Western Cape Government

Health

Wound Care Guideline · 2021

Assessment and care of the "hole within the whole"

Foreword

In 2005 the Metro District Health Services (MDHS) in the Western Cape developed evidenced based wound care guidelines in order to improve the quality of wound care offered at primary level. These guidelines also aimed to promote a systematic approach to chronic wounds that would enhance rational use of newly available wound care products and decrease healing times and costs incurred.

In 2014, The Provincial Clinical Governance Committee and the Non-Communicable Disease Audit Task Team proposed that the 2005 MDHS Wound Care Guidelines be reviewed and expanded to all levels of care as provincial guidelines. This would not replace the individualised decision making at specialised services such as plastic surgery but could be used as a general wound care guide in both an academic hospital and at community level. A task team was established under the leadership of family physicians, Dr Vanessa Lomas and Dr Francois Coetzee, Advanced Wound practitioner, Anne Berzen and Non-Communicable Diseases Programme Manager, Ms Unita van Vuuren, and included representatives from all levels of care: wound care nurses, surgeons, emergency physicians, family physicians, dieticians, allied health professionals, and a United Kingdom fellow podiatrist. Their expertise was extensive and comprehensive in the fields of dermatology, vascular surgery, burns, podiatry, PHC platform dressing rooms, nutrition, rehabilitation and prosthetics. The task team collated the guideline content, aligned to most recent evidence and standard treatment guidelines. In 2021, the guideline was then edited, formatted and designed by the Knowledge Translation Unit (KTU) of the University of Cape Town, who are responsible for developing the standard PACK guide used in the Western Cape.

There are several unique features of this guideline, notably that it emphasises that one cannot treat the wound without treating the patient holistically ("The hole within the whole") and that it addresses the complexity of wound care management across all levels of care. It also includes guidance on preventing wounds in vulnerable patients and aims to standardise the management of chronic wounds in these groups. Furthermore, the guideline proposes the inclusion of allied health professionals in the care pathway, highlighting the importance of a multi-disciplinary team that includes physiotherapists, occupational therapists, dieticians and social workers. The guideline covers a wide range of wound care topics. There are general chapters (approach to wounds, wound infection, nutrition, pain management), and specific chapters on acute wounds (trauma, burns) and chronic wounds (diabetic foot wounds, pressure ulcers, lower limb ulcers, surgical wound complications, cancer wounds). There is also an up-to date chapter on available wound dressings and consumables, formulated with inputs from the provincial Department of Health Supply Chain Management (SCM). We strongly advise districts to develop clear supply chain pathways and communication with their central supply chain centre (e.g the District Hospital) so that correct dressings are available for every patient from Community Based Services level upwards.

It is anticipated that the introduction of this Wound Care Guideline will significantly enhance the quality of wound care at all levels.

How to use this guideline:

Start with the chapter 'Initial assessment of the patient with a wound'. This will provide a holistic approach to assessing the patient and their wound and will help you decide the type of wound and its likely cause. Manage and dress the wound following recommendations in the chapter 'Initial wound management and dressing guide', and also in relevant chapters in the Wound types section that focus on the likely cause. When the guideline recommends a dressing or consumable, find it in the Dressings and basic consumables list on page 72.

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Glossary of terms and abbreviations

Glossary

Term	Explanation
Antiseptic	A solution or topical application that prevents the growth of microorganisms that cause disease.
Autolytic	The breakdown of devitalised tissue by the body's own enzymes
Callus	Localized hyperplasia/thickening of the horny layer of the epidermis due to pressure or friction.
Cellulitis	Inflammation of the tissues indicating a local infection; characterised by redness, swelling and tenderness.
Claudication	Pain in calf muscles with exercise due to ischaemia
Colonisation	The presence of bacteria which adhere to the wound but do not cause a local or systemic response. It is not an infection. "Critical colonisation" is where the amount of bacteria (although not causing infection) delays healing.
Contractures	Prolonged shortening of the muscle or other soft tissue around a joint, preventing movement of the joint
Debridement	Removal of foreign material and devitalized or contaminated tissue from a wound until healthy tissue is exposed.
Dehiscence	Separation of wound edges due to breakdown of tissue.
Dermatitis	Any inflammation of the skin.
Dermis	This is the second principle part of the skin and is composed of connective tissue. Blood vessels, nerves and glands are embedded in the dermis.
Deroof	To remove the roof or cover of a blister
Desiccation	Drying out
Epidermis	This is the outer layer of skin. It is made up of 5 layers and is composed of stratified squamous epithelium. These cells help waterproof and protect the skin and underlying tissues.
Epithelialisation	Reconstitution of eroded or injured epithelium by proliferation and migration of epithelial cells from below or adjacent to the damaged site.
Erythema	Redness of the skin due to dilated blood vessels.
Eschar	A dry, dark thick scab
Exudate	Accumulation and drainage of fluids from the wound.
Fibrosis	Thickening and scarring of connective tissue
Fistula	Communication between skin and internal organ
Fluctuant	A mass that can be moved or compressed
Friable	Easily bleeding
Gangrene	The presence of dead tissue
Granulation	Formation of connective tissue and many new capillaries in a full-thickness wound; typically appears as red and cobblestoned.
Haematoma	Collection of blood in a cavity
Haemostasis	The stoppage of bleeding
Irrigation	The flow of solution over a wound to remove debris, cleanse and hydrate the wound

Term	Explanation
Ischaemia	Hypoperfusion of blood through an organ or tissue caused by pathological constriction or obstruction of its blood vessels, or an absence of blood circulation.
Lipodermatosclerosis	Skin change of the lower legs that often occurs in patients who have venous insufficiency. It is a type of panniculitis (inflammation of subcutaneous fat). Affected legs typically have skin induration (hardening).
Maceration	A softening or wetting of the skin owing to retention of excessive moisture.
Necrotic	Dead (in relation to tissue)
Neuropathic pain	Pain along the distribution of a nerve due to lesion or disease
Paraesthesia	Cutaneous sensations (e.g., cold, warmth, tingling, pressure, etc.) that are experienced spontaneously in the absence of stimulation.
Proteolytic	Able to break down the bonds in proteins and peptides
Satellite	Small wounds or lesions that appear around an original larger one
Seroma	Collection of fluid in a cavity
Slough	Stringy, necrotic tissue, usually yellow.
Strikethrough	When the outer layer of a dressing discolours due to exudate.
Tunnelling	Undermining between two different wounds - causing a tunnel under the skin.
Ulcer	A break in the skin or mucous membrane that fails to heal.
Undermining	Skin edges of a wound that have lost supporting tissue under intact skin.
Varicosities	Enlarged and tortuous veins
Wound	Any opening in the skin or break in the skin barrier.

Abbreviations

Abbreviation	Full form
ABPI	Ankle brachial pressure index
BMI	Body Mass Index
CRP	C-reactive protein
DVT	Deep venous thrombosis
ESR	Erythrocyte sedimentation rate
Hb	Haemoglobin
HIV	Human Immuno-deficiency Virus
IAD	Incontinence-associated dermatitis
MC&S	Microscopy, culture and sensitivity
MUAC	Mid-upper arm circumference
NPWT	Negative Pressure Wound Therapy
NSAIDs	Nonsteroidal anti-inflammatory drugs
NTP	Nutritional Therapy Programme
PVD	Peripheral vascular disease
TB	Tuberculosis
TBSA	Total body surface area

Contents

Holistic approach to assessment and care of the patient with a wound

Initial assessment of the patient with a wound

Introduction

The aim of wound assessment is to:

- Assess the whole patient's health including a full social, psychological, medical and surgical history.
- Identify the cause of the wound.
- Hear the concerns of the patient.
- Identify issues (local and systemic) that might delay wound healing.

Assess the patient with a wound

History of the patient

- Ask about current symptoms other than the wound and assess and manage these appropriately. Look specifically for signs of TB and cancer.
- Find out about the patient's chronic conditions and ensure that these are being well managed.
  - › Ask specifically about hypertension, diabetes, peripheral vascular disease (PVD) and HIV.
  - › If the patient has a life-limiting illness, consider whether s/he also needs palliative care.
  - › Ask about smoking and a history of smoking.
- Look for mental illness:
  - › Consider depression if, in the past month, the patient has felt down, depressed, hopeless or has felt little interest or pleasure in doing things.
  - › Consider substance abuse, if in the past year, the patient has drunk 4 or more drinks per session, used illegal drugs or misused prescription or over-the-counter medications. (Where one drink is 1 tot of spirits, or 1 small glass (125mL) of wine or 1 can or bottle (330mL) of beer.)
- Check what medication the patient is using. Steroids, non-steroidal anti-inflammatory drugs (NSAIDs), immuno-suppressant or cytotoxic therapies can all affect healing. Consult with treating doctor and patient as to necessity for such medications.
- Find out about the patient's social circumstances that might influence their general health and wound healing, including their income, family support and the type of household they live in.

Examination of the patient

- Assess the patient's nutritional status. See page 15: Nutrition for the patient with a wound.
- Check the patient's cardiovascular risk and manage if increased.
- Assess the patient's mobility and how they are coping with activities of daily living. See page 17: Rehabilitation of the patient with a wound.

Investigations

- Point-of-care glucose – screen for diabetes.
- Urine dipstick for kidney disease and diabetes.
- Point-of-care haemoglobin – check for anaemia. If Hb < 12g/dl (woman) or < 13g/dl (man), anaemia is likely.
- HIV test – check for HIV if the patient's HIV status is unknown.
- Consider also a syphilis test.

Assess the patient's wound

History of the wound

- Ask about the age of the wound and all previous treatments used.
- Ask about the likely cause of the wound: trauma, burns, previous surgery, extreme exposure to sun or smoke, history of radiation, incontinence, immobility.
- Ask about pain. If pain is present, assess and manage on page 19: Pain management.

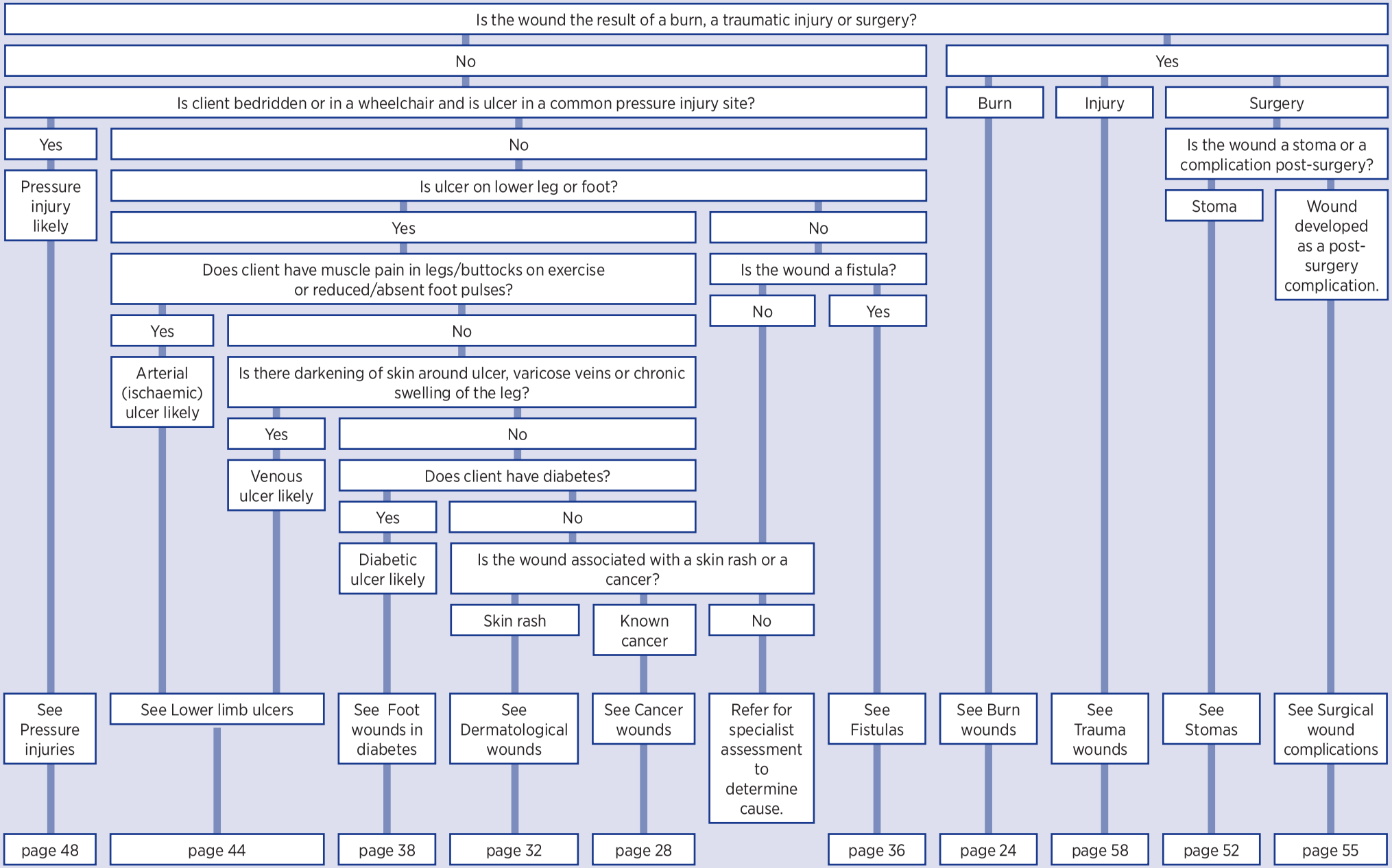
Examination of the wound

Examine the wound and the surrounding skin. To guide and record your assessment, use the wound assessment form on page 82: Wound documentation and forms.

1. Identify the features of the wound:
   - › Size – if available, use a disposable once-off ruler. Record the widest, longest and deepest measurements e.g. 10cm x 8cm x 2cm.
   - › Undermining – record at clock face points - e.g. 8cm at 3 o'clock.
   - › Tunnelling – measure by gentle sterile probing with a wound swab or similar.
   - › Is there visible fat, muscle, bone or tendon?
   - › Wound discharge: check colour, consistency, amount and smell.
   - › Desiccation – dry
   - › Maceration – due to excess exudate
2. Check the condition of the surrounding tissue.
3. Check for infection: surrounding skin red/warm/swollen, or if diabetic ulcer and increasing exudate, pus or offensive smell. If present assess and manage infection on page 63: Wound infections.
4. Look at the colour of wound bed: is it pink (epithelialising), red (granulating), yellow (sloughy) or black (necrotic)?

Pink (epithelialising) | Red (granulating) | Yellow (sloughy) | Black (necrotic)

Decide on the likely type of wound:



Investigations

- Do not do a wound swab routinely.
- If the wound is not healing, consider further investigations. See page 66: The wound that does not heal.

Management

Manage the patient with a wound

- Manage the patient's general health, paying particular attention to conditions that may slow wound healing and the patient's social and psychological well-being.
- Draw on the multidisciplinary team where needed.
- Manage the patient's nutritional needs on page 15: Nutrition for the patient with a wound.
- Manage the patient's pain on page 19: Pain management.

Manage the wound

Manage and dress the wound depending on the colour on page 12: Initial wound management and dressing guide, and the likely cause (see the relevant chapter).

Review

Review the patient and his/her wound regularly. Find out about progress and response to treatment. If the wound worsens or does not improve, see page 66: The wound that does not heal.

Initial wound management and dressing guide

- Assess the patient fully, identify the cause of the wound and address factors which could delay healing on page 8: Initial assessment of the patient with a wound.
- The patient with wet gangrene or severe infection (spreading cellulitis or who is systemically ill) needs same day referral to a district hospital.
- Refer to chapters for specific wounds for additional or different management (e.g., venous stasis wound, burn wound, trauma wound).
- If the wound is infected (increasing exudate, pain, redness, swelling and warmth of the surrounding skin), first manage infection on page 63: Wound infections.

Manage the non-infected wound based on the type of wound (necrotic, sloughy, granulating or epithelialising).

Necrotic wound (black/dry)

1. **Aim of dressing:** to hydrate the wound bed and promote autolytic debridement.
2. **Debride dead tissue:** see how to debride a wound on page 69: Useful techniques for wound assessment and care.
   - › If there is vascular insufficiency or you are unable to debride, refer to hospital within 1 week.
   - › If the patient has a life-limiting illness and the wound is regarded as unhealable, consider whether to omit this step.
   - › If there are maggots in the wound, remove these before debriding the wound.
3. **Apply a dressing:** Medicinal honey or hydrogel and a non-adherent synthetic dressing plus a supportive pad held in place with tape or carefully applied bandage e.g. cling bandage.
4. **Reassess:** After 3 days, but after 1 day to exclude infection if the patient has diabetes or peripheral vascular disease. Once stable, change the dressing every 3 to 4 days.

Sloughy wound (yellow exudate)

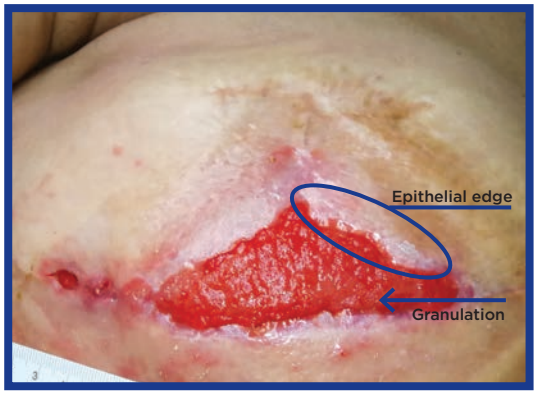
- Debride the wound before cleaning and dressing it.
- If there are maggots in the wound, remove these by irrigation with clean saline or water, or if deep, cover the wound with a film dressing to bring the maggots to the surface and then irrigate.
- Assess the amount of exudate and manage accordingly.
- **Low exudate sloughy wound** (if the exudate has not saturated dressings after 2 days)
  - › Irrigate with saline or clean water.
  - › **Apply a moisture balance or moisture retention dressing:** apply a hydrogel, hydrocolloid or hydrofibre dressing and secure with a protective absorbent foam dressing.
  - › Reassess within five days depending on the type of dressing and response of the wound, sooner if signs of infection.
  - › The aim of the dressing is to achieve moisture balance.
- **High exudate sloughy wound** (if exudate saturates dressings within 1 day)
  - › Irrigate with saline or clean water.
  - › Apply a skin protector product to prevent maceration of the surrounding skin and an antimicrobial, moisture-absorbent dressing to the wound bed. If the patient cannot visit frequently, put a surgical or absorbent pad on top – the pad only can be changed by the patient daily – supply the patient with sufficient pads and cling bandages to last until the following visit. Advise the patient to change the dressing as soon as there are signs of dressing saturation.
  - › Reassess as frequently as needed until the wound settles, then every 3 to 5 days.
  - › The aim of the dressing is to remove slough and prevent skin maceration.

Granulating wound (beefy red)

1. **Aim of the dressing:** to maintain moisture balance and protect new tissue growth.
2. Irrigate with saline. If there is friable (easily bleeding) beefy red tissue, suspect infection, see page 63: Wound infections.
3. **If there is over-granulation:** perform light cautery with silver nitrate sticks taking care not to damage other parts of the wound already epithelializing. Apply an absorbent dressing to dehydrate the over-granulation such as a wound pad or hydroconductive dressing.
4. **Dressing:** protect the wound from trauma and exposure by applying a low adherent dressing - non-adherent synthetic dressing or an impregnated tulle dressing.
5. Reassess weekly. The granulating wound can stall easily. If it is not healing, see page 66: The wound that does not heal.

Epithelializing wound (pink)

1. **Aim of the dressing:** to promote epithelialisation and wound shrinkage.
2. Only clean peri-wound area if needed. Don't damage fragile epithelial cells on the wound edge, avoid scrubbing.
3. **Dressing:** Apply a low adherent dressing - impregnated tulle dressing or non-adherent synthetic dressing. If the wound is dried out – add hydrogel. If an awkward area, use cloth adhesive tape.
4. Reassess within 7 days depending on wound and patient needs.



Nutrition for the patient with a wound

Introduction

- Nutrition plays an important role in the management of a wound. The body needs to replace the damaged tissue with new tissue which requires nutritional support to promote and support optimal wound healing.
- Both over-and under-nutrition can negatively impact wound prevention and healing.
- During the healing process, the body needs increased amounts of calories, protein, vitamins A and C, and sometimes the mineral, zinc.
- Timeous assessment of nutritional status will enable optimal nutritional management in wound prevention and during wound care.

History

- Assess intake of calories, protein, fluid, vitamins and minerals.
- If first assessment – ask patient to recall what s/he ate in the past 24 hrs to get an idea of whether the patient is eating sufficiently from all food groups.
- Identify if the patient does not eat enough and try to ascertain the cause:
  - Difficulties swallowing
  - Poor appetite - if the patient regularly leaves three quarters of a plate of food.
  - Not enough food at home - if a main meal does not consist of protein, calories and vegetable/fruit.

