

Wound Management

WOUND ASSESSMENT

The **TIMES principle** provides a systematic approach to the management of wounds. TIMES is based on the intervention for the five clinical areas and leads to an optimal well vascularised wound bed that facilitates the effectiveness of other therapeutic measures.

The objectives underpinning **TIMES** are:

- **T** = Tissue type and whether non-viable or deficient
- **I** = Infection or inflammation
- **M** = Moisture balance (Dry, moist or wet exudate)
- **E** = Edges – advancing, non-advancing or undermined
- **S** = Surrounding skin/periwound (This is *beyond* the wound edge)

Assess the wound for:

- Anatomical location
- Dimension - length (longer measurement), width (shorter measurement) and depth in cm
- Peri-wound skin – e.g. healthy, macerated, erythematous, fragile
- Wound edges – e.g. rolled, thickened, advancing, undermining
- Wound tissue – e.g. epithelial, granulation, slough, necrotic, hypergranulation
- Exudate/wound fluid – e.g. serous, haemoserous, purulent, haemopurulent, sanguineous
- Odour – any malodour?

Documenting anatomical location of the wound, for example:

- Left lower leg

Use landmarks to further define location (see C.5.4 Wound Location Descriptors), for example:

- Left lateral lower leg

Use correct terminology (refer to Wound Ed 2 Module), for example

- Mid dermal burn to left lateral lower leg

Without correct assessment of the wound and skin, proper diagnosis and treatment cannot occur

- **Accurate assessment is critical**
- Requires good observational skills and current knowledge
- **Proper terminology is critical** for accurate communication
- Include regular wound photos in documentation

T.I.M.E. clinical decision support tool

Assess patient, wellbeing and wound

Establish diagnosis and baseline characteristics for appropriate support and comorbidities that may impact healing. Record wound type, location, size, wound bed condition, signs of infection / inflammation, pain location and intensity, comorbidities, adherence / concordance to treatment

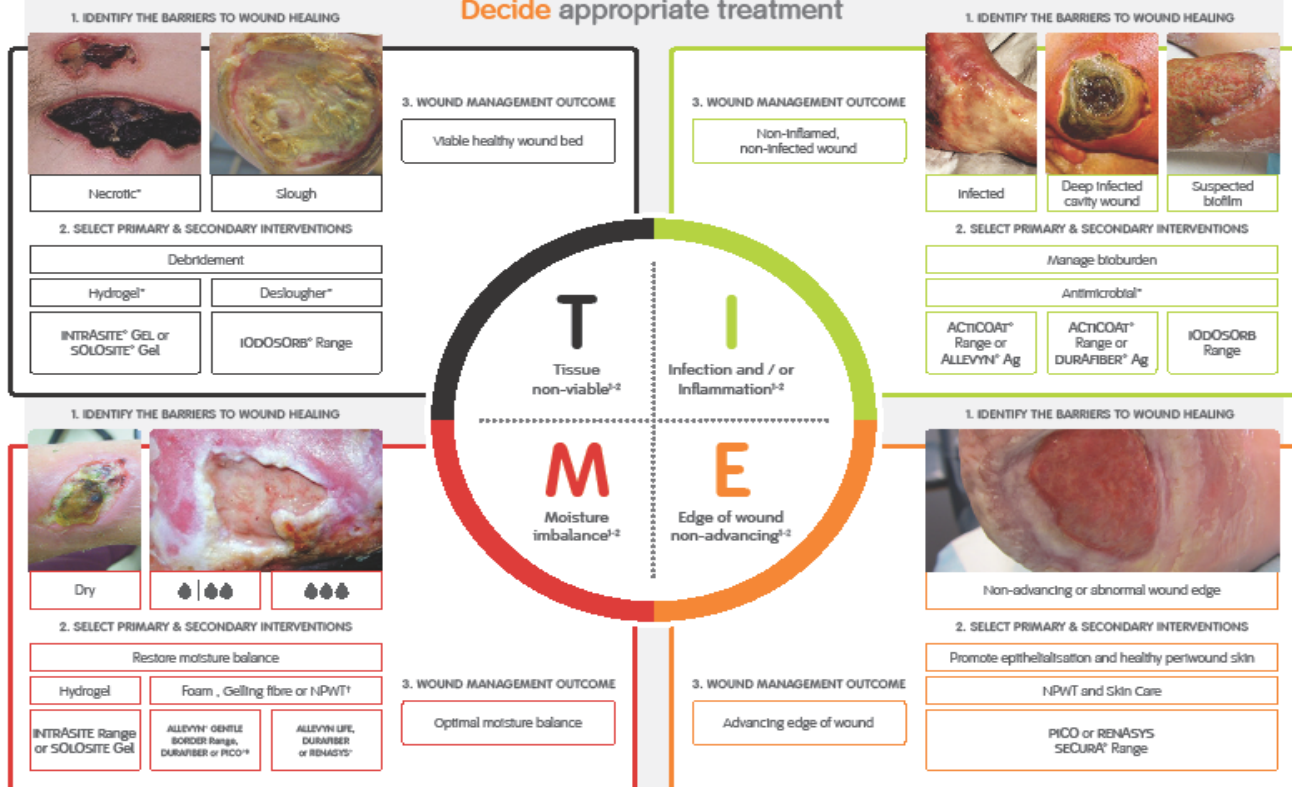
Bring in multi-disciplinary team and informal carers to promote holistic patient care

Record referral to others such as surgical team, wound specialist nurse, dietician, pain team, vascular and diabetes team, podiatrist, physiotherapist, family carers and trained counsellor

Control or treat underlying causes and barriers to wound healing

Record management plan for: systemic infection, diabetes, nutritional problems, oedema, continence, mobility, vascular issues, pain, stress, anxiety, non-adherence / concordance with offloading and compression, lifestyle choices

Decide appropriate treatment



*Use appropriate secondary dressing as per your local protocol

Evaluate and reassess the treatment and wound management outcomes

Evaluate: Record wound progression within given timelines. **Flag** if no change, go back to A, B, C and change treatment where indicated

Developed with the support of Glenn Smith³ and Moore et al. 2019⁴

Always ensure adequate blood supply before debriding necrotic tissue. †NPWT Negative Pressure Wound Therapy. ‡Level of evidence for wounds suitable for NPWT. SECURA Range includes SECURA moisturising creams and lotions, SECURA Barrier Cream D, SECURA No Rinse Cleanser, SECURA No Sting Barrier Film, SECURA No Sting Skin Prep, ALLEVYN GENTLE BORDER Range includes ALLEVYN GENTLE BORDER and ALLEVYN GENTLE BORDER LIFE. INTRASITE Range includes INTRASITE Gel and INTRASITE CONFORMABLE. ACTICOAT Range includes ACTICOAT and ACTICOAT FLEX. Reference: 1. Schultz GS, Sibbald RG, Falanga V, et al. Wound bed preparation: a systematic approach to wound management. *Wound Rep Reg* (2003)11:1-28. 2. Leaper DJ, Schultz G, Carville K, Rafter J, Swanson T, Drake R. Extending the TIME concept: what have we learned in the past 10 years? *Int Wound J* 2012; 9 (Suppl. 2):1-19. 3. Smith G, Greenwood M, Smeeth R. Wound murses' use of wound dressings before and after a bespoke educational programme. *Journal of Wound Care* 2010;19(8):396-402. 4. Moore Z, Dawson C, Smith G, et al. TIME CDST: an updated tool to address the current challenges in wound care. *Journal of Wound Care* 2019;28(3):54-60.

