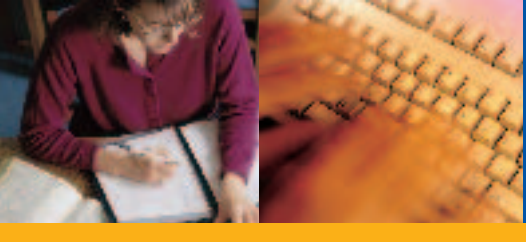
Glue Tissue adhesives can be used to close simple lacerations as an alternative to suturing, especially for children or needle-phobic adults. Glue offers many potential advantages over suturing, including ease of use, decrease in pain and time to apply, as well as not requiring a follow-up visit for removal (Farion *et al* 2003). Individual glue manufacturers' instructions should be followed on storage and use, however most glue is applied in a continuous line or dotted along the opposed wound edges being held together. Although any minor laceration can be glued, reinforcement with Steri-Strips® might be needed for wounds longer than three centimetres (Pope 1993). When glueing a scalp laceration, surrounding hair should be trimmed short to avoid it being stuck into the wound. Most manufacturers recommend that a glued wound should be kept dry for four to five days, by which time an artificial scab will have formed, which will fall off when the wound has healed. Farion *et al* (2003) report that there is no significant difference in cosmetic outcome between tissue adhesives and suturing, or between different types of tissue adhesives.

Hair ties Minor lacerations or incisions of the scalp can be closed by tying the hair together to pull the wound edges closed. Hair opposition technique (Singer 2002) is suitable for minor lacerations or incisions that are not actively bleeding. Hock *et al* (2002) suggest that hair is brought together from both sides of the wound making a single twist, which is then secured with tissue glue. This is a painless, easy and quick procedure.

Steri-Strips® These are thin strips of adhesive paper that vary in size – 3mm, 6mm and 12mm (Walsh and Kent 2001). They can be used to painlessly close many types of minor laceration or incision, except for hirsute areas where they will not stick. Similarly, mobile areas such as a knee joint may not be suitable for Steri-Strips®. When using them it is essential that the surrounding skin is clean and dry to optimise adhesion. The wound should be closed from the middle, working outward to ensure an even tension across the wound. There should be a gap between each strip to allow drainage from the wound. The patient will need advice on keeping the area dry and when to remove the strips. This will usually be five to seven days, however for pre-tibial lacerations the strips must stay *in situ* for ten to 14 days.

Staples Although used widely in surgical settings, wound closure with staples is still a relatively underused A&E department technique. Staples can be used to close scalp lacerations or incisions instead of sutures. The main benefits of this technique are speed and ease of insertion. Local anaesthesia is required before staple insertion. When comparing stapling with suturing for paediatric scalp lacerations, Kanegaye *et al* (1997) found no significant increase in complication rates, such as infection.

Suturing Sutures provide secure wound closure, but their placement is not without associated discomfort, fear and increased risk of infection (Quinn *et al* 2002). A suture is essentially a foreign body placed in a wound and, therefore, the smallest amount should be inserted to ensure adequate wound closure with minimal local irritation. Wounds are normally sutured up to six to 12 hours post-injury, but this may differ according to local policy and the site



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of the wound. Suturing is not a skill that can be learnt from a book (Moulton and Yates 1999). Theoretical preparation for the skill should go hand-in-hand with supervised practice to develop competence.

Infiltration of local anaesthesia is necessary for most sutured wounds. Lignocaine without adrenaline should be used to prevent compromising the surrounding tissue blood supply. A small percentage of patients may report an allergy to lignocaine, citing dizziness, hypotension or central nervous system disturbances. If this is reported, an alternative wound closure method may need to be considered. Maximum strengths and doses should be stated in a local policy, however for local anaesthesia the solution should not normally exceed lignocaine 1% strength. A 10ml ampoule of 1% lignocaine will contain 10mg/ml, and the maximum adult dose is usually 200mg (20ml – 1%).

Sutures are either absorbable or non-absorbable. Absorbable sutures dissolve in a wound over a period of three to four weeks. They are, therefore, used for the internal repair of deeper wounds, inside the mucous membrane and the perineum. Non-absorbable sutures such as nylon or polypropylene are monofilament, that is, made up of one fibre, which is said to be less irritant and less prone to infection than more traditional multifilament sutures, such as silk. Non-absorbable sutures have to be removed and are used to close skin wounds involving the epidermis and the dermis. Cutting needles have the cutting edge on the inside of the needle curve and reverse cutting needles have the cutting edge on the outside. Both types of needle are used in skin repair and are said to be less traumatic to skin than round-bodied needles. The size of suture used will depend on the patient and the wound (Table 1).