Examination

- Check the Mid-Upper Arm Circumference (MUAC). It is an easy screening tool and can be done on patients who cannot stand.
- If MUAC is less than 23cm, or if the patient appears overweight, also check BMI (if the patient can stand).
  - To calculate BMI, check height in metres and weight in kilograms.
  - BMI = weight (kg) ÷ height (m) ÷ height (m).
- Look for general signs of poor nutrition: check mouth for angular chelitis, nails for spoon shape, brittleness or ridges, hair to see if it is dry or easily pluckable. Look for severely dry skin and muscle wasting.

Investigations

- Routine investigations of nutritional biochemistry (albumin, transferrin, renal function) is not necessary, but should rather be guided by nutritional status, general health and wound response to management.
- Offer all patients an HIV test if their status is unknown.

Management

- If BMI <18.5 or MUAC <18.5, refer to dietician and start Nutritional Therapy Programme (NTP).
- If MUAC 18.5-23cm or BMI 18.5-19.5, the patient is at risk. Start nutritional supplementation and regular monitoring.
- If BMI> 25, discuss weight loss measures. If no success or BMI >30, refer to a dietician.
- If the patient deteriorates or has general signs of poor nutrition, refer to a dietician.

Advice

- Encourage the patient to enjoy where possible a variety of food and to consume mixed meals with foods from various food groups, and to alter food preparation methods.
- Encourages families to share meals and to view meal times as occasions in which they can interact and relax.
- Advise the patient to eat regular meals - at least 3 meals of the same size every day rather than one or two large meals. If poor appetite, advise 5 small meals per day.
- Make fruit or vegetables part of each meal. They contain vitamins A and C, iron and zinc which aid wound healing.
- Eat protein-rich foods which promote wound healing: eggs, beans, peas, lentils, soya products, fish or meat (twice a week if possible).
- Use whole grain and high fibre starchy foods.
- If trying to lose weight:
  - Limit portion sizes, especially of starchy foods.
  - Try to balance the amount of food eaten with levels of physical activity.
  - Eat fats sparingly. Steam or oven-bake food instead of frying it in oil.
  - Replace refined carbohydrates such as bread, pasta and rice with healthier alternatives such as salads and vegetables.

Review

Review the patient's nutritional needs based on NTP protocols; more frequently if the wound is not healing.

Referral

- If food insecurity is present, arrange social work assessment for grant support. Consider referral to a community structure offering food support (community kitchens or organisation involved in food security) while awaiting the assessment or grant.
- If BMI < 18.5 or MUAC < 18.5, refer to the Nutritional Therapeutic Programme (NTP) for nutritional supplements.
- Refer to a dietician if the patient has:
  - a BMI < 18.5 or MUAC < 18.5.
  - a BMI > 30
  - a BMI > 25 and no success with weight loss measures
  - general signs of poor nutrition
  - a wound that is not healing.
- If the patient is referred to a dietician, ask the patient to prepare a food diary for a week that includes what they eat, timing of meals and snacks, how the food is prepared and how much of the prepared food is actually eaten.

Rehabilitation of the patient with a wound

Introduction

- Rehabilitation is a goal-orientated process aimed at enabling impaired persons to reach an optimum mental, physical, sensory and/or social functional level.
- Rehabilitation aims at reducing the impact of disablement (activity limitations and participation restrictions) and facilitating full participation in society.
- The following patients with wounds are likely to require rehabilitation: those with pressure sores, long term health conditions, cancer or amputation, or those who are wheelchair users or are bed-bound.
- While all healthcare professionals need to be able to perform an initial screen for rehabilitation, there are several members of the rehabilitation team that provide specialist rehabilitation services.

History

- Attempt to ascertain why the patient has this wound.
- Find out whether and how the patient is coping.
- Ask about issues with mobility.
- Check if the patient is having problems with activities of daily living like getting dressed, feeding, using the toilet or any other issue that is now difficult for the patient.
- If the patient is using assistive devices, check that these are working properly.
- If the patient has pain related to the wound, see page 17: Pain management.
- Look for mental health issues:
  - Consider depression if, in the past month, the patient has felt down, depressed, hopeless or has felt little interest or pleasure in doing things.
  - Consider substance abuse if in the past year, the patient has drunk 4 or more drinks per session, used illegal drugs or misused prescription or over-the-counter medications. (Where one drink is 1 tot of spirits, or 1 small glass (125mL) of wine or 1 can or bottle (330mL) of beer.)
- Check what support the patient receives from family/friends and from social services.
- Assess the patient's nutritional status – see page 13: Nutrition for the patient with a wound.

Examination

- Check if the patient can mobilise safely, and is balance is satisfactory.
- Look for limited movement of joints, contractures and weakness.
- Check nutritional status. See page 13: Nutrition for the patient with a wound.

Management

- If there are issues identified on history or examination, refer to rehabilitation health worker or rehabilitation team member.
- Discuss with the patient and carer if needed the patient's rehabilitation goals and plans.
- Ensure adequate communication between necessary members of the rehabilitation and wound care teams.
- Management will depend on the rehab needs.
- Take a holistic approach to the rehabilitation process that takes into account the patient's social, cultural, physical and emotional needs.

Advice

- Explain the need for rehabilitation – to promote healing, prevent complications and regain best possible function.
- Have a carer/buddy/support – identify this person and involve them in the rehab plan.
- Advice will depend on the rehab needs.
- Once the wound is healed, educate the patient on how to manage the scar:
  - › Advise the patient to avoid sun exposure to the scar/s.
  - › Advise the patient to limit excessive scar formation by gently massaging the scar to ensure it is soft, supple, and flat.

Referral

If the patient requires rehabilitation services, refer to an available member of the rehabilitation team. Below is a list of common issues seen in patients with wounds and the appropriate rehabilitation service they should be referred to.

Issues to refer	Therapist
• Patient struggles to complete activities of daily living • Need for or issues with assistive devices • Problems with mobility • Wound over a joint • Extensive or non-healing wounds	Occupational therapist/physiotherapist
Social support needs	Social work
• Mental health issues • Post traumatic stress disorder following a traumatic incident • Distress around the scar	Psychologist/occupational therapist/social worker/counsellor/mental health nurse
Non accidental injuries in children	Social worker
• Large pressure sores • Extensive burn wounds • Malnutrition • Weight loss • Non-healing wounds	Dietician
• Difficulties with speech • Swallowing issues	Speech therapist
If prosthesis is a problem	Prosthetist
• Foot deformity • Foot ulcer (once healed) • Problems with footwear or inserts	Orthotist/ Orthopaedic footwear technician

Consider admission for rehabilitation if the patient has complicated wounds, other health issues or social circumstances that make care difficult, for example large wounds (larger than 12 cm x 4 cm, deeper than 1 cm), condition of the wound (infection, no granulation), extensive pressure sores requiring reconstructive surgery, nutritional status of the patient (obesity, malnourished) or the patient lives far away from the clinic. Discuss with rehabilitation specialist or rehabilitation centre.

Review

Review the rehabilitation needs at every visit.

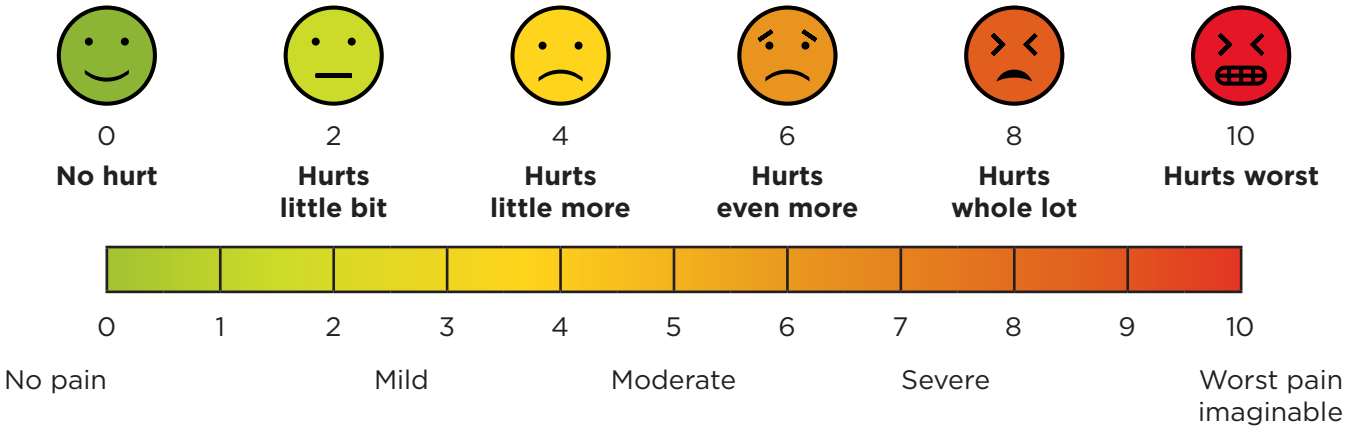
Pain management

Introduction

- Uncontrolled and prolonged pain can delay wound healing and can have negative effects such as depression, hyper-sensitization of the wound and peri-wound area, and excessive scarring.
- View the assessment of pain as a continuous process and not as a once-off event.
- The first step to minimizing pain is to practice good wound care and appropriate dressing selection. See page 12: Initial wound management and dressing guide and page 74: Dressings and basic consumables list.
- Most of the pain ascribed to wounds is related to dressing changes. See page 69: 'How to remove a dressing' in Useful techniques for wound assessment and care.
- Chronic wounds that become more painful signal a new problem that needs to be treated.

History of the wound

- Consider the psychological and social aspects of having a (chronic) wound, since this may influence the person's perception of pain.
- Elicit the patient's concerns to ensure appropriate pain management.
- Use a pain scale at each patient encounter.



Examination

Look for the cause of the pain:

- Signs of wound infection: surrounding skin is red and tender, foul smelling exudate, biofilm. The patient may be systemically unwell with a fever.
- Infected bone: severe tenderness and able to reach bone when probing with a metal probe.
- Foreign bodies: sutures that were missed at the time of removal, dirt, glass, other objects.
- Evidence of ischaemia in lower limb wounds: absent pulses, cold and pale skin, decreased ABPI
- Exposed nerves in the wound
- Exposed tendons that are not shiny white and are friable are likely to be infected.

Management

- Aim to identify and treat the cause of the pain, if possible.
- When prescribing pain-relief medications, aim to relieve the pain as much as possible:
  - Use of oral formulation of analgesics is preferred wherever possible.
  - Analgesics should be given at regular intervals rather than on demand.
  - Ensure patient also has analgesics to take one hour before a dressing change.
  - Allow the patient to guide the treatment selection according to the level of pain.
  - Add adjuvant treatment for nerve pain (burning sensation) and if pain disturbs sleep.

Pain medication options

Medication group	Medication	Route	Dosing	Note
	Paracetamol	Oral or rectal	Paediatric dose: (1 month and older) 20mg/kg/dose, maximum 90mg/kg/day	
		Oral	Adult dose: 0.5 -1g 6 hourly, maximum 4g /24 hours	
Non-steroidal anti-inflammatory drugs (NSAIDs)	Ibuprofen	Oral	• Paediatric dose: (≥7kg or ≥6 months old) 5mg/kg 4-6 hourly, maximum 20mg/kg /day • Adult dose: 200-400mg 8 hourly, maximum 2400mg/day	• Limit use of NSAIDs in chronic wounds as they can affect healing. • Avoid NSAIDS in patients with peptic ulcer disease, previous allergy to NSAIDs, pregnant or breastfeeding, on warfarin or with clotting disorders, asthma, kidney impairment, liver impairment and heart impairment.
		Dressing containing ibuprofen	These dressings can remain on the wound for 3 -7 days releasing a low dose of ibuprofen into the wound bed. They are effective even if exudate is present.	Indicated for a wide range of exuding wounds: • Acute wounds (second degree burns, donor sites, postoperative wounds and skin abrasions • Chronic wounds (leg ulcers, pressure ulcers and non-infected diabetic foot ulcers).
	Diclofenac	Oral or rectal	Paediatric dose: (2 years and older) 1-3 mg/kg/day in 2-3 doses, maximum 150mg /day	• Limit use of NSAIDs in chronic wounds as they can affect healing. • Avoid NSAIDS in patients with peptic ulcer disease, previous allergy to NSAIDs, pregnant or breastfeeding, on warfarin or with clotting disorders, asthma, kidney impairment, liver impairment and heart impairment.
		Oral, rectal or intramuscular	Adult dose: 25-50mg 8 hourly orally or 75mg IM or rectally, maximum 150mg/day	
Opioids	Tilidine	Oral	Paediatric dose: (1 year and older) 1mg/kg/dose 6 hourly = 1 drop/2,5kg 6 hourly	
	Tramadol	Oral	Adult dose: 50-100mg 4-6 hourly, maximum 400mg/day.	Use with paracetamol. Safety not established in paediatrics.
Opiates	Morphine	Oral, intramuscular	Adult dose: Oral 5-20mg/5ml 6 hourly; IM 5-15 mg	It takes 30-60 minutes to relieve pain. Reserve morphine for chronic pain not controlled by other measures.
		Dressing containing morphine	Mix 10mg of morphine with 8g of hydrogel and apply to wound 24 hourly.	Avoid if patient has sensitivity to constituents of dressing.
Anti-convulsants	Carbamazepine	Oral	Adult dose: 200mg 12 hourly, increase dose weekly by 100mg until pain is relieved, maximum dose 1.2g/day.	Unacceptable sedation is often experienced at higher doses.
Anti-depressants	Amitriptyline	Oral	Adult dose: 25-75mg/day. Start at low dose, increase to dose where side effects are tolerable or absent.	Not all patients experience pain relief with amitriptyline.

Advice

- Explain to the patient what the diagnosis and cause of the pain is, the options for treating it and the options for pain relief.
- Advise patient to take pain relief regularly as prescribed and one hour before dressing changes if required.
- Give advice on how to cope with painful dressing changes or acute episodes of pain:
  - Use distraction, like listening to music, reading a magazine or watching a DVD. Suggest skin stimulation, use of strong aromas, or tasks involving hands: puzzles, needlework, crafts, or crafts.
  - Employ relaxation techniques like deep inhalation with muscle contraction & exhalation with muscle relaxation, meditation, or guided relaxation.
- Advise patient to draw on available support structures: family members, friends, NGOs & support groups, religious support. Make referrals where appropriate.
- Provide contact details of the facility and encourage the patient to return if the pain is worsening or does not subside with the adjustment in treatment.

Review

Review the patient's pain experience at every dressing change and if an inpatient, at each administration of medication.

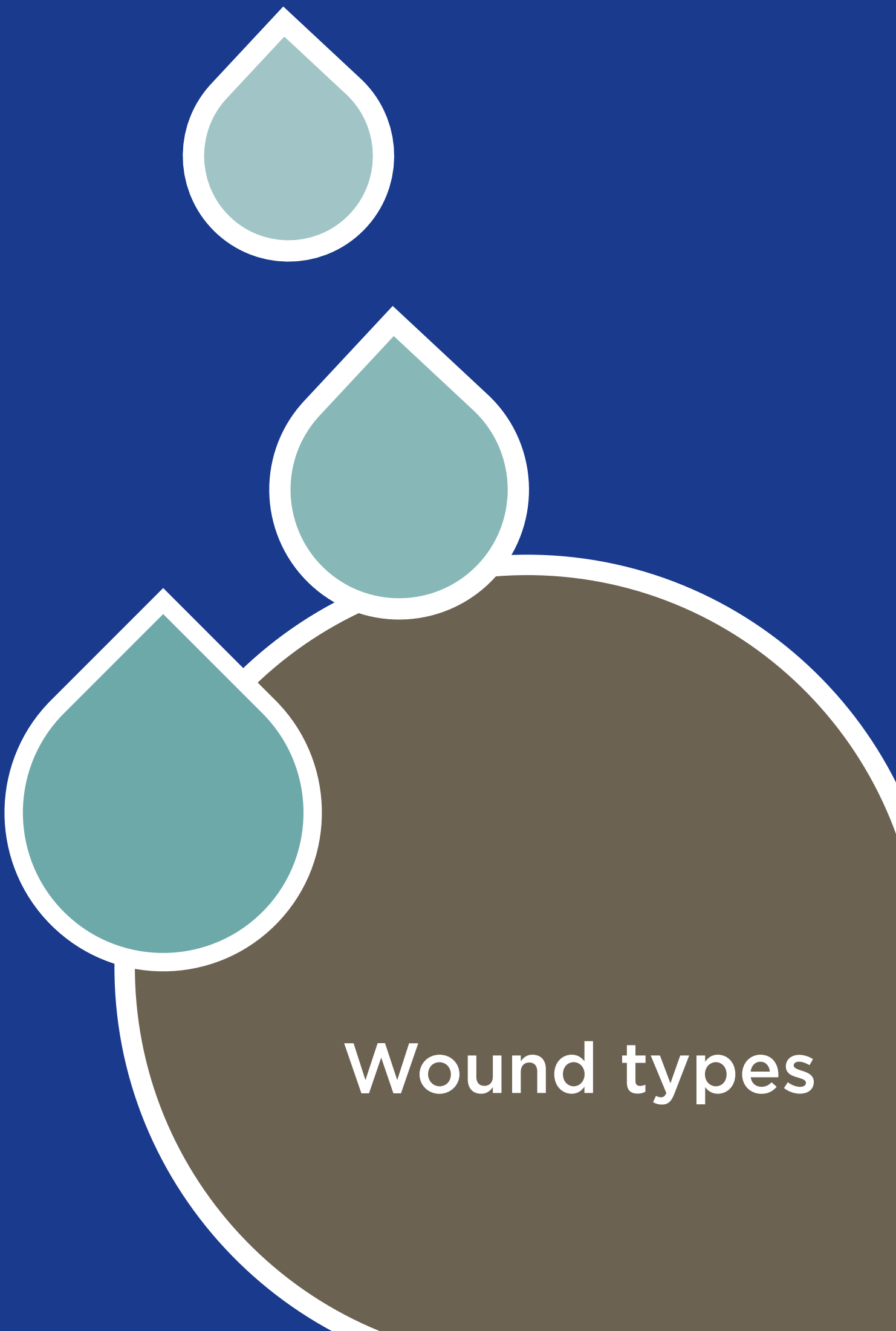
- If pain is controlled or decreasing significantly, continue therapy as is.
- If pain is unchanged or worsening: check for infection and other wound complications as described in this section and treat accordingly.

Referral

- **For clinical specialist assessment/management:**
  - Quadriplegic patients that develop spasms due to wounds need baclofen which is specialist-initiated.
  - If neurogenic pain is not controlled with first-line adjuvant analgesia, discuss with or refer to a wound specialist or pain specialist.
  - Severe infection that is spreading as a cause of increased pain
  - If the cause of severe pain is unclear.
- **For therapy:**
  - Physiotherapy – When limited movement of a limb due to wound pain is putting the patient at risk of developing contractures.
  - Psychologist – where anxiety and depression is a significant contributor to the pain experience.
  - Occupational therapy – where temporary splinting of a limb is needed to relieve pain or to assist with positioning of limbs to minimize wound oedema.

Prevention

- Most of the pain ascribed to wounds is related to dressing removal.
- Selection of medication before dressing changes is determined by wound factors (larger wounds and deeper wounds tend to be more painful) and patient factors (for example, some patients are not able to tolerate NSAIDs). In the hospital setting, consider use of opioids as pre-medication for painful dressing changes.
- Do not let dressings dry out and avoid adherent products that cause pain and trauma at dressing changes. See page 72: How to remove a dressing.


Wound types

Burn Wounds

Introduction

- Prompt action following a burn (ideally within the first 4 hours) will decrease morbidity, hospital admissions and operations.
- A thorough history and examination is critical before contacting a hospital or burns unit to discuss the patient's level of care.

History of the wound

- Record details of how and when the burn occurred. Determine the type of burn including the possibility of electrical, chemical or inhalational injury.
- Ask about what immediate care was given including cooling of the burn and for how long.
- Ask about co-morbidities.
- Consider the possibility of abuse, especially in the child, the elderly or the patient with disabilities.