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Wound Tissue Types

NECROTIC WOUND

DESCRIPTION

Brownish/black, dead dehydrated tissue, leathery in texture. May be hard or soft.

When an area of tissue becomes ischaemic for any length of time, it will die. The area may form a necrotic eschar or scab. When assessing these wounds it is important to remember that the wound may be more extensive than is apparent. The eschar, or slough, masks the true size of the wound. Unless necrotic tissue is removed, the wound will continue to increase in size. Intervention is necessary for these wounds to heal (Dealey 2001).



Treatment Aims:

- to autolytically debride dead tissue
- to rehydrate the wound.

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Treatment

Primary Dressing

- Solugel Hydrogel or Solosite gel or Hyalo4 Start

Secondary Dressing

- hydrocolloid
- film
- Cuticerin/Non-adherent pad

Considerations

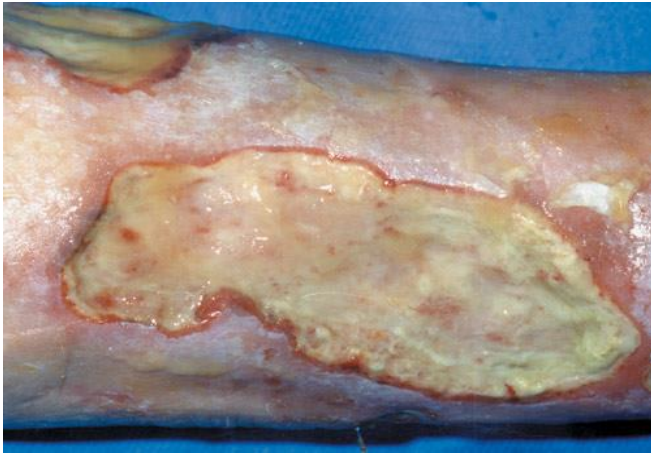
- conservative sharp debridement by a certified RN
- wound will deepen as necrosis is lifted
- ischaemic necrosis-Caution with rehydrating these wounds:

Dealey, C. (1996) General Principles of Wound Management. *In: The Care of Wounds*, 2nd edn. Oxford: Blackwell Science.

SLOUGHY WOUND

DESCRIPTION

Viscous, devitalised tissue, predominantly yellow in colour. It is most often found as patches on the wound surface, although it may cover large areas of the wound. It is made up of dead cells which have accumulated in the exudate. (Dealey 2001).



Treatment Aims:

- to remove/debride slough
- to remove excess exudate
- to promote autolysis.

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Treatment

Dry Slough

- the aim is to donate fluid in order to establish a moisture balance and promote autolysis.

Primary Dressing

- Solugel hydrogel or Solosite gel (for dry slough)
- Hyalo4 Start Ointment (for autolytic debridement) Can be mixed 50%/50% with Hyalo Control Cream (to reduce microbial load)
- Aquacel hydrofibre products (for wet slough)
- AMD foam (for very wet slough at risk of infection)
- Iodosorb Ointment (for all slough esp. in diabetics and for chronic non-progressive wounds)

Secondary Dressing

- Hydrocolloid (only over dry slough and where Solosite gel is used)
- Aquacel foam over Aquacel
- No secondary dressing over AMD
- Cuticerin over Iodosorb, Solosite or Hyalo4 Start, then a non-adherent pad

Wet Slough

- the aim is to absorb fluid in order to establish a moisture balance, and promote autolysis.

- **Considerations**
- debridement

- monitoring and management of exudate levels.
- when using a product that donates fluid ensure that the secondary dressing does not absorb the product before the wound i.e. no foams over gels! (Exception: Iodosorb under Allevyn)

Dealey, C. (1996) General Principles of Wound Management. In: The Care of Wounds, 2nd edn. Oxford: Blackwell Science.

GRANULATING WOUND

DESCRIPTION

Red, granular tissue.

The tops of the capillary loops cause the surface to look granular. It should be remembered that the walls of the capillary loops are very thin and easily damaged, which explains why these wounds bleed easily (Dealey 2001).



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Treatment Aim

- to protect angiogenesis
- to maintain moisture balance.
- Assist tissue growth

Treatment

Primary Dressing

- alginate if bleeding
- Polymem assists dermal depth granulation to grow through
- Paraffin tulle gras if superficial (e.g. Bactigras or Cuticerin)
- Silicone contact layer (e.g. Mepitel or use Allevyn Gentle Border as a stand alone dressing)

Secondary Dressing

- only required if primary is not a stand alone dressing

Considerations

- depending on the depth of the wound cavity packing may be required. and consider NPWT
- alginates can be useful as they have a haemostatic property if the wound is prone to bleeding

Dealey, C. (1996) General Principles of Wound Management. In: The Care of Wounds, 2nd edn. Oxford: Blackwell Science.

EPITHELIALISING WOUND

DESCRIPTION

Pink, fragile tissue.

As the epithelia at the wound margins start to divide rapidly, the margin becomes slightly raised and has a bluey-pink colour. As the epithelia spread across the wound surface, the margin flattens. The new epithelial tissue is a pinky-white colour. In shallow wounds with a large surface area, islets of epithelialisation may be apparent. The progress of epithelialisation may be seen as the new cells are a different colour from those of the surrounding tissue (Dealey 2001).



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Treatment Aim

- to protect the fragile epithelial cells
- to maintain moisture balance
- to promote new tissue growth
- to prevent infection.

Treatment

Primary Dressing

- Primary contact layer paraffin or silicone based. (e.g. Bactigras or Cuticerin or Mepitel)

Secondary Dressing

- Non-adherent pad or Cutiplast
- Alternative: Allevyn Gentle Border as a stand alone dressing

Considerations

- it is essential that the primary dressing does not adhere to the wound base causing trauma on removal

Dealey, C. (1996) General Principles of Wound Management. *In: The Care of Wounds*, 2nd edn. Oxford: Blackwell Science.