The most commonly used suture for an emergency wound is the interrupted suture. This minimises the risk of infection tracking along a continuous suture (Moulton and Yates 1999). Sutures should always be started in the centre of the wound and then planned strategically along the wound, so that tension remains even throughout. Following the curve of the needle, the first 'bite' of the needle should enter the skin approximately 4mm from the wound edge and then exit the same distance on the opposite side (Walsh and Kent 2001). The width and depth of the suture should be equal so that the layers of the epidermis and the dermis are closed and the wound edges are everted (Holt 2000). If the wound edges are inverted there is a risk of infection, build up of haematoma beneath the edges, delayed wound healing and scarring. Patients need post-suturing advice on wound care, including keeping them clean and dry, how to look for signs of infection and suture removal.

Table 1. Suture size and removal time

Area	Size of suture	Suggested removal
Face	6/0 nylon	Three to five days
Scalp	3/0 nylon	Seven days
Arms, upper legs, torso	4/0-5/0 nylon	Five to seven days
Hands, lower legs, flexure surfaces	3/0-4/0 nylon	Seven to ten days

Abrasions

Abrasions are areas of skin loss caused by rubbing or friction. Blood vessels and nerve endings are left exposed (Dearden *et al* 2001), therefore these wounds tend to ooze haemoserous fluid and are very painful. Additionally, there is a risk of infection from dirt, grit or fibres that may be embedded in the abrasion. To reduce the risk of infection and the development of a permanent tattoo from subcutaneous grit, abrasions must be thoroughly cleaned (Moulton and Yates 1999). Dirt and grit can be removed by applying local anaesthetic gel or infiltrating local anaesthesia and then debriding the wound with a sterile scrubbing brush. Hydrogels or hydrocolloid dressings may help to further debride the abrasion (Dearden *et al* 2001). Large or deep abrasions may require debridement under general anaesthesia.

Bites

A common problem seen by staff in A&E departments is bites by mammals. Dog and cat bites are the most prevalent and people are usually bitten by an animal known to them (Medeiros and Saconato 2003). Human bites and, in particular, clenched-fist injuries (which may not initially present as a bite) are wounds that may involve the hand or deep structures including joints, bones and tendons. Here, a foreign body in the form of a broken tooth may be present. All bites, whether superficial or deep have the potential to become infected because of the oral bacteria that may be present in the mammal delivering the bite. Cat bites have an increased risk of developing an anaerobic infection (Morgan 1997).

There is a lack of consensus in the literature over the use of prophylactic antibiotics following a bite. In a systematic review of current evidence, Medeiros and Saconato (2003) found that antibiotics were associated with a significant reduction in the rate of infection after bites by humans. Interestingly, prophylactic antibiotics did not appear to reduce the rate of infection after bites by cats or dogs. However, there is evidence that the use of antibiotic prophylactic after bites of the hand reduces infection. For human and animal bites, Mellor *et al* (1997) suggest prophylactic co-amoxiclav. This

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Table 2. Zone of burn injury

Zone of injury	Description
Coagulation zone	Dead or non-viable tissue.
Stasis zone	An area of damaged tissue which is at risk due to reduced perfusion following the burn injury but has the potential to recover.
Hyperemia	Tissue may be damaged, but minimally and is able to recover fully.

advice may differ according to local policy, site and depth of bite. Nevertheless, regardless of the injuring agent, scrupulous wound cleansing with irrigation is essential to reduce the risk of infection. Suturing of bite wounds remains controversial with concerns expressed about primary closure of a potentially infected wound. Holt (2000) suggests that bites may be closed using adhesive strips while Dearden *et al* (2001) state that all bites, except hands, may be sutured. Suturing, with its associated infection rate, may be acceptable in bites where cosmetic appearance, on the face for example, is a primary concern (Chen *et al* 2000). Careful follow up to monitor potential infection is recommended for all bites.

Burns

About 130,000 people with burns are treated in UK A&E departments each year (Flanagan and Graham 2001) and burns are the third most common injury type to present to an A&E department (O'Reilly 2003). The severity of the burn is determined generally by the amount of body surface area involved and the depth of the burn. As previously mentioned, a burn is an injury to the skin and possibly underlying tissues which can be caused by thermal, chemical or electrical sources. A burn has three zones of injury (Flanagan and Graham 2001) and its depth can range from superficial to full thickness (Tables 2 and 3).