Examination

- Look at which areas of the body are affected. Functional areas include the areas of flexion and extension, neck, groin, palms and soles.
- Consider abuse if a cigarette burn or imprint burn or the patient has other unexplained injuries.
- Determine total body surface area (TBSA) area affected:
  - The palmar method (palmar surface including fingers and thumb counts as 1 %) is more accurate than the rule of nines.
  - Do not use TBSA calculation for superficial burns.
  - Add 10% if there is an inhalation injury. Signs of inhalational injury include cough, difficulty breathing, sore throat.
- Classify the burn depth on the next page:

Burn depth	Damaged area	Appearance	Painful	Blanching	Old classification*
Superficial	Epidermis injured but intact	Red like sunburn	Very	Rapid	1st degree
Superficial partial thickness	Superficial dermis	Blisters and darker epidermis, pink or light red	Very	Rapid	2nd degree
Deep partial thickness	Deep dermis	Mottled white or pale pink	No	None	
Full thickness	Muscle/tendon/ bone	• Thick, dry, leathery • Yellow, brown or black • Clotted veins, there may be red fixed mottling	No	None	4th degree

Superficial burn

Superficial partial thickness burn

Deep partial thickness burn

Full thickness burn

**Do not use the old classification.*

Management

Acute management of the burn wound

- When the patient is first seen after the burn, take the following steps:
  - Provide urgent care including resuscitation, respiratory support and fluids as needed.
  - Cool the burn with cold running tap water for 30 minutes. This will stabilise tissue temperature and remove any surface contaminants such as chemicals. Do not apply ice.
  - Ensure the patient does not become hypothermic.
  - Provide tetanus prophylaxis.
- Prepare to dress the burn:
  - Manage pain during dressing change. See page 19: Pain management.
  - Debride loose or necrotic tissue and deroof blisters > 2cm or blisters over joints.
  - Cleanse with normal saline or sterile water or chlorhexidine in water. Avoid astringent and alcohol-based cleansers.
- Dress the burn:
  - Apply a hydrogel product designed for the acute management of burns (for example Burnshield®) for maximum 4-6 hours.
  - Cover with a transparent dressing (such as cling wrap) or crepe.

Change the dressing after 6 hours:

- Manage pain during dressing change. See page 20: Pain management.
- A superficial burn is unlikely to need further dressing. For all other burns:
  - Deroof any blisters.
  - Cleanse gently with saline or chlorhexidine soap.
  - Apply silver sulfadiazine cream/ointment and cover with a secondary dressing such as gauze and bandaging.
  - If a full thickness burn and transfer is not possible, discuss with burns unit about further management. The wound requires a skin graft for good quality healing.
- Dress fingers and toes separately to prevent digits growing together. If dressing an ear, dress it separately from the head, to prevent the ear moulding to the head.

Advice

- If daily outpatient visits are not feasible, supply dressings (and if indicated, silver sulfadiazine ointment for no more than 2 weeks) for home care. Encourage the patient to keep a record of wound pictures on their phone.
- Most patients requiring admission for wound care need high protein diets.
- Advise patient to avoid baths to “soak” the wounds, rather use showers – they limit the chances of wound infection.
- Advise the patient to protect healing burn wounds and burn wound scars from sun exposure, as the skin over these areas is damaged and is vulnerable to sunlight.
- Once healed, advise the patient to limit excessive scar formation by gently massaging the scar to ensure it is soft, supple, and flat.

Review *(out-patient management)*

- Inspect the wound once to twice a week either in person or using photos taken by the patient or other team members.
- Reapply silver sulfadiazine (SSD) dressings daily, but if this is impractical for the patient and the wound is healing well consider other dressing options:
  - Dressings can be changed between 3-14 days depending on wound healing.
  - If there is concern about infection, blood under the dressing or large areas in partial thickness burns, continue daily SSD, or use hydrophobic or tulle dressing which can be left on for 3 to 5 days (or until it peels off, according to manufacturer’s guidelines).
  - If the wound is healing well and the dressing is clean and dry, leave the dressings unchanged.
- For superficial partial thickness burns, use hydrofibre or tulle dressings; for deeper partial thickness burns use hydrogel and foam dressing.

Referral

Refer or discuss with the next level of care if the patient has any of the following:

- The child < 1 year of age
- A burn > 5% TBSA in the child 1–2 years of age
- Full thickness burn
- Partial thickness burn > 10% TBSA
- Burns of face, hands, feet, genitalia, perineum and major joints
- Electrical burns, including lightning injury
- Chemical burns
- Inhalation injury
- Circumferential burn of a limb or chest
- Burn injury in a patient with a pre-existing medical condition which could complicate management, prolong recovery or affect mortality.
- If the patient has concomitant trauma
- Suspected child abuse - discuss with a social worker.
- Burns exceeding the capabilities of the referring centre
- Infected burn wounds.
- Discuss with a burns unit the child with a burn wound that has not healed within 21 days.

Prevention

- If burn wounds span across joints or involve the hands, refer early to physiotherapy and occupational therapy to prevent contractures.
- Refer the patient with full thickness burn wounds to occupational therapy for pressure garments to prevent excessive scarring.
- Patients admitted for inpatient burn wound care should be referred to a dietician for a high protein diet to prevent delayed wound healing.

Cancer wounds

Introduction

- Cancer wounds may be the result of a primary skin cancer, a metastasis, the spread of an internal cancer to the surface, the malignant transformation of a chronic wound or following cancer treatment with radiation.
- A cancer wound may or may not be healable, and an approach to care can be curative or palliative or both.
- A non-healable wound is one due to a cancer where current treatments are addressing palliative care and not cure due to various reasons, or any wound where the patient has so few reserves that the patient is expected to demise from the primary condition before the wound heals.
- Assessment and management of the patient with a cancer wound needs to be holistic and must include symptom management and local wound care. See PACK Adult for a holistic approach to palliative care of the patient with a life-threatening condition. This chapter focuses on local wound care for the patient with a cancer wound that might or might not be healable.

History of the wound

- Ask about current medication and treatments including radiation, chemotherapy and treatment for chronic diseases such as HIV and diabetes.
- Ask about pain in the wound. New or worsening pain might indicate wound infection or damage to local structures including nerves. See page 19: Pain management.
- Record whether there is any foul odour, exudate or bleeding from the wound.
- Check if the patient can manage adequate intake of fluids and food.
- Ask about the patient's mental state and support structures for patient and carer.

Examination

- Perform a general examination including assessment for anaemia, hydration and nutritional status.
- Look for signs of infection: if 3 or more of any of the following, infection is likely: non-healing, odour, increasing pain, increasing exudate, increasing size of wound or new areas of breakdown, redness, swelling, tenderness and increased temperature of surrounding skin, probing to bone or if the patient has a raised temperature.
- Look for the presence of dead tissue that will promote infection.
- Assess the health of the peri-wound skin.
- Look for fluid collections after cancer surgery where lymph nodes were removed.

Investigations

- Offer an HIV test if status is unknown.
- Check a haemoglobin if the patient is clinically pale.

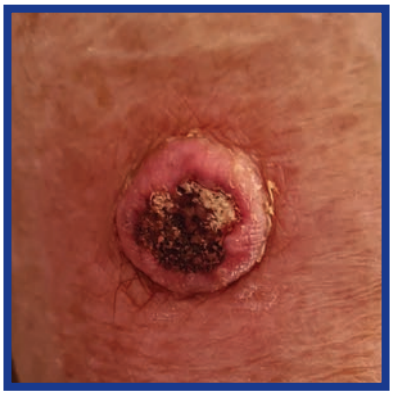
Management of the wound

- Cleaning wounds and changing dressings are painful procedures.
- Administer prescribed pain medication 20-30 minutes prior to the procedure. See page 19: Pain management.
- The standard principles of wound care apply to cancer wounds, except that in non-healable wounds, avoid moist wound environments as they promote infection. See page 11: Initial wound management and dressing guide.
- Irrigate the wound as frequently as needed and as gently as possible to remove any loose debris so as to allow increased wound hygiene. Using warm solutions causes less pain.
- Attend also to additional features of the wound like easy bleeding, necrotic tissue, excess exudate, distressing odour and infection.

Superficial clean cancer wound:

- Apply a very thin layer of petroleum jelly on cotton gauze or other non-adherent dressing or the silicone interface of a silicone foam dressing.
- Avoid tulle or foliated gauze as these adhere to the wound and can cause severe pain and bleeding on removal.
- Change dressings when outer layer of the dressing discolours due to exudate, (“strikethrough”) occurs.

Cancer wound that bleeds easily:



- Dressing selection is similar to that of superficial cancer wounds.
- To stop bleeding:
  - Attempt local pressure for 2-3 minutes for minor bleeds. This may be painful. Start with gentle pressure then ensure firm pressure.
  - Constant firm pressure is more effective than mild pressure with frequent checking on the wound.
  - Avoid wiping the wound. This is painful and will dislodge early clotting and start the bleeding again.
  - Apply a moisture absorbent alginate dressing or gelatine powder for minor bleeding.
  - Use silver-nitrate sticks to chemically cauterize bleeding points.
  - For moderate-to-severe bleeding, consider placing a stitch to ligate the blood vessel, or electrical cauterization.
  - If the wound is over a major artery or blood vessel, counsel the family and patient to be aware of breakthrough bleeds and be prepared for haemorrhage. Have sanitary pads or incontinent products on standby.

Cancer wound with necrotic (yellow/grey/black) tissue:

- Apply a thin layer of ichthammol ointment dressings daily.
- Trim loose slough conservatively and very cautiously to avoid incising healthy tissue or causing bleeding or pain.
- Necrotic tissue no longer has pain fibres but cutting it away may pull on the wound, causing pain.
- Be sensitive to odour from the necrotic tissue and infection forming under the tissue. Absorbent charcoal-based dressings can help control this.

Cancer wound with large amounts of exudate:

- For smaller wounds or wounds with moderate amounts of exudate, apply foam dressings, alginates or hydro fibres.
- For larger wounds or with copious amounts of exudate, apply a dressing that will achieve moisture control, for example, cotton gauze, surgi-pads, sanitary pads, appropriately sized disposable nappies or drainage bags.

Cancer wound with distressing odour

- Treat any visible infection. See page 63: Wound infections.
- Apply a charcoal-containing odour absorbing dressing.
- Apply metronidazole to the wound.
  - › Use metronidazole gel or apply gauze soaked in intravenous metronidazole.
  - › If local application fails to resolve the odour, give metronidazole orally.
- Ventilate the room. Kitty litter or baking soda beneath the bed may help to absorb the odour.
- Apply a few drops of eucalyptus oil to the outside of the dressing.

Cancer wound with infection

- See page 63: Wound infections.

Advice

- Cancer wounds can be very distressing for patients and their family and carers. Addressing their concerns is key to effective care.
- Advise the patient to avoid scratching or fiddling with the wound as they can bleed easily and to present for care early if bleeding does occur.
- Advise pain medication before cleaning wound or changing wound dressing.
- Ask the patient to inform wound care health worker if s/he starts new medications (especially warfarin or aspirin which may cause easy bleeding).
- Discuss advance-care plans and preferences with the patient and carer/s.

Review

Standard principles of wound assessment and documentation are applicable.

Referral

- Refer to a palliative care team for holistic palliative care, symptom management and support for carers.
- If the patient is unable to take in adequate amounts of fluids and food, refer to a dietician or hospital if severe and the patient agrees to an admission.
- Consider admission to hospital when signs of systemic infection is present (confusion, high temperatures, low blood pressure). Discuss first with the patient and the family.
- Refer to an occupational therapist for splinting of a limb to limit excessive movement in a wound over a joint or to control pain.
- Refer to an emergency centre if life-threatening bleeding occurs from a wound occurs that cannot be controlled at the local facility.

Prevention

- It is important to prevent pressure injury in patients that have cancer wounds, as they are typically less mobile. See page 48: Pressure injuries.
- Prevent cancer wound infection:
  - › Carefully debride dead tissue – slough or eschar. See page 69: How to debride a wound. Exercise extreme caution during surgical debridement, to avoid bleeding from the wound.
  - › Use absorbent dressings (for example, foams and alginates) to keep the wound dry.
  - › Prophylactic use of antimicrobial agents is not recommended.

Dermatological problems

Introduction

This chapter provides an approach to dermatological problems that are associated with wounds or wound dressings and those that benefit from dressings:

- The skin surrounding a wound may become infected, irritated by exudate or have concomitant pathology as in the stasis dermatitis of chronic venous insufficiency in the patient with a leg ulcer.
- A wound dressing itself may cause a contact dermatitis.
- There are several dermatological problems whose management may include the application of dressings. The purpose of dressings in these conditions is the following:
  - To increase the contact of topical treatment with the skin (e.g., atopic or contact dermatitis)
  - To prevent infection and for patient comfort when the epidermis is open and leaking serum (e.g., Stevens Johnson Syndrome and bullous skin conditions like pemphigus and pemphigoid)
  - To assist in removing crusts (e.g., impetigo or ecthyma).

History of the wound

- Find out the history of the wound or dermatological problem, possible cause, any procedures, treatment and dressings the patient has received.
- Ask about adhesive plaster use as allergy is a common cause of dressing-related contact dermatitis.
- Elicit the patient's symptoms, including pain, itch, exudate, odour, swelling.
- Ask about known chronic conditions (including skin and vascular conditions), allergies and medications used.

Examination

- Follow the principles of initial wound assessment, see page 8: Initial assessment of the patient with a wound.
- Examine the skin all over, as well as mucosa, hair and nails.
- Look for signs of skin infection: erythema, increasing exudate, odour, tenderness. The patient may be systemically unwell or febrile.
- If the patient with chronic venous insufficiency has swollen legs with erythema, discomfort, itchiness or weeping, stasis dermatitis is likely.
- If surrounding skin is red and itchy in the distribution of the dressing, consider a contact dermatitis.
- Identify skin conditions that might benefit from dressings: severe dermatitis, crusting or blistering, or where the skin is peeling off (as in a burn, or in Stevens Johnson Syndrome)

Skin peeling off in Stevens Johnson Syndrome

Crusting in impetigo

Atopic dermatitis

Contact dermatitis

Stasis dermatitis

Bullous pemphigoid

Investigations

Consider performing a skin biopsy if the diagnosis is unclear. Discuss with a specialist.

Management

Manage the skin problems and the patient's condition depending on the diagnosis.

- If the patient has Stevens Johnson Syndrome, they need urgent care and specialist management, including attention to fluid balance and care of mucous membranes (eyes, mouth, genitalia). Any likely causative medication must be stopped.
- If the patient has lower leg stasis dermatitis:
  - Key is to manage the chronic venous insufficiency with compression and elevation (see page 44: Lower limb ulcers).
  - Treat the dermatitis with topical steroid, starting with potent steroid, e.g. betamethasone cream if a 'wet' dermatitis or fluocinolone ointment if a 'dry' dermatitis and weaning down as it improves.
- If the patient has a contact dermatitis due to a dressing:
  - First check if the dressing can be removed altogether.
  - If the wound still needs a dressing, use a non-adherent dressing or petroleum gauze kept in place with cling bandages.
  - If erythema and itch are severe, also apply topical steroid, starting with potent steroid and weaning down. Use only hydrocortisone (not stronger) for the face.
- If there are signs of infection, manage as on page 63: Wound infections.
- If the patent has a corrosion dermatitis related to a stoma or fistula, manage as on page 52: Stomas or page 36: Fistulas.

Apply dressings to help manage skin conditions:

Apply dressings to remove crusts (impetigo, ecthyma)

1. Apply any topical therapy that has been prescribed.
2. Apply aqueous cream to gauze or pieces of fabric and apply to crusted area.
3. Cover with a dry bandage or fabric to keep it in place.

Apply a wet wrap for flare-up of atopic dermatitis to maximise application of topical treatment:

1. Apply potent topical steroid (and other topical medication if required) to the affected area.
2. Apply a thick layer of emollient.
3. Soak dressing in luke-warm water. Ring out excess water.
4. Cover with warm damp gauze or cotton dressing.
5. First cover with dry bandages or fabric or stockinette, if available, then pajamas or other clothing to keep it in place.
6. Repeat every 24 hours until better.

Apply dressings in blistering conditions for patient comfort and to prevent infection (Stevens Johnson syndrome, herpes zoster, bullous skin conditions)

Apply non-adherent dressings where the skin is eroded. See page 74: Dressings and basic consumables list.

Advice

- Advise the patient to try to avoid scratching and keep the skin clean and dry.
- Ensure the patient and family understand and can replicate the treatment regimen.
- Educate the patient that the cornerstone of dermatitis treatment is the regular use of emollients.
- Wash with clean water only or if needed a soap substitute such as aqueous cream.
- Encourage bathroom hygiene and proper cleaning. Advise to avoid sharing the soap bar and to wash and dry cloths and towels well.
- Ensure the patient knows to avoid medication or topical applications that have not been prescribed or discussed with a doctor.

Referral

- Refer the patient with Stevens Johnson syndrome urgently to a regional or tertiary level hospital.
- Refer other patients for specialist assessment if the skin condition does not respond to the above approach.
- If the dermatitis/other skin condition is extensive (affecting more than 90% of the body) this is considered erythroderma and must be referred to a specialist dermatologist or at least to a regional hospital.
- Refer to stomatherapist if the patient has a stoma- or fistula-related corrosion dermatitis.

Fistulas

Introduction

- A cutaneal fistula is an inadvertent communication between the skin and a hollow organ, for example the oesophagus, stomach, colon, bladder or biliary system.
- Fistulas can be present at birth (congenital) or acquired (following surgery, trauma or disease).
- Those most at risk are people with diabetes, those with compromised immune systems (HIV, cancer) and those with some gut diseases (e.g. Crohn's disease, inflammatory bowel disease).
- Fistulas can be life-threatening or benign. They may impact a lifestyle heavily or go undetected with few.

History of the wound

- If the cause is unknown, ask about chronic conditions like diabetes, Crohn's disease, HIV and their symptoms. Ask also about past surgery.
- Conduct a nutritional assessment. See page 15: Nutrition for the patient with a wound.
- If the patient has a life-limiting condition, consider of s/he will benefit from palliative care as well. If the patient has a cancer wound, see page 28: Cancer wounds.
- Ask if the fistula and surrounding skin causes pain and the nature of exudate – odour, volume, colour and consistency.
- Ask how the patient (and carer) is coping with managing the fistula and the pouch system or if s/he has any concerns about it.

Examination

- Identify the site of the fistula and the likely affected underlying organ.
- Examine the fistula. Note the number and size of the opening/s. Check for any visible underlying bowel.
- Examine the peri-fistula surrounding skin:
  - If the skin is erythematous (red), eroded (raw), macerated (wet), or ulcerated, corrosion is likely.
  - If there is corrosion of the skin, identify the draining fluid: gastric, duodenal, jejunal, pancreatic, ileal, caecal, bile salts or colonic (from the ascending and right transverse colon).
  - Consider infection if the skin is red, warm, painful, swollen with odour or pus. The patient may also be systemically unwell. See page 63: Wound infections.
- Check the exudate. Note the colour, consistency, odour and volume: low output: 25–300ml per day, moderate output: 300–800ml per day and high output: 800–5000ml per day.
- Assess hydration and nutritional losses. See page 15: Nutrition for the patient with a wound.

Simple uncontrolled oesophageal cutaneal fistula following surgical wound sepsis in the neck with saliva draining

Investigations

- Investigations to ascertain the cause of the fistula will be performed by the surgical team.
- If the patient's HIV status is unknown, offer an HIV test and exclude diabetes if not already done.
- The patient may require a fistulogram or loopogram study to identify the organ connecting with the skin or visualization of the tract.
- For inpatients with high output fistula losses, routine blood tests and input/output fluid monitoring are necessary to maintain hydration.

Management of the wound

- The patient with a cutaneal fistula needs initial assessment and management at a district hospital.
- The objectives for cutaneal fistula management are to contain the fistula's effluent in a drainage pouch system, protect the surrounding skin and limit infection.
- No fistula has a standard size and shape. Pouches need to be individually prescribed by the referral hospital. The pouch system must allow for the recording of effluent volumes, provide skin protection, promote comfort for the patient, control odour and improve patient mobility.
- If the exudate volume exceeds 200 ml per day, manage according to the type of exudate:
  - › If the exudate is corrosive, use an open drainage system with a tap.
  - › If the exudate is not corrosive, then a drainable pouch with a clamp can be used.
- If the exudate volume is high, ensure replacement of fluids and nutritional needs.
- If peri-fistula skin is corroded:
  - › Remove the cause of corrosion from the skin (usually soiled pouches or dressings).
  - › Wash with water and gently dry the surrounding skin.
  - › Do not apply gauze dressings or oily barrier creams, as these are not compatible with the adhesive skin barrier. Also avoid alcohol-based paste or cleaning wipes as they will burn the skin.
  - › Apply non-sting barrier spray before fitting the pouch system.
  - › Apply a long-wear, cut-to-fit drainable pouch system with a tap. Attach this to an open drainage system. Consider placing this on suction if the exudate is excessive.
- If the peri-fistula skin is infected, treat the infection as on page 63: Wound infections. Avoid removing the pouch daily for wound checks as this will irritate the skin. Ensure the pouch is appropriate to maintain continence and skin integrity.