HYPERGRANULATING WOUND

DESCRIPTION

Granulation tissue which is raised above the level of the surrounding skin.



Three causes:

- excessive wetness (use products that will manage exudate and reduce bioburden)
- raised bacterial load (use an antibacterial produce)
- inappropriate dressing (change to a product that will not scuff back and forth)

Treatment Aim

- to reduce further development of granulation tissue
- to promote epithelialisation.

Treatment

Primary Dressing

- IF exudate level is low: try Inadine, non-adherent pad and firm taping
- Once exudate has increased to “wet” you will need to use an antimicrobial foam:
- AMD foam taped firmly onto hypergranulation has proved successful in many cases
 - Silver foams such as Mepilex Ag can also be used
- With all these foams firm taping will assist hypergranulation reduction

Considerations

- Look for signs and symptoms of infection. Hyper granulation can be encouraged by a bacterial load. Trialling an antimicrobial applied with a secondary dressing that provides uniform downward pressure as tolerated on the wound may be of assistance.
- Topical steroid creams may be of use for persistent cases. Discuss with medical staff or nurse specialists in your area.

Note: Silver nitrate sticks devour tissue and are *not* considered ideal treatment except in extreme cases. Even then, these must be used with great caution and deactivated by applying normal saline on wound at end of treatment.

British Medical Association and Royal Pharmaceutical Society of Great Britain (2003) British National Formulary, 46. London: British Medical Association and Royal Pharmaceutical Society of Great Britain.

TYPES OF WOUNDS

SURGICAL WOUND

DESCRIPTION

A surgical wound is the result of a planned procedure, either elective or emergency, where the clinician creates the wound in order to perform a surgical procedure. This wound type is expected in general to follow a rapid, predictable pathway towards healing with minimal scarring and loss of function. The wound may be either incised and closed (this wound heals by primary intention) OR incised and laid open (this wound heals by secondary intention). For guidance see cavity wounds.

Wound Healing by Primary Intention



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Treatment Aim

- to restore physical integrity and function without infection and with the minimum of deformity
- approximation of wound edges immediately using sutures, clips staples or adhesives, so that each layer (muscle, subcutaneous fat and skin) comes together, thereby expediting haemostasis and the healing mechanism.

Treatment

If a dressing is required:

- Occlusive dressings should be used post operatively, which may be removed within 48 hours as the wound should be totally sealed, thus preventing the entry of bacteria (Dealey 2001).
- If there is strike through or leakage, dressing can be replaced or reinforced.
- Consider Acticoat Flex under post op dressing or under Pico NPWT especially where exudate is present.

Wound Healing by Secondary Intention

Treatment Aim

The wound is left open to heal by granulation, contraction and epithelialisation, for several reasons:

- there may be considerable tissue loss, eg radical vulvectomy
- the surgical incision is shallow, but has a large surface area, eg donor sites
- there may have been infection, eg a ruptured appendix, or an abscess may have been drained, and free drainage of any pus is essential (Dealey 2001).

Treatment

- surgical wounds should be dressed according to the wound type and suture removal/surgical clip removal precautions followed

Dealey, C. (1996) General Principles of Wound Management. In: The Care of Wounds, 2nd edn. Oxford: Blackwell Science.

ABRASIONS

DESCRIPTION

These are shearing and friction injuries that result in a scraping or rubbing away of the epidermis or dermis.



Treatment Aim

- to prevent infection and further tissue damage
- abrasions should be cleaned carefully to ensure that there are no foreign bodies embedded in the wound (Dealey 2001).

Treatment

- Selection of a suitable dressing depends on the extent and depth of the injury.
- Simple dressings that maintain moisture balance will suffice
- Exudate levels can vary and depending on the cause of injury infection risks can be high.
- An occlusive dressing, such as a thin hydrocolloid, which can be left in place for several days, and also allows the patient to bathe and shower with the dressing in situ. The effect of such a dressing is to prevent the nerve endings drying out. This appears to be the factor which reduces the pain (Dealey 2001).

Dealey, C. (2001) The management of patients with acute wounds. Oxford: Blackwell Science.

CAVITY WOUND

DESCRIPTION

A wound which is characterised by its depth and tissue involvement. This wound type may be acute or chronic.



Treatment Aim

- to manage exudate
- to protect the surrounding skin
- to prevent infection
- to remove devitalised tissue
- to promote granulation from the base of the wound. (Secondary intention growth)
- to prevent osteomyelitis where the cavity overlies bone

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Treatment

- treatment is dependent on the position of the wound and the amount of exudate (Dealey 2001).

Primary cavity packing with Secondary dressing

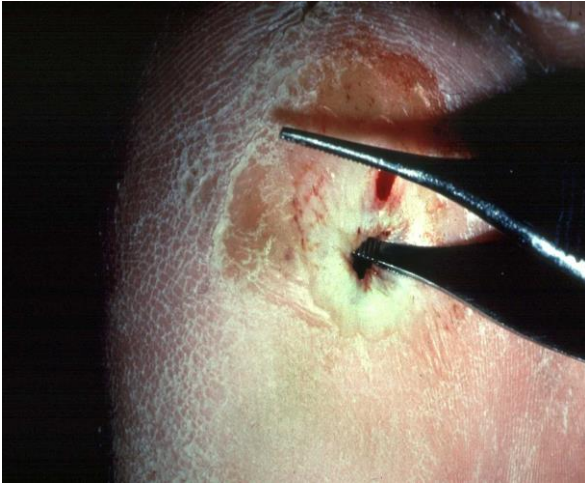
- Alginate cavity fillers i.e. alginate hydrofibre ropes: Aquacel rope or Aquacel Ag rope, with Aquacel Foam as the secondary dressing
- Polymem Wic Cavity Filler ONLY when it is completely visible and retrievable. Polymem as the secondary dressing
- Negative Pressure Wound Therapy may be required and various cavity packers may be employed under these; e.g. Kerlix antimicrobial gauze, Acticoat Flex, granufoam packing all specific to the NPWT system used

Dealey, C. (1996) General Principles of Wound Management. In: The Care of Wounds, 2nd edn. Oxford: Blackwell Science.

SINUS WOUND

DESCRIPTION

A sinus is a track to the body surface from an abscess or from some material which is an irritant and becomes a focus for infection. A common irritant is suture material. Dressing material may also be retained and prevent healing. Sinuses can become chronic if the causative factor is not resolved. A sinogram will show the extent of a sinus and help to identify the root problem (Dealey 2001).