Most minor burns are dealt with in A&E departments and in the community (McKirdy 2001). Minor burns are usually considered to be where the surface area of the burn is less than 5 per cent (Harulow and Holt 2000), with only superficial or partial thickness involvement. Deep dermal or full thickness burns need referral to a specialist team or centre. Partial thickness burns of greater than 5 per cent or involving areas of special concern may also need referral (Harulow and Holt 2000).

TIME OUT 5

Before reading on, think about what is meant by areas of special concern. Which potentially problematic areas of the body may suffer complications as a result of a burn injury? Write down where and why and then compare with Table 4.

A quick way to estimate the size of the burn is to work out what percentage of the skin surface is burnt. For example, the hand palm surface, including the fingers but not the thumb, is equal to 1 per cent of their body surface area (Moulton and Yates 1999).

Generally burn injuries will heal in the same manner as a minor wound with epithelialisation complete in seven to 14 days. Superficial burns need initial cooling with water and analgesia. If the reddened skin (erythema) is intact the treatment should involve emollient therapy. The skin will feel tight and will dehydrate, therefore an unperfumed emollient should be applied, such as petroleum jelly or E45 cream. The patient should be encouraged to keep flexion surfaces (McKirdy 2001), such as the hands and fingers, mobile. Regular analgesia should be advised during the acute phase.

Following initial cooling and analgesia, partial thickness burns need to be protected against infection and encouraged to heal. As for superficial burns, mobility of a flexion surface must be a consideration. During the inflammatory phase zero to three (up to 72 hours post-burn injury), individual gauze and pad dressings for hand and finger burns should be avoided as the mobility of the hand will be impeded. A burn bag or glove filled with silicone or paraffin is an effective alternative as a method of allowing movement, moisture and collection of exudate. Non-flexure surfaces may be dressed with a semi-permeable film dressing (DuKamp

Table 3. Depth of burn injury

Depth of burn injury	Description
Superficial – epidermal involvement	Pink/reddened skin, painful.
Partial thickness – epidermal and dermal involvement	Red, moist, thin-walled blisters, very painful. Blisters may continue to form over a number of hours.
Deep dermal – involvement of all tissue down to the deep dermis	May have fluid-filled blisters, may be painful. Looks paler than partial thickness, mottled and dry.
Full thickness – deep destruction of all tissue possibly including subcutaneous fat, blood vessels, muscles and bone	Painless, flat, hard surface. Looks white, grey and blackened (charred).

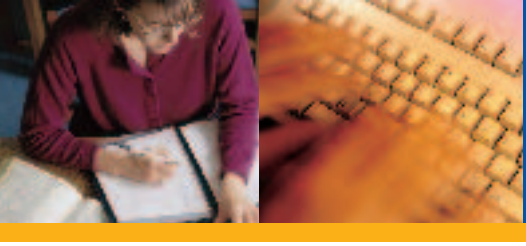

Table 4. Potentially problematic areas of burn injury

Area of the body	Potential problems
Face	Cosmetic appearance – possibility of scarring Potential oropharynx, tongue or upper airway burn
Eyes	Cosmetic appearance – damage or destruction of the eyelids Ocular burns resulting in visual damage
Ears	Cosmetic appearance – damage to cartilage and other tissue resulting in deformity
Hands	Both hand involvement – short-term disability while dressings are *in situ* Potential loss of function resulting in long-term disability
Feet	As for hands
Circumferential burns to limbs or digits	Risk of neurovascular compromise
Perineal burns	Risk of infection from elimination and menstruation Mechanism of injury – non-accidental injury?
Electrical burns	Occult damage to underlying structures

2000), however there may be leakage in cases of large amounts of exudate.

Alternatively, at least four layers of sterile paraffin tulle dressing may be considered to ensure protection and moisture. All partial thickness burns should be reviewed the first day following the injury to observe for blister formation, signs of infection and management of exudate.