Advice

- Educate the patient to wash the surrounding skin with warm soapy (white, non-perfumed soap) water, to dry the surrounding skin until touch dry and to apply the pouch system to dry skin.
- Talk openly with the patient (and carer) about their concerns around handling the pouch system and provide practical suggestions about how to cope.

Review

- Initially the patient will need frequent consultation to reassess the fistula and pouch system fit.
- The draining pouch can be changed every 5-7 days. This can vary from patient to patient.

Referral

- Refer the patient with a newly diagnosed fistula to a district hospital.
- Refer the patient to a stomatherapist or stoma care nurse for education about the removal, application and discarding of the drainage pouch system.
- If appropriate, refer to surgeon for assessment for fistula repair.

Foot wounds in diabetes

Introduction

- Neuropathy and peripheral vascular disease are serious complications that affect the feet of those with uncontrolled diabetes after 10-15 years.
  - A sensory neuropathy leads to the loss of the “gift of pain” and means the patient is unaware of injury, new wounds or ill-fitting shoes.
  - A motor neuropathy causes altered plantar (bottom of foot) pressure which can lead to altered gait.
  - An autonomic neuropathy causes a loss of the ability to sweat from the feet, leading to dry feet with cracks and callus formation.
- Diabetic foot disease can lead to foot wounds and can put the patient at risk for limb loss.
- Active management with prevention, education, early diagnosis and ongoing treatment is key to prevent irreversible damage and limb loss. Early recognition and management of callus or injury is foot saving.
- The loss of limb due to delay can lead to huge personal loss to the patient and family. Limb loss is associated with a higher mortality rate.

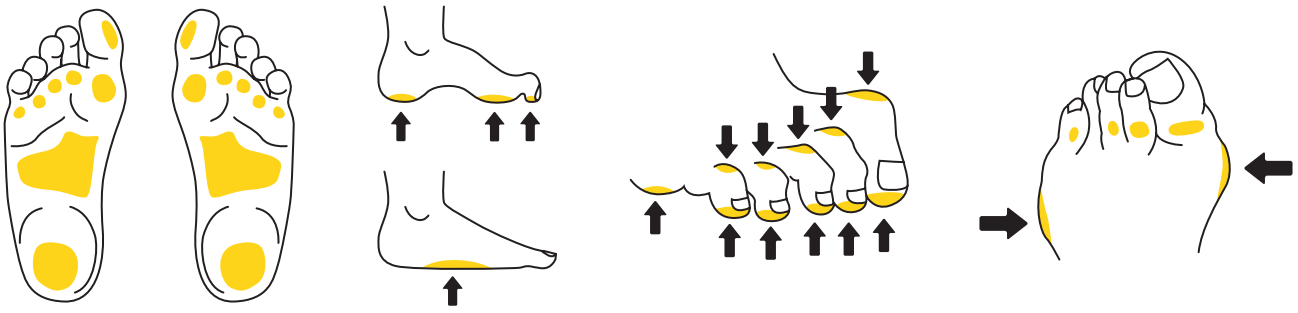
History of the wound

- Ask about symptoms suggestive of arterial insufficiency: intermittent claudication, rest pain, parasthesiae.
- Discuss the patient’s diabetes control and adherence to diet and medication.
- Ask about the history of the wound – check for injury and pain.
- Also gather history of previous ulcers, foot infections or amputations

Examination

- Examine both feet. Look for deformity, callus, cracks and injury.

- The typical diabetic foot wound is a round, punched-out ulcer with a pale bed and thick callus .
- Look at the site of the wound on the foot and check if it is in ‘at risk’ area.



Look for infection:

- Classic signs of infection may include pain, fever, redness, swelling, warmth, but might be absent in the patient with diabetes.
- Look for secondary signs of infection: friable granulation tissue (comes away easily), wound undermining (open pocket beneath the skin and apparent wound edge), malodour, if you can probe to bone, or high levels of wound exudate.
- Increasing size of wound or development of satellite wounds should also prompt consideration of an infective cause.

Perform a vascular examination.

- Consider arterial insufficiency if:
  - › Absent or difficult to palpate dorsal pedis and posterior tibial pulses
  - › Delayed capillary refill of greater than 5 seconds
  - › Temperature difference between the feet
  - › Rubor/palor
  - › Decreased hair growth
  - › Gangrene
- If present also check ankle brachial pressure index (ABPI). See how to perform an ABPI measurement on page 73. ABPI measurements may be unreliable in diabetes due to atherosclerosis-related hardening of blood vessels.

Do a neurological examination:

- Asymmetrical loss of sensation (touch or vibration) or position sense and decreased ankle reflexes indicate peripheral neuropathy.
- Wasting of foot muscles may be due to motor neuropathy.
- Test sensation using a 10gm monofilament. See below.

HOW TO ASSESS FOOT SENSATION WITH A 10g MONOFILAMENT:

- Explain to the patient how the test works. Apply it to the patient's hand that s/he knows what sensation to expect.
- Uncover both feet and make sure the patient cannot see where you apply the filament.
- Avoid areas of thick callus or existing ulcer.
- Apply the filament to the 3 sites in the adjacent diagram on each foot.
- Apply the filament perpendicular to the skin with sufficient force to make it buckle against the skin. Hold it there for 2 seconds. Do not let it slide about.

- Ask the patient IF they feel it and WHERE they feel it. Ask 3 questions per site:
  - › Test each site twice. Do not press at the site more than twice.
  - › Perform a "sham" test where you do not press the monofilament anywhere and ask the patient if they can feel it.
- If the patient has 2 or more incorrect answers at any site, they are considered at risk for ulceration due to lack of protective sensation.

Adapted with permission from the SEMSDA (Society for Endocrinology, Metabolism and Diabetes of South Africa) guideline: Diabetic Footcare Guidelines for Primary Healthcare Professionals 2017.

Establish type of ulcer: neuropathic, ischaemic or neuro–ischaemic

Feature	Neuropathic	Ischaemic	Neuro–ischaemic
Sensation	Sensation loss	Painful	Some or total sensory loss
Callus	Callus present, often thick	No callus	Callus may or may not be present
Wound bed	Pink and granulating with surrounding callus	Pale and sloughy with poor granulation	Poor granulation
Necrosis	Uncommon	Necrosis is common	Prone to necrosis
Foot temperature and pulses	Warm with bounding pulses	Cool with absent pulses	Cool with absent/ diminished pulses
Typical location	Weight-bearing areas of the foot such as metatarsal heads, heels and dorsum of clawed toes	Tips of toes, nail edges, between toes and lateral borders of the foot	Margins of the foot and toes
Other features	Dry skin and fissuring	Delayed healing	High risk of infection

Investigations

- Ensure routine diabetes care monitoring occurs. Suspect infection if the patient has out-of-control glucose readings.
- If the wound is infected, do an X-Ray to check for osteitis.
- If the wound is infected, take a wound sample only if the wound is deep and discharging or the wound does not respond as expected to local treatments or if given, antibiotics. If the wound is not healing, send a sample in fungal culture medium and take a sample for bacterial culture. See how to take a wound sample on page 71.

Management of the wound

- Debride wound if slough is present, the wound has callus on or surrounding it, or macerated tissue is evident. Avoid debridement if there is arterial insufficiency. See how to debride a wound on page 69.
- Apply an appropriate dressing. See page 12: Initial wound management and dressing guide.
- If the wound is infected, give an antibiotic. If the patient is systemically unwell refer to hospital for an intravenous antibiotic.

Advice

- Advise rest and elevation of the limb if the wound is neuropathic, or there is swelling or infection.
- Advise the patient to report early any change in the shape of the foot, callus development or injury.
- Advise patient to manage diabetes well: adhere to medication and dietary advice and attend routine appointments for diabetes care.
- Give foot care and shoe advice.

HOW TO CARE FOR YOUR FEET DAILY TO PREVENT ULCERS AND AMPUTATION:

- Inspect your feet every day. Tell your health care worker at once if you have any cuts, blisters or sores on the feet.
- Wash your feet daily, but do not soak them. Carefully dry between the toes.
- Moisten dry cracked feet daily with cream or ointment. Avoid moisturising between the toes.
- Avoid walking barefoot or wearing shoes without socks. Change socks/stockings daily so they are clean and dry.
- Wear comfortable shoes that fit well and have a wide toe box.
- Inspect inside shoes before you put them on for items that might cause injury.
- Clip your nails straight and file the sharp edges.
- Do not cut corns or calluses yourself and avoid chemicals or plasters to remove them.
- Do not burn your feet! Avoid testing water temperature with your feet or using hot water bottles or heaters near your feet.

Review

- Monitor diabetes control regularly.
- Expect gradual improvement of wound. If no improvement after 2 weeks, reconsider infection and reassess – see page 66: The wound that does not heal.
- Repeat neurological and vascular examinations 6 monthly or if new ulceration occurs.

Referral

- Refer urgently or discuss same day with referral hospital the patient with deep or systemic infection, critical ischaemia of the limb, gangrene, or sudden onset of paraesthesia or paralysis.
- Refer the patient with ischaemic or neuro-ischaemic wounds to district hospital for a vascular assessment, including ABPIs if needed and a management plan.
- Refer for orthotics to help redistribute the weight on the plantar surface of the foot if the patient has a foot deformity or a wound that has been present for more than 2 weeks or a wound on an “at risk” area (see figure above).

Prevention

- Key to preventing foot ulcers in patients with diabetes is good foot care, good diabetes control and early intervention. See above for foot care advice.
- Refer for orthotics if the patient has a foot deformity.

Incontinence-associated dermatitis

Introduction

- Incontinence-associated dermatitis (IAD) describes the skin damage associated with exposure to urine or stool.
- It is also known as nappy dermatitis, irritant dermatitis, moisture lesions and perineal dermatitis.
- It causes considerable discomfort and can be difficult, time-consuming and expensive to treat.
- IAD and pressure injuries have different aetiologies but may co-exist: IAD is a 'top down' injury, with damage initiated on the surface of the skin. Pressure injuries are 'bottom up' with damage initiated by changes within soft tissues below and within the skin.
- IAD and pressure injuries have several risk factors in common. Both conditions are most likely to occur in patients who have poor health and problems with mobility. Once IAD occurs, there is high risk for pressure injury, infection and key.

History of the wound

- The patient may describe discomfort, pain, burning, itching or tingling in the affected areas. Pain may be present even when the epidermis is intact.
- Assess patterns of incontinence – frequency, access to toilets, what incontinence products are used and frequency of changing.

Examination

- Affected area has poorly defined edges and may be patchy or continuous over large areas.
- Intact skin may feel warmer and firmer than surrounding unaffected skin because of underlying inflammation.
- Lesions including vesicles or bullae, papules or pustules may be observed.
- The epidermis may be damaged to varying depths; in some cases, the entire epidermis may be eroded, exposing moist, weeping dermis.
- Check folds of skin for infection: lesions that are red and hot are likely bacterial infection. If the lesions are scaly, shiny, wet and white, then fungal infection is likely.

- With light skin, erythema can range from pink to red.
- In darker skin tones, affected skin may be paler, darker, purple, dark red or yellow.

Management of the wound

- Wash after each incontinence episode with aqueous cream. Avoid rubbing, pat dry.
- Apply emulsifying ointment after washing.
- If bacterial infection, apply topical antiseptic ointment first.
- If fungal infection, apply clotrimazole cream first.
- If possible, try containing faeces with nappies and diverting urine with a urinary catheter or an absorbent pad.

Advice

- Manage incontinence timeously.
- Advise about cleaning agents: standard soap is alkaline and changes skin pH, damaging its barrier function. Use instead gentle, no-rinse liquid skin cleanser with a pH similar to normal skin, like aqueous cream.
- Clean as often as needed to limit exposure to urine, faeces or both.
- Use barrier creams to protect the skin after each wash.
- Avoid rubbing, pat dry.

Review

Review the patient regularly and if the patient's condition changes.

Referral

If incontinence is troublesome and IAD is not healing, refer for incontinence management.

Prevention

Implement a structured skin care regimen. Perform the following at least once daily and after each episode of faecal incontinence:

- Cleanse: Remove irritants from skin (urine and/or faeces). Use a gentle, no-rinse liquid skin cleanser with a pH similar to normal skin, like aqueous cream.
- Protect: Place a barrier on the skin to prevent direct contact with urine and/or faeces. Skin protectants like petrolatum (petroleum jelly), zinc oxide, dimethicone and acrylate terpolymer will form an effective barrier.

Lower limb ulcers

Introduction

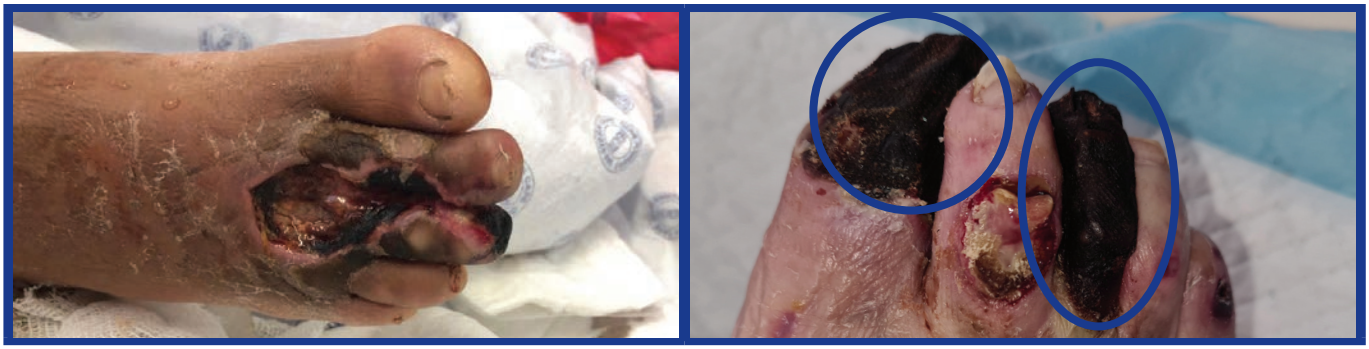
- Lower limb ulcers are most commonly caused by chronic venous insufficiency, followed by arterial insufficiency. These aetiologies frequently overlap.
- Our greatest weapon against leg ulceration is prevention, followed by the early management of these wounds.
- If there is no vascular disease or you are unsure, or the patient has strong risk factors for arterial insufficiency, early referral for assessment at district level is key.

History

- If the patient has muscle pain in the legs or buttocks on exercise (claudication), suspect **arterial insufficiency**. Document the nature of the pain (at rest or on exercise), its progression, chronicity, influence on symptoms of position or time of day. Arterial pain improves when the exercise stops. If the patient has pain at rest, arterial pain is more likely to improve when the foot is down and not with elevation.
- Leg pain associated with **venous insufficiency** is often worse at the end of the day and improves with elevation.
- Document past history of similar events or recurrences, previous DVT, varicosities or trauma.
- Identify co-morbidities: HIV, diabetes, hypertension, chronic kidney, heart or liver disease, hypercholesterolaemia or other rheumatological or dermatological conditions.
- Ask about risk factors: smoking, drugs or standing for many hours.

Examination

- Check the foot pulses:
  - › If they are reduced or absent, **arterial insufficiency** is likely.
  - › If cold, blue limb, absent pulses and acute onset of pain, suspect acute **arterial occlusion**.
  - › Check ankle brachial index (ABPI) measurement. See page 73: How to perform an arterial brachial pressure index (ABPI) measurement.
- Examine the wound and surrounding skin:
  - › In **arterial insufficiency**, there is atrophy of surrounding skin (thin, shiny hairless dry skin, cooler to the touch), the ulcer may have a punched-out, deeper appearance and is more likely to be on the lateral malleolus, toes and pressure points. If there is necrotic or dead tissue, this is gangrene: wet gangrene will have exudate, pus and an odour. With dry gangrene the skin is black and dry.



Wet gangrene

Dry gangrene

› In **venous insufficiency**, there is darkening, thickening and fibrosis of the surrounding skin with chronic swelling of the leg and the ulcer is shallow and appears more often on the medial aspect of the lower leg (below the knee). There may be varicose veins visible.

- If there are no signs of arterial or venous insufficiency, look for a dermatological problem locally or systemically. See page 32: Dermatological problems. If unsure of the cause, refer the patient for further assessment as to the cause of the ulcer.
- Look for signs of infection: redness and swelling with increasing exudate, pus, or odour from the wound. If present, also page 63: Wound infections.
- Perform a general examination to evaluate extent of co-morbid disease.

Venous ulcer on the medial part of the leg. Note the dermatosclerosis (darkening of the surrounding skin).

Lipodermato-sclerosis – thickening, darkening and swelling of the skin of the lower leg

Investigations

- Investigations as required for evaluation and optimisation of cardiovascular risk.
- If no arterial or venous insufficiency or sign of dermatological cause is present, consider performing a biopsy or referral for possible malignancy. Discuss or refer if unsure.

Management of the wound

Ulcer with neither venous nor arterial insufficiency

- Management will depend on likely cause. If cause uncertain, refer to next level of care for further assessment and possible biopsy.
- Apply an appropriate dressing. See page 12: Initial wound management and dressing guide.

Ulcer with arterial insufficiency

- If acute arterial occlusion is suspected, discuss immediately with local vascular unit.
- Assessement should occur at district hospital level including assessment of ABPI, and management plan determined. Patients with critical limb ischaemia (rest pain, gangrene, tissue loss) and sepsis to be discussed with a vascular unit.
- Keep the wound clean. Apply an appropriate dressing. See page 12: Initial wound management and dressing guide.
- Avoid compression with circumferential dressings.
- Manage co-morbidities. Start aspirin and a statin and control hypertension and diabetes.

Ulcer with chronic venous insufficiency:

- All patients should be assessed at district hospital level at least once for a comprehensive work-up including assessment of ABPI if needed and management plan.
- Manage the patient's co-morbidities.
- Prepare the wound bed carefully and keep it clean. See page 12: initial wound management and dressing guide.
- Measure the wound for maximum length and width when exposed, to monitor progress.
- Apply multi-layered compression bandages (see box) until the wound is healed. Once healed, the patient can switch to compression stockings to prevent further ulcers.

THE COMMANDMENTS OF COMPRESSION

- Apply compression to a limb only if arterial disease has been excluded by feeling for a palpable pulse. If uncertain, perform or refer for ABPI measurement.
- Any ancillary dressing should be non-adhesive and have minimal bulk to prevent additional compression of wound surfaces.
- Small wounds can be managed with a compression stocking over a simple, preferably non-adhesive, dressing.
- Bandaging should always commence at the toes and end below the knee. If the compression is started higher up on the foot, it can act as a tourniquet, causing swelling or even necrosis of the forefoot.
- Advise the patient that pain may initially increase, but if numbness or pins and needles occur, the patient must seek medical advice. If unable to access medical services at night and the pain, numbness or pins and needles are worsening they can remove the entire bandage. They must never just release a portion or cut an edge as this can cause swelling or necrosis.

Advice

- Educate the patient about his/her condition and management plan.
- If the patient has diabetes, ensure s/he is adhering to the diabetes management plan.
- Advise the patient with venous insufficiency to elevate the leg at rest, especially if not using compression bandages.
- Encourage the patient to exercise as tolerated and to avoid smoking or using drugs.
- Advise foot care.

HOW TO CARE FOR YOUR FEET DAILY TO PREVENT ULCERS AND AMPUTATION:

- Inspect your feet every day. Tell your health care worker at once if you have any cuts, blisters or sores on the feet.
- Wash your feet daily, but do not soak them. Carefully dry between the toes.
- Moisten dry cracked feet daily with cream or ointment. Avoid moisturising between toes.
- Avoid walking barefoot or wearing shoes without socks. Change socks/stockings daily. Before putting your shoes on, inspect inside them for items that might cause injury.
- Wear comfortable shoes that fit well and have a wide toe box.
- Clip your nails straight and file the sharp edges.
- Do not cut corns or calluses yourself and avoid chemicals or plasters to remove them.
- Do not burn your feet! Avoid testing water temperature with your feet or using hot water bottles or heaters near your feet.

Review

- If using venous compression bandages, review and change these weekly at the local clinic with periodic follow-up at district level and modification of the management plan.
- If there is arterial insufficiency, review as needed depending on wound and degree of insufficiency.
- If the wound is not healing after 12 weeks, assess adherence to management plan and consider referral.

Referral

- Refer the patient with acute arterial occlusion urgently same day to a vascular unit.
- Referral to vascular unit (usually via the district hospital): critical limb ischaemia (rest pain/ gangrene/sepsis) or incapacitating claudication.
- District hospital level referral for initial assessment, ABPI measurement if needed and management plan:
  - Arterial insufficiency
  - Venous insufficiency
  - If unsure of cause of ulcer
  - If ulcer is > 10 cm or circumferential
  - Recurrent ulcers
- Vascular surgeon referral:
  - If patient has peripheral vascular disease, with ABPI < 0.8, and standard compression bandaging is not an option.
  - Ulcers that have not healed after 12 weeks.