Treatment Aim

- to allow free drainage of exudate
- to protect the surrounding skin
- to promote granulation from the base of the wound.

Treatment

Surgical excision or laying open of the sinus is usually the most effective management. Once the focus for the infection has been removed and free drainage can occur, the remaining cavity will heal by granulation and contraction.

Although wide excision is the most appropriate method of managing a sinus, it is not always possible. If the sinus is very deep the opening may be fairly narrow in relation to the sinus size. Everett (1985) suggests that inserting a drainage tube into the sinus will prevent the sinus closing and allow free drainage. The tube can gradually be withdrawn as the sinus heals (Dealey 2001).

Primary Dressing

- If wide opening, cavity fillers as previous page
- If narrow opening, allow free drainage, attempt to keep entrance open until granulated upwards from base.

Considerations

- ensure that the dressing product is not contraindicated for sinus use e.g. no Polymem Wic unless you have a full visual and can ensure that none is left behind
- irrigate sinuses to ensure all debris is removed. Then ensure fluid is removed from sinus, either by aspiration or moving the patient.

Dealey, C. (2001) The Management of Patients with Acute Wounds. In: The Care of Wounds, 2nd edn. Oxford: Blackwell Science.

Everett, W.G. (1985) Wound sinus or fistula? In: Westaby, S. (ed) Wound Care. London: William Heinemann Medical Books Ltd.

BITES

DESCRIPTION

These are penetrating, often ragged, wounds which may also be contused. They can be caused by either animals or humans.

Dog Bites

- range from superficial scratches to puncture wounds and major tears
- tears have the potential to cause underlying damage to bone, nerves and tendons.

Important points to note regarding the history are:

- what caused the wound?
- where did it happen? (Consider rabies if bite sustained abroad).

Treatment Aim

- to prevent infection

Treatment

- adequate analgesia to allow for wound cleansing
- thorough cleansing with warm tap water or saline
- debridement of devitalised subcutaneous tissue and dermis
- exploration for underlying structural damage, and to ensure no fragments of tooth remain in the wound
- after debridement cleansing should be repeated.

Not all dog bites require prophylactic antibiotics.

Wound Closure

The closure of bite wounds is a matter of considerable controversy and the decision depends on several factors.

Wounds More Than 8 Hours Old:

- Leave open following meticulous wound cleansing and irrigation
- If small, heal by secondary intention
- If large, dress with antimicrobial and polyurethane foam film (secondary dressing) and review in 4 to 7 days for possible delayed primary suturing.
- In a cosmetically significant area, if the wound looks clean and is under 12 hours old, primary suturing may be considered.

Wounds Less Than 8 Hours Old:

- These wounds present different options. Callahan (1980) found that only 2.9% of sutured dog bites that were under 8 hours old became infected. This represents the same percentage as any other sutured laceration. Therefore it could be assumed that most non-infected dog bite wounds might be safely closed with a simple layer of superficial sutures following meticulous wound toilet (Al-Khateeb et al. 1995).

- Alternatives to sutures are skin closure strips as these are less likely to cause infection (Edlich et al. 1974).
- In a cosmetically significant area, the wound may be sutured following meticulous cleansing.

HUMAN BITES

High Risk of Infection

These are potentially more serious than dog bites and constitute 18% of all bite presentations (Higgins et al. 1997). Multiple organisms are found in the mouth, commonly staphylococcus and streptococcus (Wienert 1999). Other infectious diseases transmitted by human bite include scarlet fever, TB, syphilis, Hepatitis B and C, HIV, and tetanus.

Human bites can be separated into actual bites and clenched fist injuries. In clenched fist injuries the lacerated skin retracts and then returns to its original position, carrying dirt into the wound. There is also a much easier access into the joint space for the teeth, creating a high risk of tendon sheath and web space infections.

Treatment

- analgesia if required
- irrigate with warm tap water or saline
- leave open – do not suture or apply skin closure strip
- prophylactic antibiotics must be given for aerobic and anaerobic bacteria
- large wounds may be dressed according to amount of exudate and state of wound bed
- an alginate (primary dressing) can be packed loosely into puncture wounds to facilitate removal of exudate (Young 2002).
- consider Prontosan or Betadine use soak and inclusion of Hyalo4 Control

Cat Bites

High Risk of Infection

These have a high potential for infection. Wounds are usually very difficult to cleanse adequately, as cat bites usually puncture the skin rather than tear it. *Pasteurella multocida* is the commonest infection micro-organism which is highly sensitive to penicillin, however, *Capnocytophaga canimorsus* is a far more serious infection with a mortality rate of 28-50% (Higgins et al. 1997).

Treatment

As for human bites.

Al-Khateeb, T., Thomas, D.W., Shepherd, J.P. (1995) The Management and repair of wounds of the face. *Journal of Wound Care* 4, 359-362.

Callahan, M. (1980) Dog bite wounds. *Journal of American Medical Association* 244, 2327-2328.

Edlich, R. et al. (1974) Techniques of wound closure, contaminated wounds. *Journal of American College of Emergency Physicians* 3, 375-381.

Higgins, M.A.G., Evans, R.C., Evans, R.J. (1997) Managing animal bite wounds. *Journal of Wound Care* 6, 377-380.

Wienert, P., Heiss, J., Rinecker, H., Sing, A. (1999) A Human Bite. *The Lancet* 354, 572.

Young T (2002). Wound care in the accident and emergency department. In: *British Journal of Nursing Monograph: Trends in Wound Care*. Wiltshire: Mark Allen Publishing Ltd.

SKIN TEARS / FLAP LACERATIONS



STAR Skin Tear Classification System



STAR Skin Tear Classification System Guidelines

1. Control bleeding and clean the wound according to protocol.
2. Realign (if possible) any skin or flap.
3. Assess degree of tissue loss and skin or flap colour using the STAR Classification System.
4. Assess the surrounding skin condition for fragility, swelling, discolouration or bruising.
5. Assess the person, their wound and their healing environment as per protocol.
6. If skin or flap colour is pale, dusky or darkened reassess in 24-48 hours or at the first dressing change.

STAR Classification System



Category 1a

A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour is **not** pale, dusky or darkened.



Category 1b

A skin tear where the edges **can** be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour is pale, dusky or darkened.



Category 2a

A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour is **not** pale, dusky or darkened.



Category 2b

A skin tear where the edges **cannot** be realigned to the normal anatomical position and the skin or flap colour is pale, dusky or darkened.



Category 3

A skin tear where the skin flap is completely absent.