Blisters form when the epidermis separates from the dermis, filling with fluid (Flanagan and Graham 2001). This may continue throughout the inflammatory phase. The management of blisters is contentious. It is suggested that a blister should be deroofed as not doing so could increase the size of the lesion (Collier 2000). However this is contradicted by Flanagan and Graham (2001), who describe the detrimental and deepening effects of exposing a burn injury to air. Furthermore, calmodulin, a protein found in higher levels in burn blister fluid, has been shown to have a positive mitogenic effect on keratinocytes and fibroblasts present (DuKamp 2000, Flanagan and Graham 2001). This indicates the need to leave the blister intact during the inflammatory phase. From a practical perspective, many patients find it extremely painful to have a blister deroofed in the first day or two following a burn injury, and therefore the blister should be left intact and covered with a protective dressing until the devitalised tissue has become loose, grey and ready for debridement. Once the burn has passed the inflammatory phase and exudate is reduced, a moist, non-adherent dressing, such as a hydrocolloid, semi-permeable film or a non-adherent silicone dressing can be applied (DuKamp 2000, Harulow and Holt 2000, McKirdy 2001).

Tetanus prevention

Tetanus is caused by the anaerobic bacteria *Clostridium tetani*, found in soil and in human and animal excrement. While the effects of tetanus in the UK are, in general, controlled by an immunisation programme, if acquired the disease can prove fatal (Cassell 2002). Between 1984 and 1995 there were only 145 cases of tetanus in England and Wales and the people most likely to be susceptible to tetanus are older people (DoH 2002). Routine tetanus immunisation only began in 1961, therefore people born before this may not have received childhood immunisation. Additionally, people could be at risk because of incomplete primary immunisation or because antibody levels decline over time (Reid *et al* 1996). Indeed tetanus may result from apparently minor wounds (Cassell 2002). Moreover, wounds do not need to be obviously contaminated for tetanus to develop, and in unvaccinated individuals or people with waning immunity even minor wounds can prove fatal (Thwaites and Farrar 2003).

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Table 5. Anti-tetanus prophylaxis (DoH 2002)

Immunisation status	Clean wound (not tetanus-prone)	Tetanus-prone wound
Last of three dose course or reinforcing dose given in the past 10 years.	Nil (no tetanus prophylaxis needed).	Nil. A dose of human tetanus immunoglobulin may be given if risk of infection is considered high.
Last of three-dose course or reinforcing dose given more than 10 years previously.	A reinforcing dose (0.5mls of absorbed tetanus vaccine).	A reinforcing dose (0.5mls of absorbed tetanus vaccine) plus a dose of human tetanus immunoglobulin in a different site.
Not immunised or immunisation status not known with certainty.	A full three-dose course of absorbed tetanus vaccine.	A full three-dose course of absorbed tetanus vaccine plus a dose of human tetanus immunoglobulin in a different site.

Box 1. Tetanus-prone wounds (DoH 2002)

- Any wound or burn sustained more than six hours ago.
- Any wound or burn at any interval after injury that shows one or more of the following characteristics:
  - A significant degree of devitalised tissue.
  - Puncture-type wound.
- Contact with soil or manure likely to harbour tetanus organisms.
- Clinical evidence of sepsis.

When assessing patients with a wound in the A&E department the following questions should be asked:

- Have they had a full course of tetanus?
- When did they last have a booster?

A comprehensive mechanism of the injury needs to be obtained so that you can determine if the wound is tetanus prone. A full primary course consists of three doses of 0.5ml of absorbed tetanus vaccine given via an intramuscular or deep subcutaneous injection with intervals of one month between each course. The Department of Health (2002) states that a booster given ten years after the primary course and again ten years later suggests that a fully immunised adult who has received the full five doses probably maintains lifelong protection. This, however, may not protect them against tetanus-prone wounds where human tetanus immunoglobulin may be needed (Box 1) (Table 5). The dose of human tetanus immunoglobulin is 250iu intramuscularly (or 500iu if more than 24 hours have elapsed since time of injury).

Conclusion

There are many types of minor wounds and burns seen in an A&E department setting. While in the short-term these presentations are rarely life-threatening, infection, disability and, in rare cases, death can result from inappropriate assessment and management of wounds and burns.

The role of the nurse is changing to best meet the needs of the patient attending the A&E department. It is essential that the A&E nurse has the knowledge and skills to assess and initiate treatment for the wide range of wounds that may be seen. Assessment should centre on the mechanism and time of the injury, the size, depth and site of the wound so that appropriate and timely management is carried out. Thorough cleansing is the cornerstone of emergency wound management. There is a lack of consensus or rigorous evidence regarding much emergency wound care, such as type of wound closure, blister management or antibiotic therapy. Ultimately, considerations such as the individual patient's pre-existing status and lifestyle may dictate the most appropriate management

TIME OUT 6

Now that you have completed the article, you might like to think about writing a practice profile. Guidelines to help you are on page 56.