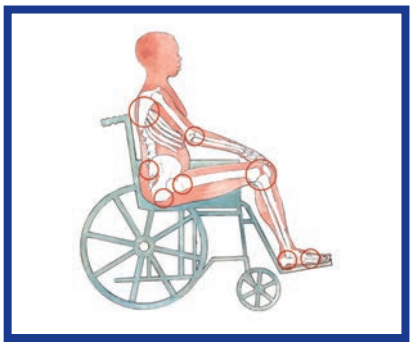
Prevention

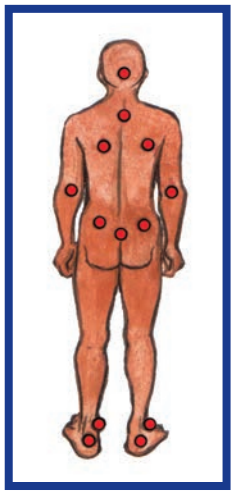
- Early recognition and intervention with lower limb ulcers will prevent long term sequelae.
- Prevent lower limb ulcers in the patient with chronic venous insufficiency once the ulcer has healed or if the patient has varicose veins or lipodermatosclerosis (without an ulcer):
  - Issue Grade III (30-40 mmHg) below-knee compression stockings.
  - If not tolerated, use Grade II (20-30 mmHg) compression stockings instead.
  - Follow up at clinic twice a year to replace stockings.
- Advise the patient with chronic venous insufficiency to avoid sitting or standing for long periods, manage comorbidities, exercise regularly and stop smoking to prevent lower limb ulcers.

Pressure injuries

Introduction

- Pressure injuries are injuries to skin and underlying tissue that result from a combination of events like prolonged pressure (especially if bed-bound or a wheelchair user), friction and shear.
- Prolonged immobility, decreased sensation and decreased responsiveness will put patients at high risk for pressure injuries.
- Pressure injuries develop on skin covering bony areas — heels, ankles, hips, sacral area, ears and skull.
- There are well known at-risk pressure areas. See adjacent figures.
- In an intensive care setting, prone management of COVID patients presents new and different pressure exposure points. Be alert to device-related pressure points from endotracheal tubes, CPAP masks, catheters etc.





History of the wound

- Ask about the patient's medical and surgical history.
- Assess the patient's mobility.
- Ask about pain. See page 19: Pain management.
- Assess the patient's nutritional intake and needs. See page 15: Nutrition for the patient with a wound.
- Assess the patient's social circumstances and see what support s/he needs to heal and prevent further pressure wounds.

Record relevant items on the patient's Waterlow Score Chart and repeat this assessment at least six-monthly. See page 82: Wound documentation and forms.

Examination

- Check all at-risk pressure areas.
- Look for signs of infection (surrounding skin is red, swollen or warm, there is increasing exudate, pus or offensive smell). If present, see page 63: Wound infections.
  - › Surrounding skin is red, swollen or warm.
  - › There is increasing exudate, pus or offensive smell.
- Look for **deep tissue pressure injury**: Intact or non-intact skin with localized area of persistent, non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood-filled blister.

This wound needs urgent care.

- **All other pressure injuries:**
  - › Classify the wound to decide management and track response.
  - › If the wound is difficult to classify because of slough or eschar, remove it unless the eschar is dry and adherent (without erythema or fluctuation) on an ischaemic limb or the heel. Manage as a full thickness wound until the slough or eschar is removed and the wound can be classified.

Superficial pressure injury:

The skin is red (non-blanchable); the site may be tender, soft and warm compared with surrounding skin.

Partial thickness pressure injury:

There is loss of epithelium (surface of the skin). The dermis is exposed. There may be a clean open area, slough (yellow/dead) tissue or intact blisters.

Full thickness pressure injury:

There is complete loss of skin. Dermis and fat may be seen. Yellow/green/grey slough or necrotic eschar may be visible and muscle, tendon, ligament, cartilage or bone exposed.

Investigations

There is no need for a routine wound sample.

Management of the wound

- If there is pain, manage as on page 19: Pain management.
- If needed, arrange supplemental nutrition.

Deep tissue injury

- Manage this wound urgently as it can worsen rapidly.
- Refer for a surgical assessment to decide whether to open up the wound.
- Clean the wound bed.
- Debride non-viable slough or eschar.
- If there is a cavity - fill with a soft dressing e.g. an Alginate or Cutimed gauze.
- Then apply padding e.g. a foam dressing.
- If available, consider Negative Pressure Wound Therapy see page 92: Negative Pressure Wound Therapy.
- Key is to off-load the area as much as possible. (See Prevention section below).

Superficial pressure injury

- Protect the area with hydrocolloid sheets.
- Apply a skin protector cream or ointment to protect from incontinence or shear.
- Ensure strict pressure care.

Partial thickness pressure injury

- Clean the area with aqueous cream and water after each exposure to incontinence.
- Protect surrounding skin with barrier cream and padding e.g. foam dressings.
- Leave blisters intact for 72 hours. Then if they have not improved, deroof them.

Full thickness pressure injury

- Off-load pressure as much as possible.
- Clean wound bed.
- Protect intact skin with barrier cream.
- Debride non-viable slough or eschar.
- If there is a cavity, fill it with a soft dressing e.g. An Alginate or Cutimed gauze. Then apply padding e.g. foam dressing.
- Consider Negative Pressure Wound Therapy - see page 92: Negative Pressure Wound Therapy.
- Choose dressings that maintain moisture balance, depending on how wet or dry the wound is.
- If possible, try containing faeces with nappies and diverting urine with a urinary catheter or absorbent pad.

Advice

Give this advice to the patient and his/her carer:

- If incontinent, manage this timeously and use barrier creams to protect the skin.
- If the patient is bed-bound or unable to move easily, provide pressure relief on wound and at-risk sites:
  - › Adjust patient's position every 2-3 hours: turn the patient from the back to side-to-side or onto the abdomen. Prevent the patient from lying in a foetal position.
  - › Use pillows or foam to hold the patient gently in position.
  - › If available, use an offloading device like an air mattress or egg box mattress overlay.

Review

Review regularly and, if a deep tissue injury, daily.

Referral

- Refer the patient with a deep tissue injury for a surgical assessment to decide whether to open up the wound.
- Ensure an inter-disciplinary team assessment. Include a doctor, physiotherapist, occupational therapist, dietician, social worker and wound care enthusiast. See page: Rehabilitation of the patient with a wound.
- If the patient is a wheelchair user, refer for a seating assessment and programme and cushions for pressure areas.
- Consider referral for reconstructive surgical flap or skin graft in non-healing full thickness pressure wounds.
- If needed, arrange or refer for supplemental nutrition.
- If incontinence is troublesome and the wound is not healing, refer for incontinence management.

Prevention

Skin protection:

- Effectively manage continence and ensure incontinence is dealt with frequently.
- If the patient is incontinent, apply barrier cream to prevent skin erosion.
- Use zinc-based products or advanced skin protectors to protect superficial pressure wounds and to surround partial and full thickness pressure wounds.

Pressure relief

- Adjust position 2-3 hourly by turning patient from the back to side-to-side or on stomach.
- Use pillows or foam to hold patient gently in position.
- If available, use an offloading device like an air mattress or egg box mattress overlay.
- If the bed-bound patient has a sacral wound, spend more time on the abdomen or turn 3-hourly side-to-side.
- Prevent patients from lying in a foetal position.

Friction management

- Lift to move and position the patient correctly:
  - › Avoid dragging the patient up the bed.
  - › Position cushions under knees to prevent sliding.
  - › Use a draw sheet to lift.
- Be cautious of sliding because of linen savers and plastic mattress protectors.
- DO NOT RUB; use light touch or pat creams into skin.

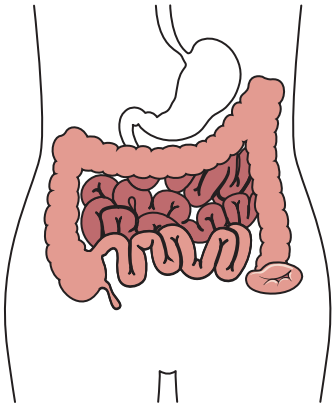
Rehabilitation

- Encourage all wheelchair users to lift regularly e.g. lean forward every 30 minutes for 2 minutes. This prevents contractures and pressure injuries.
- For patients with cervical injury or stroke, apply hand splints: 2 hours on, 2 hours off.
- Follow team advice and individual rehabilitation regimen. Support caregivers in their role.

Stomas

Introduction

- A stoma is a surgically created opening, made to divert the flow of urine or stool contents.
- A stoma may be temporary or permanent. A temporary stoma assumes the function of elimination of waste, to permit healing distally; a permanent stoma takes over function of elimination of bowel removed or permanently bypassed.
- The three most common stomas are the colostomy (to colon), ileostomy (small bowel) and urostomy (urinary tract).



Colostomy – end loop

Adapted from: Cancer Research UK (https://commons.wikimedia.org/wiki/File:Diagram_showing_an_abdoperitoneal_resection_of_the_bowel_CRUK_093.svg), image, https://creativecommons.org/licenses/by-sa/4.0/legalcode

History of the wound

- Ask if there has been a change in stoma shape, size or colour.
- Ask about surrounding skin issues – like itch, pain, rash or lumps.
- Ask if the stoma is working adequately.
- Note and document the consistency of the stool and any changes.
- Check that the patient received from the referral hospital stomatherapist the correct stoma prescription and quantity of stock and the renewal date of the stoma prescription.

Examination

- Assess and document the stoma size, shape and length.
- A healthy stoma is moist and pink or red in colour, with healthy peristomal skin.

Healthy stoma

- Check if peristomal skin is healthy or if there is moisture-associated skin damage (red, macerated or weeping).

Moisture-associated skin damage.

- Check if the pouching system fits the stoma. Stoma pouches tend to be individualised to the needs of the patient and stoma.
- Check for leaks and if the pouching system adhesive is still adhering to the skin.
- Check the stoma spout. If it is black, this is necrosis.

Stoma necrosis

Management of the wound

- If the stoma spout is necrotic, refer urgently to the nearest hospital with surgical expertise.
- Avoid additional dressings, alcohol-based pastes or creams as they are not compatible with the pouch system adhesive.
- If the pouch is leaking or if there is skin damage:
  - › Remove the soiled pouch and discard appropriately.
  - › Wipe clean the soiled skin and stoma with toilet paper.
  - › Wash with a soft cloth, warm water and non-perfumed soap.
  - › Dry with a soft paper towel till touch dry.
  - › Apply a non-sting barrier spray to the skin (not to the stoma).
  - › Apply the new pouch system.
  - › If the problem has not resolved within one week, refer to the stomatherapist.

Advice

- The stomatherapist educates the patient (and carer if needed) about their specific stoma and pouch system and its maintenance.
- If there are sutures around the stoma, ensure the patient understands that these are to keep the stoma in place and should not be removed.
- Ensure the patient has the following pouch system accessories:
  - › A disposal bag for discarding the dirty pouch
  - › Toilet paper - to wipe and clean the stoma
  - › Hot tap water
  - › Soap (preferably a white, non-perfumed soap)
  - › The prescribed pouch system issued by the referral hospital
  - › A pair of scissors (if the pouch needs to be cut to size)
  - › A measuring guide - to measure the stoma (packaged in every stoma pouch box)

- Explain how to change the pouch system:
  - Remove the soiled pouch and discard in the disposal bag, not in the toilet.
  - Wipe the stoma with toilet paper and surrounding skin, until clean.
  - Wash with non-perfumed soap and water in the shower, bath or hand basin using a face-cloth.
  - Dry the skin around the stoma with a towel until it is touch dry.
  - Apply a non-sting barrier spray to the surrounding skin. (3M Cavilon™ Barrier spray and Ample Resource Elisse® spray are non-sting barrier sprays and are currently on the WCDOH tender.)
  - Cut the pouch to the specific diameter if not a pre-cut pouch system.
  - Remove the backing paper of the pouch system.
  - Apply the new pouch as prescribed for the specific stoma. Apply it vertically, with the opening or tap facing in a downward position.

Review

- Ensure the patient is reviewed annually by the stomatherapist for a stoma check and repeat prescription.
- If there is a stoma complication, the patient will need more frequent review until the issue is resolved.

Referral

- Refer the patient back to the referral hospital for reassessment if there is a change in colour, shape or size of stoma.
- Refer the patient to a stomatherapist if the patient experiences problems with the pouch system and for re-issue of stoma supplies when needed. Accessory items are exclusively prescribed by the stomatherapist prior to discharge and are patient-specific.
- The contact details of the referring hospital are found on each stoma prescription form.
- Western Cape ostomy support contact numbers:
  - Groote Schuur Hospital - 021 404 3341
  - Tygerberg Hospital - 021 938 5976
  - Worcester Provincial Hospital - 023 348 1138
  - Somerset Hospital - 021 402 6911
  - Red Cross War Memorial Children's Hospital - 021 658 5363
  - Paarl Hospital - 021 8602500
  - Khayelitsha Hospital - 0213604200
  - Mitchells Plain Hospital - 021 377 4300
  - George Hospital - 044 874 5122

Surgical wound complications

Introduction

- Common post-surgical wound complications include haematoma, seroma, dehiscence (breakdown), fistula (communication between skin and internal organ) and infection.
- Post-surgical wound complications may be caused by local infection, seroma formation, subcutaneous hematoma, wound border ischaemia, a foreign body or poor surgical technique.
- They occur more commonly in the compromised patient (with HIV, diabetes, or using corticosteroids or other immune-modulating medications).
- Infection is a significant contributor to post-surgical morbidity and delayed return to function for the patient. Surgical facilities should monitor the numbers of post-surgical infections and causative organisms.

History of the wound

- Clarify what the surgical procedure was and where and when it occurred.
- Ask about pain, discharge and bleeding from the wound.
- Ask how the wound affects activities of daily living.
- Identify factors that might delay or complicate healing – HIV, diabetes, use of corticosteroids or other immune-modulating medications.

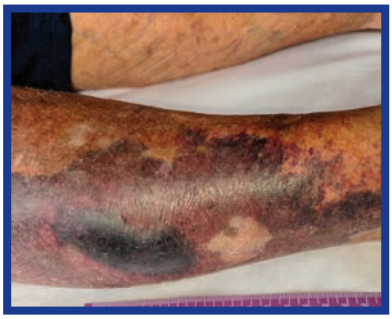
Examination

- Recognise when healing is not progressing properly — prolonged or no inflammation, hyper-granulation, retarded or arrested epithelialisation, incomplete maturation, increased exudate or drainage.

- Identify **dehiscence**: separation of the wound edges, often accompanied by signs of infection or necrotic wound edges or underlying haematoma/seroma.

Dehiscence

- Identify **haematoma** or **seroma** – it is difficult to distinguish between them. A soft swelling under the area of surgery. If large, it might be uncomfortable. If the swelling is warm or red, consider infection.



- Identify **fistula**: an opening through the wound that drains fluid or sometimes faecal matter. There may be a mucosal pout through the wound.

- Identify **infection**: the wound may have pus, increased discharge and odour and the surrounding skin may be red, swollen, warm or tender. The patient may be febrile.

Surgical site sepsis

Management of the wound

- Provide optimal local wound moisture balance to promote healing. Choosing an appropriate dressing for the acute and chronic phases of surgical wound healing.

Dehiscence:

- If it is an abdominal wound or the wound is infected, refer or discuss urgently with the surgeon. Keep the wound covered with sterile dressing for transfer.
- If the area is small (only affecting the superficial skin layer) without infection, manage according to normal wound protocols. See page 12: Initial wound management and dressing guide.
- Consider with the surgical team the use of Negative Pressure Wound Therapy if the wound is large with large exudate volumes.
- Avoid secondary closure unless decided upon by a surgical team.

Seroma or hematoma:

- Avoid drainage as it could introduce infection into a sterile environment.
- Consider referral for drainage if signs of infection, the patient's discomfort affects activities of daily living or it has not resolved by six months.

Fistula:

- For management, see page 36: Fistulas.

Infection (surgical site sepsis):

- Refer urgently back to the place of surgery.
- See page 63: Wound infections.

Advice

- Ensure the patient knows to attend follow-up appointments to monitor progress.
- Educate about the signs of infection and to return urgently if they occur.
- Advise the patient to avoid removing sutures or fiddling with the wound.

Review

Review the patient regularly and refer on to the surgical team if no improvement is seen.

Referral

- Use photos when communicating with the surgical team at the referral site (e.g. Vula app). This will assist them to correctly risk-stratify the patient to inform urgency of referral and pre-referral management.
- If the wound is infected, refer back to the place of surgery as soon as possible especially if there were any artificial implants eg hip, knee or vessels.
- Refer the patient with a fistula same day if there is high fluid output (800-5000 ml/day), infection, dehydration or electrolyte disturbances. For other patients with post-surgical fistula, book an outpatient appointment at the referral hospital.

Prevention

At the hospital where surgery takes place, prevent post-surgical wound infection:

- Ensure post-operative glycaemic control.
- Avoid shaving the patient prior to surgery, use clippers for hair removal.
- Maintain the patient's temperature post-surgery, especially following colorectal surgery.
- Avoid routine antibiotic prophylaxis for clean, non-prosthetic, uncomplicated surgery
- Give antibiotic prophylaxis according to current peri-operative prophylaxis guidelines.

Trauma wounds

Introduction

- An acute trauma wound is a wound caused by trauma that is less than 12 hours without treatment.
- The wound may have been caused by abrasion, blunt, sharp, degloving or crush injury.
- For each wound, the risk of it becoming clinically infected should be assessed before primary closure (direct apposition of wound edges) is attempted.
- After 12 hours, primary closure of the wound should not be attempted.

History of the wound

Record the time from injury and initial management given.

- Ask about the mechanism of injury:
  - Exclude the possibility of a foreign body or penetration wounds caused by rusty or dirty objects.
  - Check for associated crush injury by bite or blunt trauma, and whether sharp trauma could have caused a wound deeper than anticipated.
- Ask about comorbidities and medication that can affect healing.
- Check tetanus immunization status.
- Consider the possibility of abuse, especially in the child, the elderly or the patient with disabilities.

Examination

- Distinguish between minor and major or complex wounds:
  - **Minor wounds** are simple skin wounds that do not include extensive damage to underlying structures and have a low risk for complications.
  - **Major wounds** have occurred if the patient has poly-trauma, is haemodynamically unstable or has extensive tissue loss.
  - **Complex wounds** include wounds that are severely contaminated (visceral injuries, neurovascular injuries, fracture/s, tendon injuries) or that have devitalized tissue (tissue that either appears paler (skin or fat tissue or uninjured muscle) or darker (bruised muscle).
- Evaluate whether the wound is at risk of infection:
  - Look for debris and other foreign bodies.
  - Assess the depth of the wound. Wounds with increased depth and cavities are likely to collect blood and become infected.
  - Wounds that involved objects that first penetrated clothing (such as bullet wounds and stab wounds) can drag some material into the wound and increase infection risk.

Investigations

Check point-of-care haemoglobin if there is severe blood loss, tachycardia or low blood pressure.

Management

Approach management of the patient according to the severity of injury:

- Secure airway, breathing and circulation (ABC) and establish management priorities.
- Treat life-threatening problems.
- Control bleeding with direct pressure.
- Give tetanus prophylaxis if none received in the past 5 years: tetanus toxoid (TT), intramuscularly, 0.5 mL. Also give tetanus immunoglobulin if a major or complex wound or high infection risk (only available at hospital level).

Manage the wound:

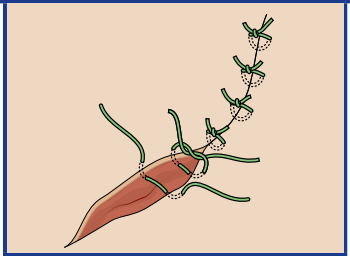
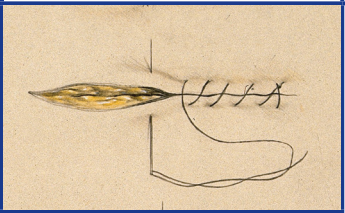
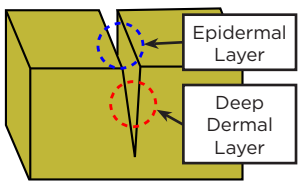
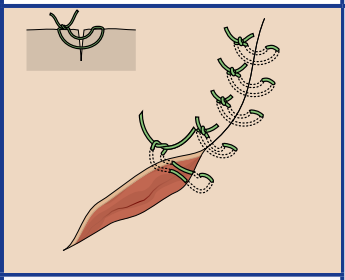
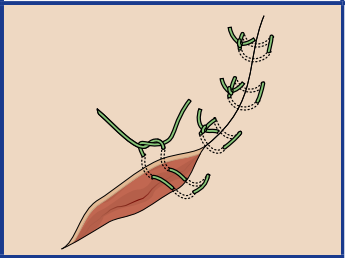
- Stop bleeding with direct pressure, or if needed, a baumanometer, figure-of-8 suture or tie-off of a bleeding artery.
- Cleanse the wound with copious irrigation with tap water or normal saline 0.9% solution. Use sterile water if tendons, bone or joints are exposed.
- Give local anaesthesia through wound edges inside the wound and not through intact skin.
- If foreign bodies are suspected on history, search carefully for these and remove.
- Remove hair by cutting with surgical clippers or scissors. Avoid shaving.