STAR Skin Tear Classification System Glossary



- **Skin Tear:** "a traumatic wound occurring principally on the extremities of older adults, as a result of friction alone or shearing and friction forces which separate the epidermis from the dermis (partial thickness wound) or which separate both the epidermis and the dermis from underlying structures (full thickness wound)"¹.
- **Pale, dusky or darkened skin or flap colour:** when compared to the individual's 'normal' surrounding skin, may indicate ischaemia or the presence of haematoma, which may affect skin or flap viability.
- **Ischaemia:** inadequate tissue perfusion as evidenced by pale, dusky or darkened tissue.
- **Haematoma:** a collection of blood or clot under the flap or realigned skin.
- **Realign:** to replace the skin or flap into the normal anatomical position without undue stretching.
- **Linear skin tear:** a skin split or the skin splitting in a straight line.
- **Flap skin tear:** a segment of skin or skin and underlying tissue that is separated from the underlying structures.

References:

- 1 Payne, R., & Martin, M. (1993). Defining and classifying skin tears: Need for a common language ... a critique and revision of the Payne-Martin Classification system for skin tears. *Ostomy Wound Management*, 39(5), 16-20.
- 2 Photographs courtesy of the Skin Tear Audit Research (STAR) photographic library, Silver Chain Nursing Association and School of Nursing and Midwifery, Curtin University of Technology.
- 3 Carville, K., Lewin, G., Newall, N., Haslehurst, P., Michael, R., Santamaria, N., & Roberts, P. (2007). STAR: A consensus for skin tear classification. *Primary Intention*, 15(1), 18-28.

STAR Tool G 4/2/2010

SKIN TEAR TREATMENT

- aims at turning back flap for recent injury, cleaning beneath to evacuate any residual haematoma , then realigning flap and securing same
- steristrips are an option to secure flap remnants. Leave on 7 days or change sooner if dirty.
- dressing choice should maintain moisture balance and absorb exudate
- dress according to tissue type

Meuleneire, F. (2002) Using a soft silicone coated net dressing to manage skin tears. Journal of Wound Care 11, 365-369.

BLISTERS/BULLAE

Blisters are caused by thermal injury, friction damage and/or acute inflammatory reactions.

DESCRIPTION

A thin walled separation of tissue within the epidermis or epidermal/dermal junction. May contain clear serous fluid, or brown/black discolouration indicating haemorrhage



Treatment Aim

- prevent infection
- to reduce discomfort
- to reduce friction
- to promote healing and manage exudate.

Treatment

- if the blister is small with minimal discomfort then only protection is required
- if the blister is painful the fluid should be drained via two puncture holes made by a sterile needle or scalpel. Removal of the roof may increase discomfort
- if the roof is loose then it should be debrided.

The impracticality of maintaining the integrity of large blisters often leads to debridement. However Wilson et al. (1994) discovered that calmodulin, a protein found in burn blisters, has a positive effect on the growth of keratinocytes, suggesting that it is beneficial to the healing of burns wounds.

Dressing

- thin hydrocolloid for protection
- if the blister is to be debrided or fluid drained, treat as per skin tear, depending on extent.
- suitable dressings for drainage and following debridement depend on the levels of exudate.

Considerations







- non adherence to the roof of the blister is critical

Wilson, Y., Goberdhan, N., Dawson, R.A. *et al.* (1994) Investigation of the presence and role of calmodulin and other nitrogens in human burn blister fluid. *Journal of Burn Care and Rehabilitation* **15**, 303-314.

Burn Management : Refer to Wound Ed 2 video on Staff Portal

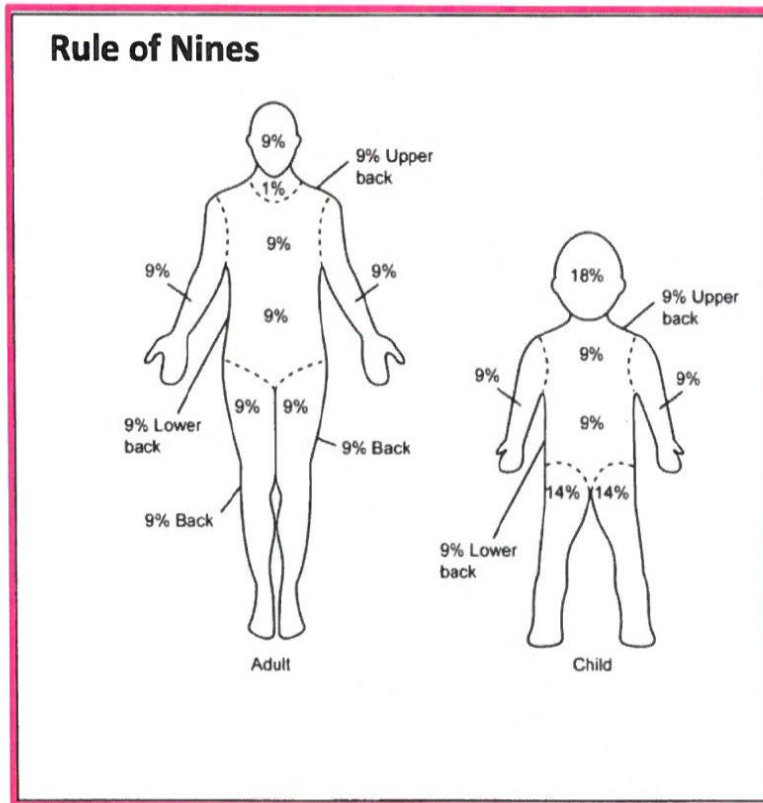
Assess Burn depth: Epidermal, Superficial Dermal, Mid Dermal, Deep Dermal, Full Thickness

Assess Total Body Surface Area = % of body that is burnt.