Manage wound further according to severity of wound and infection risk:

- **Major/complex wounds:**
  - › Cover wound with moist dressings and discuss with appropriate referral discipline/s. Follow instructions/protocols as per that discipline.
- **Minor wounds with high infection risk:**
  - › Attempt primary closure if proper debridement is possible and only if the patient agrees after you have explained that closing the wound could increase the risk of infection which may cause pain and delay healing.
  - › Also offer the option of delayed primary closure: cover the wound with a dressing and consider closure of the wound after 7 days.
- **Minor wound with low risk of infection:** use one of the following options for primary closure:
  - › Wound closure strips: for small wounds with low skin tension
  - › Staples: avoid on the face, hands and feet.
  - › Tissue adhesives: for low tension wounds < 4 cm with no active bleeding or oozing of blood. Avoid in moist, hairy areas (axilla/perineum), or if needing high level of precision. See below on how to apply.
  - › Sutures: see below on selection and suture technique.

How to apply tissue adhesive/glue:

- Ensure thorough cleaning and haemostasis of the wound before applying tissue adhesive.
- Try to position the patient so to prevent excess adhesive running into areas not meant to be glued.
- Bring the wound edges together.
- Crush tissues adhesive vial and invert.
- When using adhesive, avoid contact with gloves and instruments. If adhesive runs into areas not meant to be glued, quickly wipe away with dry gauze. Maximum bonding strength is achieved within 2.5 minutes of application.
- Gently brush adhesive over laceration. Do not push adhesive into the wound.
- Apply three layers of adhesive.
- When dry, do not put on any covering or dressings.
- Advise the patient to avoid soaking the wound in water and to pat dry after washing.
- The adhesive will spontaneously slough off within 5 to 10 days.

Name of suture	Suture type	Advantages	Disadvantages	Uses
Interrupted suture	 https://upload.wikimedia.org/wikipedia/commons/d/d2/Simple_interrupted_suture.svg	Excellent approximation	Time consuming	• Low-tension wounds • Can be used with deep sutures for high-tension wounds.
Continuous suture	 https://upload.wikimedia.org/wikipedia/commons/8/85/Diagrams_illustrating_various_surgical_stitches_and_knots._C_Wellcome_V0016823.jpg.	Rapid closure	Less meticulous than an interrupted suture. Wound can dehisce if a single knot unravels.	• Low-tension wounds • Can be used with deep sutures for high-tension wounds.
Double layer of suture (deep layer with absorbable suture)	 X	Reduces tension on wound surface.	May increase infection in infected wounds.	• High-tension wounds
Vertical mattress suture	 https://upload.wikimedia.org/wikipedia/commons/1/19/Vertical_mattress_suture.svg	• Lifts wound edges that tend to fold inwards. • Combines advantages of deep and percutaneous sutures.	May cause tissue strangulation.	• Thin or lax area with little dermal support • High-tension areas.
Horizontal mattress suture	 https://upload.wikimedia.org/wikipedia/commons/d/dc/Horizontal_mattress_suture.svg	Excellent wound approximation	May cause tissue strangulation.	• Bleeding scalp wounds • Initial approximation of high-tension wounds

- Choose the suture material:
  - › Use nylon non-absorbable sutures for soft tissue and skin approximation.
  - › Use vicryl absorbable or chromic absorbable sutures for approximation of deep dermal structures.
  - › Avoid silk non-absorbable suture material. Exceptions are for intraoral lesions or if no vicryl is available.
- Once closed, cover the wound with a water-proof occlusive dressing (to be kept covered for 3-5 days).

Advice

- Keep the sutured wound dry. Avoid immersing the wound in a bath, rather shower or wash with a cloth.
- Avoid physical activities and trauma to sutured areas for at least 48 hours in wounds that were associated with copious bleeding.
- Return to facility if the wound starts to bleed or oozes a foul-smelling discharge.

Review

Discharge with a suture removal letter to the clinic. Remove sutures depending on site:

- Scalp: remove sutures after 7 (7 to 10) days.
- Face: remove sutures after 5 (5 to 7) days.
- Chest / back / abdomen: remove sutures after 10 (8 to 12) days.
- Extremities: remove sutures after 10 (8 to 12) days.
- Hand / fingers: remove sutures after 10 (8 to 12) days.
- Foot: remove sutures after 12 (10 to 14) days.

Referral

Refer patients to the next level if they have the following:

- Wounds that continue to bleed in spite of best efforts to stop the bleeding.
- Wounds to the chest or abdomen that go through the abdominal wall or chest wall.
- Wounds that involve the neck.
- Deep wounds to the hands
- Wounds that involve joints or have associated tendon or nerve injuries.

Prevention

Consider oral antibiotics to prevent infection in the following circumstances (see latest Standard Treatment Guidelines and antimicrobial prescribing protocols):

- Exposure to sterile areas (e.g. bone/joint/tendon)
- Compromised host (immune-compromised or lymphoedema and recurrent cellulitis)
- Human and high risk animal bites
- Intra-oral or heavily contaminated wound
- Crush or stellate lacerations.

Wound complications

Wound infections

Introduction

- All environments contain micro-organisms and inevitably all wounds are colonized to some degree. An acceptable level of wound colonisation needs to be distinguished from clinically important infections.
- Wound infections can be superficial, involving surrounding skin and subcutaneous tissue layers, or deep, spreading to muscles, fascia and perhaps bone.
- Wound infections are most commonly caused by bacteria. Infections due to fungi, TB and other infective organisms occur less often, and usually in an immunocompromised host.
- Bacteria compete with the patient for oxygen and nutrients on the wound bed and secrete products which create a toxic environment, leading to prolonged inflammation and delayed wound healing.
- Biofilm is a community of micro-organisms housed in an extracellular polysaccharide matrix, which appears slimy or sloughy. This protects the bacteria against antibiotics and host responses, and reduces the effectiveness of wound cleansers.
- Those with compromised immunity are more at risk of wound infection - HIV, diabetes, poor nutrition, immunosuppressive medications (steroids, cancer medications) and autoimmune conditions like SLE, rheumatoid arthritis and psoriasis.

History of the wound

- Check for underlying conditions such as malnutrition and compromised immunity that may predispose the patient to wound infection.
- Ask about pain, wound exudate, odour and wound healing. These factors all worsen in the presence of infection.

Examination

- Decide if the infection is superficial, deep, involving surrounding tissues or systemic.
  - › Look for redness, swelling, maceration of skin (drenching of surrounding skin due to exudate), excess exudate, biofilm formation, green discoloration of exudate or biofilm (may indicate Pseudomonas infection).
  - › Feel for warmth, crepitus, wound undermining (use a probe) or deep tenderness that might indicate bone infection.
  - › Check for systemic signs of infection: raised temperature, tachycardia, hypotension, confusion or the patient looks generally unwell.
  - › If signs of infection worsen rapidly (within hours) or blistering and crepitus (bubble-wrap sensation when palpating the skin) occur, the infection is severe and may indicate necrotizing fasciitis.

Superficial infection

Some odour, more exudate or pus, yellow or green discolouration of the wound surface. Surrounding skin is normal. The patient is otherwise well with no systemic signs of infection.

Infection of surrounding or deep tissues

Odour, pus, discolouration of the wound surface, surrounding skin is red, swollen and painful/tender. Patient may have systemic signs of infection such as raised temperature, tachycardia, hypotension and clinical deterioration.

Investigations

- Offer an HIV test if the patient's HIV status is unknown.
- Screen for diabetes.
- If the patient is systemically unwell, the infection is severe or there is underlying bone infection, check CRP, ESR and white cell count.
- If the patient has TB symptoms, check two sputum samples for Gene Xpert and follow TB diagnosis guidelines.
- Do not take a sample routinely for microscopy, culture and sensitivity (MC&S):
  - Take a sample only when a wound infection does not respond as expected to wound management as detailed below. See page 71: How to take a wound sample.
  - If the patient with a non-healing wound is immunocompromised, collect a deep tissue sample or a wound aspirate and request fungal culture and bacterial MC&S.
  - See page 73: The wound that does not heal.

Management

- Physical removal of slough or debris is an essential first step in managing superficial or deep wound infections, as antibiotics or wound cleansers will not be able to penetrate the biofilm to reach the bacteria.
  - Clean with saline or antiseptic solution (e.g. diluted povidone iodine or chlorhexidine solution) – leave on for 5-15 minutes. If Pseudomonas is suspected, use 0.5-1% acetic acid.
  - Remove any further purulent exudate before dressing.
  - Debride if needed. See page 69: How to debride a wound.
- Apply a suitable dressing.
  - Apply an antiseptic ointment/dressing (silver or povidone iodine or chlorhexidine or honey or if none available, povidone iodine) + a moisture absorbent dressing. Change the dressing daily.
  - If a high exudate wound, use a silver hydro-fibre dressing and change the dressing every 2-3 days or more often if needed. Change dressings when the exudate stains the outer layer of the dressing or bandage (called "strike-through").
  - Do not use the same antiseptic for more than two weeks.
- If the patient has deep or surrounding tissue infection: give an oral antibiotic according to the latest Standard Treatment Guidelines.
- If the patient is systemically unwell refer to hospital for an intravenous antibiotic according to the latest Standard Treatment Guidelines.
- If a sample has been taken, adjust antibiotic choice to align with culture and sensitivity results choosing the narrowest-spectrum agent possible in line with antimicrobial stewardship principles.

Advice

- Educate the patient about the signs of worsening infection and when to seek help.
- Advise good hygiene - avoid getting the dressing wet or fiddling with the wound. Remind to wash hands before and after dressing changes if self-managing at home.

Review

- Review the patient every 1 to 3 days depending on the severity of the infection.
- Surrounding skin becomes red or painful, the infection becomes severe or the patient is systemically unwell, start antibiotics as above.
- If no response to antibiotics, consider taking a wound sample. See page 66: The wound that does not heal.

Referral

- If the patient is systemically unwell or has spreading cellulitis, refer same day to a district hospital.
- Refer the patient with surgical sepsis back to the place of surgery, urgently if the patient had an artificial implant e.g., hip, knee or vessels.

Prevention

- Consider prophylactic antibiotics for the patient with a traumatic wound in line with the latest Standard Treatment Guidelines. Give also tetanus prophylaxis if needed.
- Prevent surgical sepsis by limiting or avoiding exogenous sources of infection: healthcare workers, visitors, contaminated equipment, medical devices and the healthcare environment. Give antibiotic prophylaxis for surgery involving the placement of a prosthesis or implant and “dirty surgery”. Antibiotics are not indicated routinely for clean, non-prosthetic, uncomplicated surgery.

The wound that does not heal

Introduction

- A stalled wound is one that fails to heal.
- This may occur because of factors within the wound or because of the patient's compromised immune responses.

History of the wound

- Repeat history taking as on page 8: Initial assessment of the patient with a wound.
- Ask about pain, itch, exudate, bleeding.
- Ask about chronic medical history including diabetes, HIV and medications, especially corticosteroids.
- Screen for mental health issues, including depression and substance misuse.
- Assess previous treatment of the wound.
- Assess patient's (and carer's) adherence to the wound care management and advice. Check if the patient is agitating the wound or applying non-prescribed agents/dressings.
- If appropriate, find out if the patient has a terminal illness and if the wound is not expected to heal, for example a cancer wound or ischaemic wound in a patient not fit for a revascularisation procedure.

Examination

- Reassess the wound as on page 8: Initial assessment of the patient with a wound.
- If it is a trauma wound, look for foreign objects such as sutures, pieces of clothing after a gunshot or stab wound or glass.
- Look for infection: redness, swelling warmth of surrounding skin with increasing exudate or pus.
- Perform a general examination to look for an underlying chronic condition.
- If it is a leg wound, check for arterial and venous insufficiency. Perform an ankle brachial pressure index (ABPI) measurement, see page 73: How to perform an ABPI measurement.
- Assess nutritional status on page 15: Nutrition for the patient with a wound.

Investigations

- Do not take a wound sample from every wound.
  - › If the wound is infected, there is no need to take a sample routinely for MC&S.
  - › Take a sample only when a wound infection does not respond as expected to wound management as detailed on page 63: Wound infections. See page 71: How to take a wound sample.
  - › If the patient with an infected, non-healing wound is immunocompromised, collect a deep tissue sample or a wound aspirate and request fungal culture and bacterial MC&S.
  - › If the wound sample yields no results or is indeterminate, consider performing a biopsy of the wound edge.
- Take a biopsy of the wound edge if the wound edge is irregular or has other features of a malignancy (irregular bumps around the wound, unusual skin discoloration) coupled with unexpected weight loss and excessive exudate in the absence of infection.
- Consider tests for HIV and diabetes.

- If TB symptoms – cough, sweats, loss of weight, also test for TB. Consider taking a biopsy of the wound edge and sending it for a TB culture if the patient's wound has multiple sinuses without an obvious explanation for it.
- Ensure you follow up and act on swab result with appropriate treatment. Avoid performing investigations if follow up of results and patient care is not possible.

Management

- If the wound is infected, treat on page 63: Wound infections.
- If the patient has a terminal illness and the wound is not expected to heal, manage on page 28: Cancer wounds.
- Consider whether the patient would benefit from a Negative Pressure Wound Therapy. See page 92: Negative Pressure Wound Therapy.
- Try an alternate advanced wound dressing for a trial period. Examples are hydrocolloid dressings, alginate dressings, dressings that have a regulated release of iodine or antibiotics, dressings that contain protease modulators and dressings that absorb bacteria.
- Adjust dressing and the frequency of dressing changes as needed to ensure moisture balance.
- Document findings and management at each visit.

Advice

- Advise patient and carer to adhere to the treatment and dressing regimen and to attend follow-up appointments.
- Manage any chronic conditions well. If relevant, ensure that the patient achieves optimal control of diabetes and hypertension.

Review

- Review regularly until improvement is seen.
- Remember to follow up wound sample results and act on them.

Referral

- If no improvement within two weeks, refer to next level of care.
- Be sure to document in the referral note all assessments and previous dressings and treatments used.
- Refer the patient with severe wound infection for inpatient care.
- Refer for specialist assessment if a biopsy result leads to the diagnosis of a new cancer.
- If needed, refer to improve control of chronic condition/s.
- Consider referral for rehabilitation where patients have developed contractures of limbs, are weak from prolonged inactivity or have limited function as a result of their wound.
- Consider referring to mental health services if the patient needs assessment and care for mental health issues.


Wound care tools
and techniques

Useful techniques for wound assessment & care

Contents:

How to dress a wound

The aim of wound dressing is to keep the wound clean, protect it from heat loss and trauma, prevent bacterial invasion and infection and provide the correct moisture balance to aid healing. Steps to wound dressing are:

1. Decide whether debridement is needed.
2. Clean the wound.
3. Choose the appropriate dressing according to type of wound and moisture content.
4. Fixate the dressing which is not self-adherent.
5. Determine follow-up and dressing change frequency.

For guidance on choosing dressings, see page 12: Initial wound management and dressing guide and page 74: Dressings and consumables list.

How to debride a wound

Non-viable or dead tissue fills a wound, competes with it for oxygen and prevents healing. Debridement aims to prepare the wound for healing by clearing all non-viable or dead tissue from the wound bed.

If the patient has blisters, consider deroofing them only if due to burns or a pressure injury:

- If due to a burn injury, deroof the blister after 6 hours, especially if filled with too much fluid.
- If the blister is related to a partial thickness pressure injury, deroof only if more than 72 hours old.
- Pierce and drain blisters. Do not lift the roof off until it has dried out or if sepsis is suspected (blister fluid is discoloured or surrounding tissues are red or warm).

Debridement can be done using various methods: with hydrogels, proteolytic enzymes, manually or surgically. Decide which method to use from the table below depending on the type of wound, contraindications and level of wound care expertise and training.

Debridement method	Approach	Contraindication	Advantages	Disadvantages
Autolytic *The body's own wound enzymes break down and loosen necrotic tissue. Using moisture-adding or -retaining dressings facilitate this process (e.g. hydrogels, film dressings).*	1. First clean off surrounding tissues. 2. Remove loose debris from the wound. 3. Apply to wound bed either by applying to secondary dressing or by spatula directly to the wound bed. 4. If the wound is small and the tube is to be used for more than one patient, decant into a clean container and apply with a clean spatula. 5. Cover with appropriate dressing (see page 11: Initial wound management and dressing guide.). Dressings should be moisture-preserving, allowing the wound bed to soften. 6. Repeat with each dressing change, until the necrosis is soft enough to lift and remove.	Infected wounds	• Easy to perform • As this uses the body's own enzymes, less chance of a reaction to a foreign chemical • Selective – it will not harm healthy tissue. • Painless • Useful in wounds with minimal debris	• Slow process
Chemical *Break down necrotic tissue with proteolytic enzymes e.g Aserbine®, Iruxol® (currently not available in state sector).*		Infected wounds	• Easy to perform • Selective – it will not harm healthy tissue. • Painless • Useful in non-infected wounds where other methods are contraindicated	• May irritate surrounding tissue. • Slow process. • Wound's pH or other topical agents can neutralize treatment.
Deliberate mechanical debridement	1. Irrigate non-viable tissue with pressure. 2. Suction debris or wipe it away with a wet gauze swab.	• Elderly patient • Frail skin • On anticoagulant therapy	• Easy to perform • Fast • Useful in wounds with necrotic material and moderate-to-large amounts of exudate	• Non-selective • May remove or damage viable tissue • Painful!
Sharp/surgical	1. First check blood supply: if absent pulse in limbs, do not proceed with sharp debridement. 2. Ensure adequate analgesia or anaesthesia as needed. 3. Sterile procedure. 4. Use dissection scissors or blade to remove non-viable tissue.	Inadequate blood supply to wound - absent pulse or reduced capillary refill.	• Immediate results • Selective – it will not harm healthy tissue, if done by a skilled practitioner. • Facilitates faster healing by rapid removal of non-viable tissue.	• Can cause harm if inadequate blood supply. • May cause bleeding and pain. • Need for analgesia or anaesthesia • Requires trained/ accredited personnel.

How to clean a wound

1. Wash hands well and put on gloves.
2. Prepare cleaning solution:
    a. Warmed, sterile 0.9% sodium chloride (saline) is the preferred solution for cleaning both infected and non-infected wounds. Avoid homemade saline, as if too strong, it can burn a fragile wound. It is better to use cooled boiled tap water (remember it should be used warm – not cold).
    b. Use topical antiseptic solutions such as acetic acid, povidone iodine, chlorhexidine or hypochlorite solutions only for wounds that are not healing, do not respond to cleaning with saline or have excessive exudate or odour due to infection. Avoid these solutions routinely as they interfere with the natural process of wound healing and are cytotoxic to healthy cells. Discontinue use when the wound is granulating and signs of infection (exudate, odour, pain) decrease.
3. Wound cleaning should be done by gentle irrigation.
4. Use gauze to clean only if there is thick slough. Swab gently with moistened gauze. Avoid dry gauze or cotton balls as they may damage delicate new tissue, cause pain or leave debris on the fragile wound surface.
5. Clean the skin well around the wound to reduce bacterial exposure to the wound and protect the surrounding skin.
6. To prevent dirt build up, remove residual adhesive with nail polish remover or alcohol rub. Take care to avoid getting these in the wound as they are cytotoxic.

How to take a wound sample

Wound samples may be useful to help identify a causative organism or other pathology in the wound that fails to heal or respond to empiric management.

Wound swabs that are inappropriately collected are very poor specimens and are strongly discouraged. They lift organisms from the surface layers rather than from the deep tissues of a wound and are more frequently representative of wound colonizers (and not the pathogens actually causing the infection) unless adequate debridement or wound cleaning was done. They are also inappropriate for the recovery of anaerobes and some fastidious organisms and may provide too little material for a suitable yield.

Deep tissue samples (via biopsy) or **wound aspirates** are the gold standard and are preferred where possible in all cases where further investigation is needed.