| Initial Management of Small Burns | |  | | | | |
|---|--|---|---|---|--|--|
| FIRST AID | Cool with running water for up to 20 minutes Consider immersion or wet towels if running water unavailable If water is unavailable consider water gel products (in adults only) | | | | | |
| PREPARE | Provide analgesia Clean wound with 0.1% Aqueous Chlorhexidine or Normal saline, Remove all foreign, loose and non viable skin/tissue Debride blisters if >5cm or over joints Shave hair in and around wound to 2cm radius | | | | | |
| BURN | EPIDERMAL | SUPERFICIAL DERMAL | MID DERMAL | DEEP DERMAL | FULL THICKNESS | |
| |  |  |  |  |  | |
| ASSESS DEPTH | Painful Epidermis damaged but intact Red | Blistered, painful raw Pale pink/red Brisk capillary return within burn wound | Sluggish capillary return Less painful Dark pink to red | Deep red or white Dull sensation Severely delayed or absent capillary return | No sensation No capillary return Leathery white/black or yellow | |
| INITIAL PRIMARY DRESSING | Gels to soothe <ul style="list-style-type: none">Soothing moisturisersVaseline | Absorbent dressings <ul style="list-style-type: none">FoamsAlginatesParaffin gauze Silicone dressings <ul style="list-style-type: none">Mepilex Silver products if contaminated | Silver products <ul style="list-style-type: none">ActicoatAbsorbentMepilex AgAquacel AgFlamazineBiatain AgAllevyn Ag Antimicrobial <ul style="list-style-type: none">Flaminal Silicone dressings <ul style="list-style-type: none">Mepilex | Silver products <ul style="list-style-type: none">ActicoatAbsorbentMepilex AgAquacel AgFlamazine | Silver products <ul style="list-style-type: none">ActicoatAbsorbentAquacel AgFlamazine | |
| INITIAL SECONDARY LAYER DRESSING | Epidermal burns do not need secondary dressings Dermal burns produced a significant amount of exudate in the first 72 hours. Absorbent secondary dressings such as gauze or foam should be considered to manage excess exudate Secure with adhesive tape dressing, crepe bandage, tubinet or tubigrip. Ensure it is non constrictive Elevate affected area as appropriate. | | | | | |
| FOLLOW UP | In 24 – 48 hours by GP or appropriate service Refer early to a surgeon if excision and skin grafting should be considered for mid dermal, deep dermal and full thickness burns. Refer on appropriately if wound becomes infected or is slow to heal (Unhealed >14 days). | | | | | |

Adapted from the Victorian Burn Service

Total Body Surface Area % ?



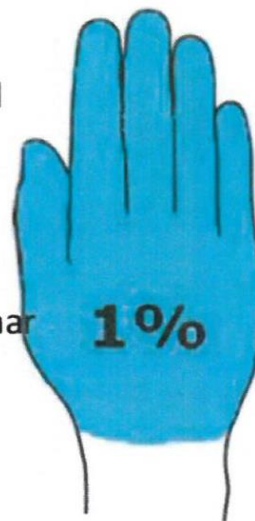
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Total Body Surface Area % ?

PALM METHOD

Small or patchy burns can be approximated by using the surface area of the patient's palm.

The palm of the patient's hand, excluding the fingers, is approximately 0.5 percent of total body surface area and the entire palmar surface including fingers is 1 percent in children and adults



slideshare.net



- Burns greater than 10% Total Body Surface Area (TBSA) in adults
- Burns greater than 5% TBSA in children
- Full thickness burns greater than 5% TBSA
- Burns of Special Areas: Face, Hands, Feet, Genitalia, Perineum, Major joints and circumferential limb or chest burns
- Burns with inhalation injury
- Electrical burns
- Chemical burns
- Burns with pre-existing illness
- Burns associated with major trauma
- Burns at extremes of age: young children and elderly
- Burn injury in pregnant women
- Non-accidental burns



Anzba.org.au

NOTE: The above mentioned burns must also receive specialist follow up!

Full thickness burn examples:



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Most burn injuries are **Mixed Depth**



Do not assume that all areas are equal depth or will remain as initially assessed.

Source: Australian and New Zealand Burn Association

Burn Treatment: analgesia, systemic hydration, blister management, debridement & dressings.



Source: Australian and New Zealand Burn Association

Provide analgesia and advise good systemic hydration.

Cleanse wound with 1% Aqueous Chlorhexidine or normal saline or water.

Blisters: To pop or not to pop?

Debride non-viable tissue, **but no de-roofing of blisters first few days!** Drain them if large. Debride blisters if >5cm or over joints.

Dressing choices: hydration, antimicrobial

Medical centres are recommended to refer rapidly to TCHS for all burns that have gone dermal depth (i.e. have blistered)

Acticoat: nano-crystalline silver activated with water provided at TCHS.

Burn Photo at right

Reproduced by permission of NHS

Lothian



Note: Silver sulfadiazine cream should not be used routinely until after specialist assessment.

Burn Treatment Aims:

- **To protect from infection**
- **To hydrate burn**
- **To manage exudate.**



Initial Treatment:

- immediately place the affected part under cold running water (approx 15°C) for at least 20 minutes.
- If greater than 3 hours from time of injury, cold water will have no beneficial effect.
- remove any clothing.

Note: Silver sulfadiazine cream should not be used until after specialist assessment as this will mask the wound bed and make for difficult assessment. If used at all, this will be a daily dressing for no more than 3-4 days. Observe contraindicated cases: Pregnancy, Lactation, Renal or Hepatic insufficiency, hypersensitivities to sulpha or silver.

- Apply primary non-adherent interface dressing such as Bactigras, or Solosite gel and Cuticerin or Hyalo Control Cream and Cuticerin with an absorbent outer dressing.
- Initially dressings may need to be carried out daily until your antimicrobial Non-core products are delivered.

- Prompt requests for high antimicrobial non-core consumable products should be made, so that these can be commenced as soon as possible.
- Non-core consumables used for burns are:
Acticoat with Hypafix tape on top. Leave on for 3 days.
Alternatively Mepilex Ag Foam can be used and changed every 5-7 days or sooner if saturated. No outer dressing needed.
- Treat as for wound type as it progresses through wound healing stages with hydration and infection control being your top priorities.

Lawrence, J.C. & Winters, M.D. (1986) The epidemiology of burns. In: Lawrence, J.C. (ed). Burncare. Hull: Smith & Nephew Medical Ltd

SKIN GRAFTS

DESCRIPTION

A graft is biological tissue which is removed from one part of the body, and then applied to another part of the same body. The graft must acquire adequate blood supply from the new recipient site if it is to survive.



Treatment Aim

- Encourage establishment of new lymph and blood circulation to the graft
- Tie over grafts may be used where a bolus of material is placed on the graft to apply downwards pressure and sutured in place.

Treatment

- Individual consultants have differing practices for care of grafts. Always ensure you are following the practice prescribed.

Dressing

- Graft site dressings are usually left intact for 5 to 7 days
- Non adherent dressing to graft site, secondary dressing of foam or gauze applied firmly and secured.
- Donor sites usually dressed with Cuticerin /Non-adherent pad, Mepilex Ag or PICO7 left on 5-7 days and not removed for any reason.
- Tie down grafts remain insitu for 5-7 days. To remove sutures must be cut and carefully removed from wound edges, the material will require soaking off

Considerations

- If donor site hypergranulates, consider an antimicrobial such as Mepilex Ag Foam or AMD Foam. If exudate level is low Inadine can be used.
- Any seromas or haematomas appearing on the graft should be carefully expressed, and a firm dressing applied
- Deep grafts can be filled with gauze or foam secondary dressing cut to size and placed over the non adherent, to ensure firm pressure to wound bed.
- Graft sites should be elevated, e.g. heads and necks on pillows, legs elevated

Chang Y (1999) Grafts in Brown DL, Brorschel GH (eds) Michigan Manual of Plastic Surgery, Lippincott Williams and Wilkins. Philadelphia.
McGregor AD, McGregor IA (2000) Fundamental Techniques of Plastic Surgery and their Surgical Applications Tenth Edition. Churchill Livingstone. CHINA
Richards AM (2002) Keynotes on Plastic Surgery, Blackwell Science Publishing, OXFORD

WOUND BED PREPARATION

What is Debridement?