1. Remove slough, necrotic tissue, dried exudate and dressing residue by cleaning the wound with sterile saline or debridement. All samples must be taken AFTER wound cleaning to avoid contamination and an incorrect result.
2. Leave the wound to rest for five minutes before taking the sample.
3. Take care to ensure that the swab/needle/sampling equipment only comes into contact with the wound surface.
4. Wound aspirates can be performed if there is a fluctuant area of the wound. If it is impractical to collect a deep tissue sample or wound aspirate, a wound swab can be considered.

For deep tissue samples:

    a. Clean the skin/wound with an appropriate antiseptic solution and allow the solution to dry.
    b. Use a sterile blade or forceps (or other sterile device) to obtain a small piece of tissue from the advancing edge of the wound, targeting tissue in deeper layers of the wound if possible.
    c. Place tissue sample in a sterile container and cover it with sterile saline to prevent desiccation. Make sure that the lid is tightly sealed and does not leak.

For wound aspirates:

a. Clean the skin/wound with an appropriate antiseptic solution and allow the solution to dry.

b. Insert a sterile needle and syringe into a fluctuant region of the wound and pull back on the syringe plunger with gentle force until material is aspirated. A minimum of 1 ml of pus is required.

c. Alternatively, pus can be collected at the time of incision and drainage with a sterile syringe.

d. Place the contents into a sterile container for submission to the laboratory. Make sure that the container is tightly sealed and does not leak. DO NOT send the sample in the syringe with the needle still attached as this is a risk to you and to everyone along the transport chain.

For wound swabs:

a. If the wound is moist, use the swab directly from the packaging; if dry, moisten the tip of the swab with sterile saline to increase the chances of recovering organisms from the site.

b. Target the advancing edge or deepest area of the wound as it is more likely to yield the pathogen(s) responsible.

c. Use one of two techniques to collect the specimen:

- Move the swab across the wound surface in a zig-zag motion, while rotating it.
- Rotate the swab over a 1cm area with sufficient pressure to express fluid from within the wound tissue (the Levine technique).

d. Return the swab immediately to the transport medium in the container.

e. Avoid requesting multiple tests on a single swab.

5. Label accurately and record in patient notes.
6. Complete laboratory documentation and make sure to include the following:

a. Co-morbidities, patient age, ongoing antibiotic treatment

b. Type of sample – tissue biopsy, aspirate or swab

c. Wound location and site and time of specimen collection. This will affect how the sample is processed, followed up, interpreted and reported. Wound swabs without a site indicated are likely to be rejected and not processed.

d. Whether a deep or superficial sample

e. Confirm that sample was collected after the wound was cleaned and whether a sterile technique was used.

f. Whether any specific pathogens are suspected, such as fungi, mycobacteria or others which may be a danger to laboratory personnel.

7. Transfer swabs to the laboratory as quickly as possible as they should ideally be processed within four hours of collection. Avoid delay in transfer to the laboratory as this will impact on results.
8. Ensure the results are followed up and appropriate treatment given if needed.

How to remove a dressing

1. Explain the process to the patient.
2. If the procedure is likely to be painful:
   - Give analgesia 1 hour before removal of the dressing. See page 19: Pain management.
   - Prepare distraction: music, magazine, DVD. Skin stimulation, use of strong aromas, activities or tasks involving hands (puzzles, needlework, crafts) can also be helpful.
   - Educate about relaxation techniques like deep inhalation with varying groups of muscle contraction & exhalation with muscle relaxation, meditation, relaxation CDs or combinations of rhythmic breathing with distractions.
3. Position the patient for comfort and support.

4. Be cautious when removing the dressings:
   - Pressure can cause pain, additional injury and can slow the healing process.
   - Do not traumatise fragile tissues around wound margins during removal.
5. Slowly loosen the ends of the tape on the patient's skin. Peel ends toward the wound while holding the skin with the other hand. Do not remove tape in a direction away from the wound as this creates tension on the wound, which can disrupt healing or tear the skin.
6. Once the tape has been separated from the skin, remove the dressings:
   - Check the dressings for odour, discoloration, and drainage.
   - Discard the dressing in a contaminated waste container.
   - If the dressing is adhered to the wound bed, do not pull. Moisten the dressing with sterile/clean water. Allow it to soak for 5-10 minutes. When loose, lift it off.
7. Remove any residual adhesive. Gently rub gauze soaked with solvent like acetone or alcohol over the adhesive residue around the wound (not on the wound). Removing the adhesive that sticks to the skin reduces skin irritation and breakdown and adds to patient comfort.
8. Consider giving a dose of pain medication afterwards if the procedure has been very painful.

How to perform an Ankle Brachial Pressure Index (ABPI) measurement

The ankle-brachial pressure index is the ratio of the blood pressure at the ankle to that in the upper arm. Blood pressure that is lower in the leg compared to the arm suggests blocked arteries due to peripheral artery disease.

1. Have the following equipment ready:
   a. a handheld Doppler and ultrasound gel
   b. an adult-size blood pressure cuff and a sphygmomanometer (manual blood pressure measuring equipment).
2. Have the patient in the supine position and determine the systolic blood pressure of the brachial arteries. Do this by placing the cuff on the arm and inflate to about 150 mm Hg, apply some ultrasound gel to the antecubital fossa (elbow), then place the Doppler probe over the brachial artery in the antecubital fossa. Now deflate the cuff until you hear the arterial pulsation. Document the blood pressure when the pulsations become audible. Measure left and right brachial artery pressures. You will use the highest value for the ABPI calculation.
3. Place the cuff on a lower limb just above the malleoli (ankle). Follow the same procedure as above to measure the pressures of the posterior tibial (ankle) and dorsalis pedis (top of foot) arteries. You will use the highest value to calculate the ABPI for that leg. Repeat on the other leg.
4. Calculate the ABPI for each leg:
   a. Left leg ABPI = highest value of left leg / highest value of both arms
   b. Right leg ABPI = highest value of right leg / highest value of both arms
5. Use the table below to interpret the lowest ABPI measurement and plan further actions.

Measurement value	Diagnosis	Recommended action
≤ **0.4**	Severe arterial disease	Refer urgently to surgery outpatient department.
0.4 – 0.69	Moderate arterial disease	Refer to surgery outpatient department if the patient has severe claudication or a non-healing wound.
0.7 – 0.89	Mild arterial disease	• Advise the patient to continue or increase exercise. • Repeat ABPI yearly if the patient has claudication symptoms.
0.9 – 1.3	Normal	

Dressings and basic consumables list

- This Dressings and basic consumables list contains the products required for good wound care. It focuses on dressings more commonly known and currently used in Western Cape Department of Health institutions.
- The list is arranged in categories: cleaning products, adhesive/fixative tapes, bandages, low adherent dressings, moisture control dressings, other dressings, ointments, surrounding skin protectors, and antimicrobials.
- Choose the product you need based on the patient's needs, the characteristics of their wound and availability.

Cleaning products

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Normal saline (0,9%)	SABAX B BRAUN	• Saline solution presented in pour-bottles, ampoules, vacolitres, spray bottles. • pH is balanced to the skin's acidity.	For cleansing all wounds, whether infected or not, acute or chronic.	Best if used to irrigate with a syringe or spray over an open wound, rather than "swabbing" it.	Caution patients making their own saltwater solution, as often this is made too strong.
0.5-5% pure Acetic acid	SABAX B Braun Lennon	• Pre-mixed clear solution. • Usually 5% concentration when bought off the shelf; hospital pharmacy will dilute to the appropriate strength. • If none available, dilute white grape vinegar: 2ml in 50ml water, 10ml in 250ml of water or 40 ml in 1L of water.	For cleaning wounds infected with Pseudomonas aeruginosa gram-negative bacteria (including resistant strains).	• Dilute with saline or sterile water. • Remove blue/ green stained dressings. • Remove wound bed debris with saline or debridement. • Soak gauze in acetic acid mix and apply to wound for 15 minutes. • Remove gauze, dry the surrounding skin and dress the wound. • Change dressings once or twice a day. • Stop if not improved by 2 weeks or once infection is under control.	• Be cautious if using plain vinegar – the concentration (usually a 5% solution) is not always accurate, and a stronger solution can damage the tissue. • Application can be painful and should be diluted as tolerated. • Stop when the infection is under control as acetic acid is cytotoxic and will burn the healing wound. • Avoid with non-infected or non-contaminated wounds.
Povidone iodine solution	B Braun Sabbax etc	• A liquid concentrated solution of 10%. • When diluted it is a brown solution.	• For cleaning infected or dirty wounds. • Used as skin preparation before surgery.	• Dilute before use especially on an open wound: add 20ml to 500ml normal saline. • Irrigate with the solution over the wound.	• Avoid with non-infected or non-contaminated wounds. • Avoid if iodine/shell-fish allergy. • Application to large areas of damaged skin can lead to systemic absorption • Caution if breast-feeding or with nodular goitre.
Chlorhexidine solution	Bioscrub	• An antiseptic solution. • Effective for broad range of gram-positive and gram-negative bacteria and fungi.	• For cleaning infected wounds and dirty trauma wounds. • The soap is often used to shower with to decontaminate following MRSA exposure.	• Follow supplier instructions. Usually a 0,05% aqueous solution is used for wounds. • Leave on for 5 minutes, then irrigate with saline. • Discontinue once the wound is clean and healing.	• Avoid the soap solution on wounds unless suitably diluted. • Do not use the solution with alcohol for wound disinfection as it is cytotoxic to new cells.
Sodium hypochlorite solution	Dakins Solution	Broad antimicrobial activity	Used for resistant gram-negative infections, especially in burn wounds.	• Only use 6mls Dakins solution in 1000ml saline. • Discontinue once infection is under control.	Stronger solutions can damage tissue as it is toxic to fibroblasts, delaying healing and increasing scarring.

Cleaning products

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Surfactant-containing wound cleanser	Prontosan Polihexanide and Betaine Wound cleanser	• Wound cleanser that contains a surfactant which disrupts biofilm and debris, reducing bioburden of wound beds and thus infection. • Has broad spectrum antimicrobial and anti-fungal properties.	For use with contaminated, colonised and infected wounds	• Remove dressings and loose debris with a saline rinse. • Apply gauze soaked in the cleanser to the wound for 15 minutes. Remove, dry skin and apply dressings.	• Be aware of allergy to any of the ingredients and stop immediately. • Be cautious in breast feeding.
Gauze	BSN Hartmann	• Loosely woven cotton thread swabs • No antimicrobial effect. • No fluid retention so minimal absorbency.	Use to clean and dress a wound.	• Apply straight onto wound bed. • Always used wet when in contact with wound.	• If it dries, it can cause pain on removal and damage new tissue.

Adhesive/fixative tapes

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Microporous Paper tape	Micropore® Leukopore®	• Paper tape • Gentle on the skin	To fix dressings without own adherent edge to the patient.	• Don't stretch tape to apply. • To remove glue, soak off or rub a little alcohol on it.	Be cautious when removing with fragile / geriatric skin.
Zinc oxide adhesive tape	Strappal BSN®	• Firm and non-elastic tape with one adhesive side. • Provides strong support and efficient stabilisation of the joints.	To support a dressing or to prevent rubbing and blisters from a splint	• Apply directly onto skin. • Use skin appropriate tape remover like nail polish remover or specific medical tape remover, to lift residue from skin.	• Use cautiously with frail skin. • Avoid in radiation patients.
Cloth adhesive tape	Hypafix® Mefix® Pharmafix® Omnifix®	• Manufactured from polyester. • Conformable, air-permeable and hypo-allergenic • 5cm or 20cm wide rolls • Has a very low profile and is flexible and adaptable. • Silicone-based adhesive makes removal easier.	• Use to fix dressings in place. • Can be used to prevent friction and blister formation. • Especially effective with plaster cast or shoe edges.	• Apply either directly over the skin or over a dressing to secure it in place. • Do not stretch the cloth when applying. Trust the adhesive	Not waterproof but does dry without lifting if it gets wet.
Elastic adhesive tape	Elastoplast Classic Fixation Tape®	• Strong, thick fixation tape • Latex free.	Use to hold dressings, wound pads and compresses in place.	• Apply to secondary dressings / bandages with minimum skin contact. • Apply directly with NO stretch as there is no give once it is adhered. • On removal, clear tape residue with nail polish remover, ether or alcohol. Use tape remover if used on fragile skin.	• Caution in fragile skin • Be cautious in circumferential use as if there is any oedema it may act as a tourniquet. • Remove slowly with skin support as adherence can lead to degloving injuries.
Wound closure strips	Steristrips®	Strips can vary in size and length.	Used for closure of acute or surgical wounds or skin tears or to support the wound in addition to sutures.	• Dry surrounding skin for good adherence. • Cut the strips to size. • Leave in place until they fall off.	Do not close skin over infected tissue.

Bandages

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Crepe Bandage	Crepe Bandage	• Firm supportive bandage with moderate compression • Width: 75/100/150 mm • Non-elastic 100% cotton	• Suitable for use as support for sprains and strains in joints and muscles. • Can apply as a moderate compression bandage for limb swelling.	• Apply with caution to the limb in either 50% spiral overlap or circumferential figure-of-eight technique. • Can be washed and reused a few times.	• Short stretch and limited use • Do not apply at full stretch as it could act a tourniquet if there is any oedema.
Conforming Bandage	Cling Elastoplast Conforming Bandage®	• Gauze-type cotton bandage • Width 50/75/100mm • Moderate-to-longer stretch bandage • Durable and lightweight	• Used to hold dressings or pads in place. • Effective and adaptable for joints.	May need to be secured to the skin.	• Do not apply at full stretch as it could act as a tourniquet if there is any oedema.
Tubular elasticised bandages	Tubigrip® Elastomesh®	• Available in different sizes for limbs and trunks • Provides soft support and compression if size is correct.	Can be used to keep dressings in place in awkward areas.	• Apply dressing to open wound and secure it in place. • Carefully lift tubular support into place. • Wash and reuse if soiled.	• Can roll and act as a tourniquet if incorrectly sized and fitted. • Tends to lose elasticity after a few washes.
Compression bandaging	Ulce3® - zinc paste bandage as initial layer; short stretch (useful if patient active) Profore® - long stretch (for less active people) Tensopress® - washable with guide for patients to reapply correctly	Bandages vary in compression due to differences in their elasticity and shape of the limb.	Optimal treatment of venous ulcer disease is compression bandaging.	• Ensure that peripheral pulses are present before application. • See page 53: The commandments of compression.	• Caution in any ischaemic or arterial disease • Caution in diabetes • Must be applied correctly (need training) and according to patient's tolerance.
Graduated Compression Stockings	Rxfit® Sigvaris ®	• Graduated, knitted compression hosiery fitted to individual needs. • Pressure ranges from supportive flight socks, Class 1-2 for prevention of ulcer recurrence to Class 3 for recurring oedema and lymphatic failure.	Prevention of ulcers or the recurrence of ulcers in patients with chronic venous insufficiency	• Assess the patient for size (ankle, calf and length), ability to apply (arthritis, obesity and age) and acceptability (summer heat). • Encourage correct use during the day and to remove at night. • Advise hand washing before use. • Replace when worn and ineffective.	Compliance with regular use of compression is a challenge - be patient and supportive.

Low adherent dressings

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Impregnated tulle	Jelonet® Adaptic® Also available as digit dressings e.g. Adaptic Digit® or Hi-Care Post-op Digit®	• Mesh-like dressings with a non-adherent ointment e.g. petroleum. • Contact layer allows transfer of exudate to a secondary dressing. • Facilitates application of topical preparations.	Use with wounds that are painful or friable.	• Usually require a secondary dressing.	• Granulation tissue can grow into the weave if left on the wound bed for too long and allowed to dry out. • Can dry out and then be painful to remove.
Silicone sheet	Cutimed Siltec® Siflex® Askina Silnet®	• Porous sheets of dressings with low tissue adherence. • Contact layer allows transfer of exudate to secondary dressing. • Facilitates application of topical preparations.	Use with wounds that are painful or friable.	May require a secondary dressing.	• Can be difficult to apply as they adhere to everything when touched. • Moisten fingertips with saline to free the dressing from your gloves.

Low adherent dressings

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Non-adherent synthetic dressing	Melolin® Telfa®	• Non-adherent contact layer • Some have an absorbent pad. • Some are impregnated with chlorhexidine. • Available as uncut bulk rolls for large areas.	Use on wounds where dressing adherence may add to tissue trauma.	• Apply shiny side down onto the wound bed. • May need a secondary dressing. • Ointments or treatment can be applied to the dressing.	

Moisture control – "add moisture if dry; remove moisture if wet; protect if correct."

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Moisture addition					
Hydrogel	Intrasite gel® Pharmagel® Intrasite dressings® Cutimed®	• Available in gels, solid sheets or embedded into gauze. • Polymers with high water content • Adds moisture to a wound bed. • Some contain cellulose or alginate that absorb some exudate. • Prevents drying of the wound bed. • Assists with autolytic debridement.	Useful in dry wounds, with or without scabs that cannot be surgically debrided.	• Apply only small amounts under a moisture retaining dressing like a non-stick pad. • Protect peri-wound skin from maceration. • May require a secondary dressing.	• When warmed by the body, the gels become fluid and this can lead to wound and peri-wound maceration. • Do not apply to wet, draining wounds. • Solid sheets should not be used on infected wounds.
Moisture balance					
Hydrocolloid sheets	Comfeel plus® Comfeel plus transparent® Granuflex®	• Contain gelatin, sodium carboxymethyl cellulose, pectin. • Sheet dressings are occlusive with polyurethane outer layer. • Forms a barrier against infection. • Comes in different thickness and shapes. • Moisture-retentive dressing • Helps with autolytic debridement.	• Best for mild-to-moderate exudate • Good for pressure areas • Can decrease the pain of a dry wound.	• Apply dressing over entire wound and onto surrounding skin. • It will not adhere to the open wound but instead create a moisture-balanced wound environment. • Should be left in place for up to 5 days, monitoring the dressing for moisture.	• Wound odour on dressing change should not be confused with infection. • Watch for peri-wound skin maceration. • Avoid on heavily draining or infected wounds.
Hydrofibre	Aquacel® Aquacel extra® Aquacel extra Ag® Activheal hydrofibre®	• Sheet or packing strip of sodium carboxymethyl cellulose • Converts to a solid gel when activated by moisture. • Supports autolytic debridement. • Aquacel extra® dressing contains strengthening fibre	• Best for moderate amounts of exudate. • Also available with silver for infected wounds. • Aquacel extra® can be packed into narrow deep sinuses.	• Apply moisture to wet the dressing to lift it off. • Use Aquacel extra Ag® if signs of infection.	• Low tensile strength – avoid packing into narrow deep sinuses. • May adhere to a dry wound and surrounding skin.
Moisture balance					
Foams	Cutimed Siltec® Tielle® Askina Foam® Kendall Dopa® Biatain® Hi-Care® Tegaderm foam® Pharmafoam® Allevyn®	• Non-adherent or adherent polyurethane absorbent sponge • Water-resistant properties dependent on the outer layer. • Moisture vapour transmission rate varies from make to make. • May combine other properties such as silicone adherence, antimicrobial properties or pain control.	• Use on moderate or heavily exudating wounds. • Some for cavities or specific areas such as sacrum or heel.	• Many foam options – find the right absorbency to keep the moisture balance correct. • Heel dressings can also be used to prevent pressure ulcers.	• Can dehydrate dry wounds. • If non-adherent – need to add secondary retentive dressing.