Simplified it is the removal of dead tissue – slough or necrotic tissue.

Slough is a combination of dead skin cells and bacteria in the wound. It often gathers on wound beds and is not necessarily a sign of infection but can increase the risk of same.

It can be creamy or yellow in colour, soft or firm in texture.

Necrotic tissue is non-viable tissue due to decreased blood supply. Eschar is dry, black hard necrotic tissue and evidence of a deep tissue injury. Scabs are simply dried exudate from a superficial injury.

Why Debride?

To assist wound healing. Dead tissue can delay healing by slowing wound contraction & epithelisation. (1)

Slough and necrotic tissue can also increase the risk of infection.

Types of Debridement

Types of debridement commonly used (by TCHS) are mechanical debridement with the use of metal forceps and autolytic debridement through the use of gels and other debridement products applied to the wound.

Conservative sharp wound debridement (CSWD)

Conservative sharp wound debridement is considered the most rapid and efficient method of selectively removing unwanted or devitalized tissue undamaged. (2).

-This procedure is only to be undertaken by staff who have received the appropriate training and clinical assessments and are “Sharp Wound Debridement certified” according to New Zealand Wound Care Society (NZWCS) recommendations.

Autolytic Debridement

Autolysis uses the body's own enzymes and moisture to re-hydrate, soften and finally liquefy hard eschar and slough. (2) It is selective and virtually painless for the patient.

Types of dressings which aid autolytic debridement of slough are –

- Hydrogels – Hydrosorb, Soloiste gel and Intrasite gel.
- Hyalo4 Start Ointment
- Hydrocolloids – Comfeel, Hydrocoll.
- Aquacel range, Iodosorb and the Manuka honey range.

Types of dressings which aid autolytic debridement of necrotic tissue are –

- Hydrogels
- Hyalo4 Start
- Hydrocolloids

Further reading

ABC of wound healing: Wound assessment and series, www.archive.student.bmj.com

Associated study video:

- Wound Ed modules 1 (Tissue types and how to treat) and Wound Ed 2 (Wound terminology)

Pressure injuries

Pressure injury



What is a pressure injury?

Skin or underlying tissue that is dead or dying due to loss of blood flow to the area. It appears in the form of a blister or redness. If left untreated the skin may ulcerate, smell unpleasant or blacken

Risk Factors

Intrinsic

Reduced mobility or immobility
Sensory impairment
Acute illness
Level of consciousness
Age
Vascular disease (smoking, diabetes, oedema)
Severe chronic or terminal illness
Malnutrition (body mass/weight)
Dehydration

Extrinsic

Pressure
Sheer
Friction

Other factors
Medication
Moisture
Incontinence
Loss of muscle mass i.e. CVA or SCI
Change in daily habits/fluctuating schedules

Selection, adaptation & maintenance of equipment

Equipment can be the source of pressure & friction if:

- in a poor condition
- poorly adapted to needs
- improperly adjusted
- incorrectly used
- not maintained

Blanchable erythema

Can signal imminent tissue damage.

Blanchable erythema is red when it blanches, turns white when pressured with a fingertip, and then immediately turns red again when pressure is removed.

Use bright light and look for taut, shiny patches of skin with a purple tinge.

Also, assess carefully for localized heat, induration, or oedema, which can be better indicators of ischemia than erythema

Non-blanchable erythema

Can be the 1st sign of tissue destruction.

In high risk patients, non-blanchable tissue can develop in as little as 2 hours.

The redness associated with non-blanchable erythema is more intense and doesn't change when compressed with a finger

If recognized and treated early, non-blanchable erythema is reversible.

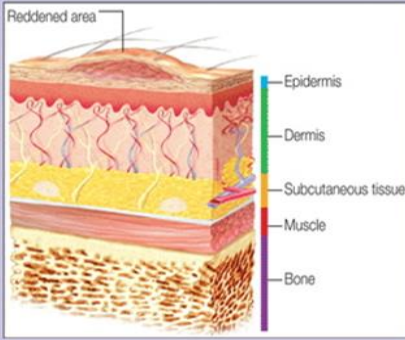
Reactive Hyperemia:

1st visible sign of ischemia

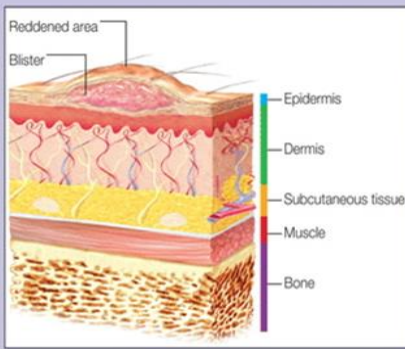
When pressure causing ischemia is released, skin flushes red as blood rushes back in to the tissue.

Blood vessels dilate in the effected area – increase in blood flow and speeds oxygen to effected area

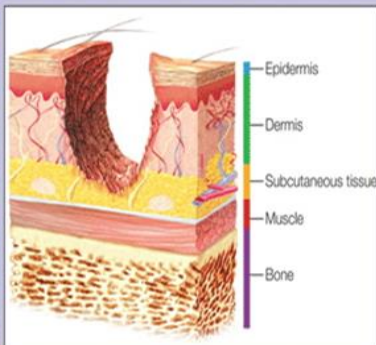
Stage I



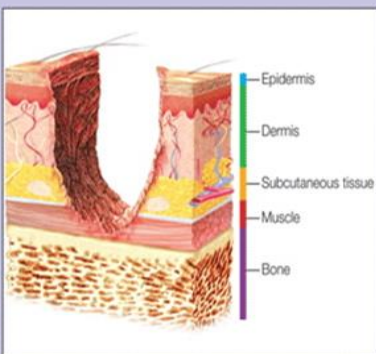
Stage II



Stage III



Stage IV



Ungradeable

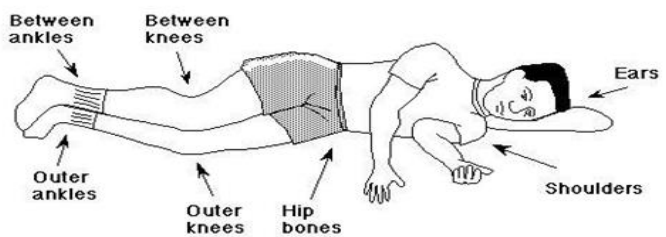
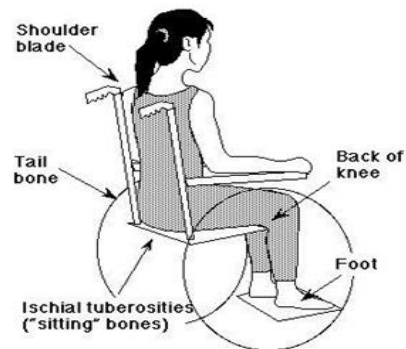
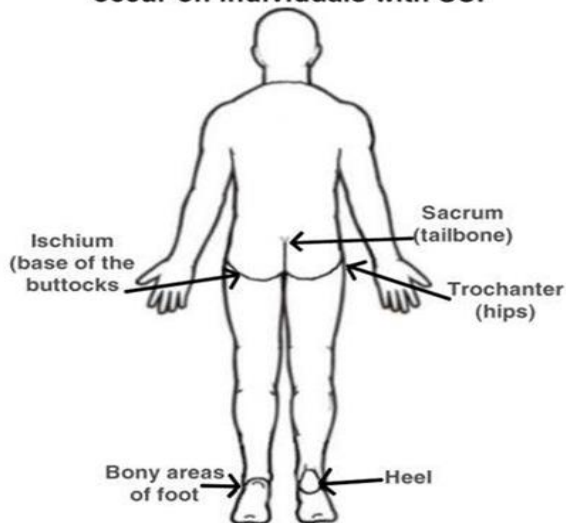


The full extent of ulceration can't be determined by visible inspection because there may be extensive undermining along fascial planes (the area that connects skin to the underlying tissues).

e.g. tunnelling can connect ulcers over the sacrum, to ulcers over the trochanter for the femur or the ischial tuberosities. These cavities can contain extensive necrotic tissue

Vulnerable Areas of Risk

Most common areas where pressure sores occur on individuals with SCI



Pressure Injury Risk Assessment used at TCHS:

WATERLOW PRESSURE ULCER PREVENTION/TREATMENT POLICY

RING SCORES IN TABLE, ADD TOTAL. MORE THAN 1 SCORE/CATEGORY CAN BE USED

| BUILD/WEIGHT FOR HEIGHT | ◆ | SKIN TYPE VISUAL RISK AREAS | ◆ | SEX | AGE | ◆ | MALNUTRITION SCREENING TOOL (MST) (Nutrition Vol.15, No.6 1999 - Australia) | | |
|--------------------------------|---|-----------------------------|---|---|-----|---|--|---|---|
| AVERAGE BMI = 20-24.9 | 0 | HEALTHY | 0 | MALE | 1 | 1 | A - HAS PATIENT LOST WEIGHT RECENTLY | B - WEIGHT LOSS SCORE | |
| ABOVE AVERAGE BMI = 25-29.9 | 1 | TISSUE PAPER DRY | 1 | FEMALE | 2 | 2 | YES - GO TO B | 0.5 - 5kg = 1 | |
| OBESE BMI > 30 | 2 | OEDEMATOUS CLAMMY, PYREXIA | 1 | 14 - 49 | 1 | 1 | NO - GO TO C | 5 - 10kg = 2 | |
| BELOW AVERAGE BMI < 20 | 3 | DISCOLOURED GRADE 1 | 2 | 50 - 64 | 2 | 2 | UNSURE - GO TO C AND SCORE 2 | 10 - 15kg = 3 | |
| BMI=Wt(Kg)/Ht (m) ² | | BROKEN/SPOTS GRADE 2-4 | 3 | 65 - 74 | 3 | 3 | | > 15kg = 4 | |
| | | | | 75 - 80 | 4 | 4 | C - PATIENT EATING POORLY OR LACK OF APPETITE | unsure = 2 | |
| | | | | 81 + | 5 | 5 | 'NO' = 0; 'YES' SCORE = 1 | NUTRITION SCORE If > 2 refer for nutrition assessment / intervention | |
| CONTINENCE | | MOBILITY | | SPECIAL RISKS | | | | | |
| COMPLETE/CATHETERISED | 0 | FULLY | 0 | TISSUE MALNUTRITION | | ◆ | NEUROLOGICAL DEFICIT | | ◆ |
| URINE INCONT. | 1 | RESTLESS/FIDGETY | 1 | TERMINAL CACHEXIA | 8 | 8 | DIABETES, MS, CVA | 4-6 | |
| FAECAL INCONT. | 2 | APATHETIC | 2 | MULTIPLE ORGAN FAILURE | 8 | 8 | MOTOR/SENSORY | 4-6 | |
| URINARY + FAECAL INCONTINENCE | 3 | RESTRICTED | 3 | SINGLE ORGAN FAILURE (RESP, RENAL, CARDIAC,) | 5 | 5 | PARAPLEGIA (MAX OF 6) | 4-6 | |
| | | BEDBOUND | 4 | PERIPHERAL VASCULAR DISEASE | 5 | 5 | MAJOR SURGERY or TRAUMA | | |
| | | e.g. TRACTION | | ANAEMIA (Hb < 8) | 2 | 2 | ORTHOPAEDIC/SPINAL | 5 | |
| | | CHAIRBOUND | | SMOKING | 1 | 1 | ON TABLE > 2 HR# | 5 | |
| | | e.g. WHEELCHAIR | 5 | | | | ON TABLE > 6 HR# | 8 | |
| SCORE | | | | MEDICATION - CYTOTOXICS, LONG TERM/HIGH DOSE STEROIDS, ANTI-INFLAMMATORY MAX OF 4 | | | | | |
| 10+ AT RISK | | | | | | | | | |
| 15+ HIGH RISK | | | | | | | | | |
| 20+ VERY HIGH RISK | | | | | | | | | |

Scores can be discounted after 48 hours provided patient is recovering normally

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Obtainable from the Nook, Stoke Road, Henlade TAUNTON TA3 5LX

* The 2005 revision incorporates the research undertaken by Queensland Health.

www.judy-waterlow.co.uk

Associated Documents / study videos:

- Pan Pacific Guidelines for the Prevention and Treatment of Pressure Injuries.
- Wound Ed 3 module video session on Staff Portal
- Wound Ed 3 Handouts:
 - Handout #4: Waterlow Score and Practice points for Skin Assessment
 - Handout #5: Pressure Injury Classification
 - Handout #6: Pressure Injury Brochure