Composite dressing	Tielle foams® Cutisorb®	• Multilayered, combination dressings that increase absorbency. • Protect wound bed by wicking fluid away. • Some are appropriate for autolysis.	Use with wounds that have moderate-to-large amounts of exudate.	• Ensure dressing pad is big enough to cover the wound. • Can make a wound water resistant enough to shower. • Apply directly to the wound or over a primary wound interface.	• Protect peri-wound skin from maceration. • Remove with caution as skin may lift with dressing removal.
Alginate	Kendall Curasorb® Pharma Algi® Kaltostat®	• Various sizes of sheets or fibrous ropes of calcium sodium alginate (seaweed derivative) • May assist with haemostasis. • May contain antimicrobial additives like silver or honey. • Bioresorbable	• Useful on exudating wounds • Works well to fill a cavity. • Can help for a stalled wound, as it donates calcium and stimulates ion exchange.	• Apply directly to a moist wound bed, as it interacts with the wound. • Contour the dressing to fit the wound bed shape.	• Avoid use on dry wounds • Has low tensile strength – avoid packing into narrow deep sinuses. • Requires a secondary dressing.
Super absorber dressings	Cutisorb ultra® Allevyn Life® Drawtex® Note this product will be added to the Supplementary list and will be available for use.	• Trap fluid away from the wound reducing maceration. • Soft cellulose beads swell and trap fluid and bacteria.	• Effective for filling cavities and high drainage wounds. • Can hold and retain large amounts of fluid.	• Apply directly onto the wound bed or as a secondary dressing. • May require a dressing or bandage to keep it in place. • Change as frequently as required to prevent it becoming saturated.	• May result in a too dry wound bed. • If saturated, it may become heavy and cold resulting in patient discomfort.
Surgical pad	Surgipad ® Zetuvit®	• Simple absorbent pad, with or without backing	• Use for moderate exudate wounds.	• Apply over a primary dressing.	• Easily saturated and will leak if exudate is heavy.
Wound Bags/ Manager	Coloplast® Eakin®	• These are flexible bags designed to offer skin protection and contain wound drainage. • Bags come in various sizes and shapes that can facilitate different drainage needs.	• Useful if large amounts of exudate. • Stops fluid leaking onto the patient's skin and clothes. • Especially effective in chronic sinus drainage.	• Ensure the skin is dry and clean around the lesion. • Ensure the bag flange is big enough to accommodate the lesion. • Cut the flange hole to fit snugly around the lesion. • Adjust the patient's position to ensure there are no skin folds in the area and apply the bag directly to the skin. • Warm the flange to the skin for two minutes with hand warmth and pressure to ensure it adheres completely. • Educate the patient on how to empty the bag and to monitor drainage amount.	• Bags in difficult-to-reach places can be hard for a patient to manage alone (such as on the back or under an abdominal fold). • If the bag lifts when they have no support, supply a replacement dressing that is absorbent enough until the bag can be replaced. • Warn them to monitor for leaks from the bag and to be proactive in changing the bag to prevent maceration and skin burn.

Other dressings

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Occlusive film dressings/ drapes	Tegaderm® Opsite®	• Polyurethane adhesive sheet • Semi-permeable to water vapour and oxygen. • Moisture vapour transmission rate varies from make to make. • Impermeable to liquid and bacterial infiltration	• Allows for monitoring of wound drainage. • Can combine to create island dressings. • Can reduce friction to susceptible skin (e.g. heels) • Best adhesive dressing to use for fragile skin.	• Apply by following individual dressing instructions. • The film will fold on itself, rendering it useless, if shortcuts are taken.	• Avoid with high draining or infected wounds. • Needs to be changed when saturated and not left in place when wet. • Remove carefully, especially from fragile skin.
Post-surgical dressings	e.g. Mepore® Primapore®, Leukomed®	• Adherent dressing with non-stick central island • Slight absorbency • Flexible tape allows for difficult areas to be dressed.	Allows for wound monitoring following surgery.	• Follow application instructions on packaging. • Do not stretch tape when applying the dressing – trust the glue.	• Absorbs very little exudate so replace when soiled. • Support skin when removing dressing, especially in the elderly with fragile skin.

Other dressings

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Charcoal-containing dressings	Actisorb Silver® Pharmapod Carbon Silver®	• Odour absorbent • Does not treat the cause. • May include silver, adding an anti-microbial element.	To mask wound odour	• When applying dressing ensure dressing edges are sealed to control odour. • Apply a secondary dressing.	Some charcoal products are inactivated by moisture.
Protease Modulating Matrix	Promogran® Promogran Prisma®	• A thin cellulose-like membrane that is fluid sensitive and is absorbed into the wound bed. • Promogran Prisma® also contains bactericidal silver.	• Can be used to help a stalled wound. • Use Promogran® on clean wounds. • Promogran Prisma can be applied to a chronic, colonised wound bed.	• Apply carefully directly onto a wound bed. • Change dressing depending on the amount of exudate produced. • Requires a secondary dressing and/or securing.	• Do not use long term, review after 2 weeks.
Emergency burn dressing	Burnshield®	• Helps decrease heat in a burn wound. • Uses a manufactured hydrogel to transfer heat from a burn. • Comes in sheets and dressings as well as gels and ointments.	All burn wounds	• Apply immediately to fresh burn wounds. • Best if used only for initial cooling, followed within 4-6 hours with management and a definitive dressing.	Confirm that the burn is cooling down, otherwise add further cooling agents.

Ointments

- Prevent contamination of pots of ointment – use a clean spatula to remove the ointment from the pot.
- Caution in wounds with high exudate as ointments add moisture.
- As the ointment action only lasts 8-12 hours, dressings need to be changed once or twice a day.

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Acriflavin	Pakmed Acriflavin Emulsion	• Topical antiseptic • Bacteriostatic and haemostatic properties	Can be applied after skin grafts.	Works well if changed often and used for a limited duration.	• Avoid prolonged use. • Ensure concentration is not stronger than 0.1%. • Schedule 7 in Australia and listed as a carcinogenic • Be alert for respiratory stridor as a sign of allergy.
Ichthammol and glycerine	G and I	• Anti- infective, strong, tar-smelling, black substance • Ichthammol paste or glycerine and ichthammol liquid • Few known side-effects	• Can be used for necrotic or infected cancer wounds • Liquid used to dab on Kaposi sarcoma and on scrotal abscesses.	Use sparingly on wounds.	• Odour can be unpleasant and can limit use. • Liquid limited to specialist units. • Can burn on application.
Chemical/ Enzymatic Debriders	Aserbine® Iruxol®	Paste aimed at assisting to loosen and soften debris adhered to a wound bed.	Helps remove debris or slough.	Apply to wound base.	• Avoid if known hypersensitivity. • Caution in porphyria, hepatic or renal impairment and pregnancy.
Silver sulfadiazine	Flamazine® Bactrazine® Silbocor®	Releases silver slowly – toxic to micro-organisms – broad spectrum antimicrobial, antifungal and antiviral activity.	Used in infected or burn wounds.	• Apply in thin layers. • Requires secondary dressing to secure ointment.	• Careful using on the face as it can cause staining. • Requires frequent dressing changes. • Toxic to fibroblasts so may delay epithelisation. • Be alert for sulphonamide allergy. • May cause transient leukopenia.

Ointments

- Prevent contamination of pots of ointment – use a clean spatula to remove the ointment from the pot.
- Caution in wounds with high exudate as ointments add moisture.
- As the ointment action only lasts 8-12 hours, dressings need to be changed once or twice a day.

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Medicinal honey	Melladerm® L-Mesitran®	• Topical antiseptic and anti-inflammatory • Osmosis causes autolytic debridement. • Available as hydrogel or ointment or as dressings in nets, alginates and hydrocolloids.	• Can help control wound odour. • Excellent for neuropathic or pressure sore wounds	• Apply according to instructions. • May require an absorbent secondary dressing for dissolving slough.	• Can cause pain if dry wound (dries it out further). • Avoid if patient allergic to honey or bee stings. • Can cause itching.

Surrounding skin protectors/ barrier products

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Acrylate terpolymer	Cavilon 3M®	• Acts as a barrier against irritation from body fluids. • Prevents skin damage associated with incontinence.	Use the cream to prevent incontinence associated dermatitis	• Clean the skin first and apply directly in a thin application. • If there is skin breakdown or a stoma bag or flange has to adhere to the skin, use the spray instead of the cream as it supplies a thin barrier that will allow adhesives to stick and seal.	• Do not apply to established fungal or bacterial rashes. • Useful to prevent incontinence associated dermatitis, however if the skin is damaged, consider urine diversion such as catheterisation to allow the skin to heal.
Zinc and castor oil	Zinc Oxide	Light but effective barrier cream for the prevention of moisture-associated skin damage	• Apply to any incontinent person requiring incontinent device like a pad or sanitary towel. • Can be applied several times a day.	Apply, in a thin layer to clean skin in moisture-retaining areas like buttock cleft, groin and abdominal folds.	• Do not apply to large areas or on blistered or broken skin. • Avoid contact with eyes and mucous membranes.
Petrolatum (petroleum jelly)	Vaseline®	• Purified softened petroleum jelly • Oil-based product	Can be used to help with dry skin.	Apply frequently in a thin layer.	• Clogs pores and can trap bacteria against the skin. • Do not use as a treatment for established rashes with fungal or bacterial components. • Do not use it on sunburn or burns.
Dimethicone	Cavilon® No-sting spray Cavilon® cream	• Silicon-based product • Occlusive agent with a dual action to keep moisture in and acids out. • It forms a physical layer that helps to prevent trans-epidermal water loss from the skin surface.	• Use the spray on raw, moisture-injured skin. • Use the cream on intact skin, exposed to moisture, like in a nappy, to prevent moisture damage.	• Ensure skin is clean before application. • Apply a thin layer on the area. • Let product dry before allowing the skin to touch in a fold. • Needs only be applied as little as once a day unless there is extreme fluid leakage onto the skin.	Do not apply to bacterial or fungal infected skin as it will trap the infection onto the skin.

Antimicrobials and antiseptics

- Antimicrobials reduce microorganism colonisation.
- Antiseptics are biocides that inhibit or kill micro-organisms in a wound. Have broad-spectrum antimicrobial activity

Product	Trade names	Characteristics	When to use it	How to use it	Caution
Topical anti-bacterials	Mupirocin (Bactroban®) specialist-restricted in public health facilities	Available as creams or ointments	Infected wounds	Will need a secondary dressing, e.g. tulle.	• Possible hypersensitivity reactions • Caution for large amounts with porphyria, hepatic or renal impairment, pregnancy • Overuse will decrease efficacy and lead to antimicrobial resistance.
Iodine-containing dressings	Inadine®	Antiseptic	• For contaminated and colonised wounds • Inadine can help dry out specific wounds e.g. necrotic digits	• Apply as a primary contact layer directly on the wound bed. • Add a secondary dressing to secure treatment and establish moisture balance. • Discontinue after 7 days.	• Check for allergy to iodine. • Can cause irritation and dryness. • Not suitable for chronic wounds.
Chlorhexidine containing dressing	Bactrigras® Kerlix® bandage or gauze	Antiseptics	Contaminated and colonised wounds	• Apply as directly on the wound bed. • Add a secondary dressing to secure treatment and establish moisture balance.	Antiseptics can lead to cell cytotoxicity if too strong or used too long.
Hydrophobic dressings	Cutimed sorbact®	• Mechanism of action is to trap and remove bacteria. • Available as gauze, post-operative dressings, absorbent sponge and ribbon form.	Useful in superficial and partial thickness burn wounds	• Secondary dressing may be needed. • If no improvement, change to a different treatment plan.	May adhere in dry wounds be cautious when removing
Silver -containing dressings	Flamazine® Bactrazine® Silbocor® Aquacel extra Ag® Prisma®	• Silver is toxic to micro-organisms and has broad spectrum antimicrobial, antifungal and antiviral activity. Works on resistant bacteria (e.g. MRSA). • In Ointments and dressing preparations silver is released slowly and in a sustained manner. • The silver either acts on release into the wound bed or kills the organisms in the dressing.	• Used in infected or burn wounds as well as fungating cancer wounds. • Effective in use with chronic wounds that have biofilm. • Some can be applied under negative pressure therapy dressings.	• Apply in thin layers directly to wound bed. • Requires secondary dressing to secure ointment. • Leave in place for up to 7 days depending on amount of exudate. • Use all silver only for active infection. Review if infection is not under control at 2 weeks and discontinue for healing wounds.	• Careful using on the face as it can cause staining. • Application can be painful. • Toxic to fibroblasts so may delay epithelisation. • Be alert for sulphonamide allergy. • May cause transient leukopenia.
Medicinal honey	Melladerm® L-Mesitran®	• Topical antiseptic, antimicrobial and anti-inflammatory action. • Osmosis causes autolytic debridement. • Available as hydro gel, ointment or as dressings in nets, alginates and hydrocolloids.	• Can help control wound odour. • Excellent for neuropathic or pressure sore wounds	• Apply according to instructions. • May require an absorbent secondary dressing for dissolving slough.	• Can cause pain if dry wound (dries it out further). • Avoid if the patient is allergic to honey or bee stings. • Can cause itching.

Wound documentation and forms

1. Wound assessment chart
2. Waterlow score chart for pressure injury
3. Wound management programme chart
4. Woundcare referral form
5. Consent for photography
6. Discharge advice sheet - Care of chronic wounds
7. Discharge advice sheet - Care of sutured wounds

For printing, access the following Wound care documentation and forms here:

https://westerncape-my.sharepoint.com/:f:/g/personal/rukmini_jacobs_westerncape_gov_za/EvirgNHqOcdPq5hzEnAnwmIBz53bJL4dYb9H4khq1BnmlA?e=Ep5EL3

1. Wound assessment chart

Western Cape Government
Health

Patient details: (place sticker here)

Client's name:_____DOB:_____

Folder no: _____

Address and tel no: _____

WOUND ASSESSMENT CHART

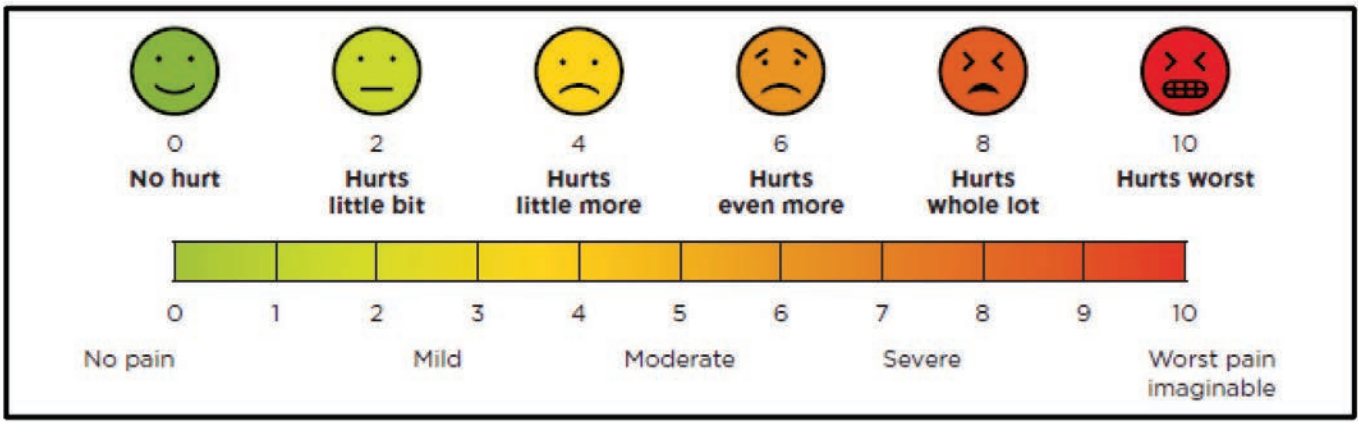
Anatomic location of wound/s: _____

Reference wound type: _____

DATE						
WOUND DIMENSIONS	**RULER BASED MEASUREMENTS**					
Max Length mm						
Max width mm						
Undermining__cm__o'clock						
Tunnelling___cm___o'clock						
WOUND BED	**TISSUE TYPE / COLOUR ESTIMATE IN % (=100%)**					
Necrotic (Black)						
Sloughy (Yellow)						
Granulating (Beefy Red)						
Epithelializing (Pink)						
Other (e.g. tendon/muscle/bone)						
EXUDATE LEVEL						
None/Low/ Moderate/High						
MOISTURE BALANCE						
Serous (Clear or Pale Yellow)						
Serosanguinous (Serous Blood Tinged)						
Sanguineous (Bloody)						
Purulent (Pus)						
ODOUR						
None/Some/Offensive						
SURROUNDING SKIN						
Intact/Healthy						
Blisters						
Erythema						
Eczema						
Other (e.g. Oedema, Indurated, Fragile)						

PAIN IN WOUND						
None						
Intermittent						
Continuous						
At Dressing Changes						
PAIN INTENSITY	**Use pain scale attached**					
1 2 3 4 5 6 7 8 9 10						
Infection (Yes / No)						
Wound Swab taken (Yes or No)						
Name & Signature						

PAIN SCALE



2. Waterlow score chart for pressure injury

Western Cape Government
Health

Patient details: (place sticker here)

Client's name:_____ DOB:_____

Folder no: _____

Address and tel no: _____

Referred from(name of health facility): **Date:** **Contact number:**

WATERLOW PRESSURE WOUND RISK SCORE CHART											
Day 1 – Day 8 & DATE (DAY/MONTH/YEAR)		**D0** Eg: 8/12/21	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D8**
		ALLOTTED SCORE	**PATIENT SCORE**							
GENDER	Male	1								
	Female	2								
AGE	14 – 49 years	1								
	50 - 64 years	2								
	65 - 74 years	3								
	75 - 80 years	4								
	81 + years	5								
BUILD	Average BMI 20 – 24.9	0								
	Above average BMI 25 – 29.9	1								
	Obese BMI > 30	2								
	Below average BMI < 20	3								
VISUAL ASSESSMENT OF AT RISK SKIN AREA (May select one or more options)	Healthy	0								
	Thin and fragile	1								
	Dry	1								
	Oedematous	1								
	Clammy (Temperature increased)	1								
	Previous pressure sore or scarring	2								
	Discoloured Grade 1	2								
	Broken Grade 2 - 4	3								
MOBILITY (Select one option ONLY)	Fully mobile	0								
	Restless/fidgety	1								
	Apathetic (depressed, sedated)	2								
	Restricted mobility (severe pain or disease)	3								
	Bedbound (↓consciousness, traction)	4								
	Chairbound/Wheelchair	5								
CONTINENCE (select one option ONLY)	Continent/catheterised	0								
	Occasional incontinence of urine	1								
	Incontinent of urine	2								
	Incontinent of faeces	2								
	Incontinent of urine and faeces	3								

TISSUE MALNUTRITION (select one or more options)	Terminal Cachexia	8								
	Multi Organ Failure	8								
	Single Organ Failure (Respiratory/Renal/Cardiac)	5								
	Peripheral Vascular Disease	5								
	Anaemia Hb < 8g/dl	2								
	Smoking	1								
Appetite (select one option)	Average	0								
	Poor	1								
	N.G Tube/Fluids only	2								
	NBM/anorexic	3								
Neurological Deficit depends on severity	Diabetes, CVA, MS, Motor/Sensory Paraplegia, epidural	4-6								
Major Surgery Trauma (up to 48 hours post surgery)	Above waist	2								
	Orthopaedic, below waist, spinal >	5								
	2 hours on theatre table	5								
	6 hours on theatre table	8								
MEDICATION	Cytotoxic high dose/long term steroids Anti-inflammatory	4								
TOTAL SCORE										

RISK	**RISK SCORE: 10+ AT RISK 15+ HIGH RISK 20+ VERY HIGH** **(Adapted from Waterlow Risk Score (Waterlow 2005))**									
PREVENTION PLANNED (tick if done)	Incontinence management									
	Barrier cream if nappy									
	2 -3 hourly mattress change									
	Avoid friction when moving									
	NOT rubbing at risk skin									
	Referral to OT and physiotherapy									
	Nutritional supplementation									
	Chair cushion									

Notes & Interprofessional team feedback:

_____

_____

_____

_____

_____

3. Wound management programme chart

Western Cape Government
Health

Patient details: (place sticker here)

Client's name: _____ DOB: _____

Folder no: _____

Address and tel no:

WOUND MANAGEMENT PROGRAMME

Date:						
Treatment Option Selected:						
Topical Rx (if yes, specify)						
Systemic Rx (if yes, specify)						
Debridement Method						
Autolytic/Enzymatic · Mechanical ▪ Surgical ▪Wet-to-dry ▪ Other						
Type of cleaning solution						
▪ Normal saline 0,9%						
▪ Acetic acid 1-5%						
▪ Iodine solution/ Chlorhexidine solution						
Treatment of surrounding skin						
▪ Barrier Cream ▪ Barrier Film ▪ Barrier Spray						
Type of primary dressing						
▪ Gauze (moist) ▪ Hydrocolloid ▪ Calcium Alginate ▪ Foam ▪ Other						
Method of securing dressing						
▪ Adhesive tapes ▪ Bandage ▪ Suture ▪ Glue						
Type of compression therapy						
▪ Compression Bandages ▪ Elastic Stockings ▪Other						
Frequency of dressing change						
▪ Daily ▪ 2X /day ▪ 3X /week ▪Other						
Other Interventions						
▪ NPWD ▪ Skin substitutes ▪ Other modalities / interventions						
Removal						
▪ Sutures ▪ Staples ▪ Steri Strips						
Education ▪Yes ▪No						
Nutritional consults ▪Yes ▪No						
Pressure redistribution device ▪Yes ▪No						
Name & Signature						
Ward/clinic						

Final date of discharge from Woundcare Clinic:

4. Woundcare referral form

Western Cape Government
Health

Patient details: (place sticker here)

Client's name:_____DOB:_____

Folder no: _____

Address and tel no: _____

REFERRAL FORM FOR WOUNDCARE

Referred from (name of health facility): **Contact number:**

Date:

CO-MORBIDITIES:

_____

_____

WOUND INFORMATION

Reason for referral; (e.g. for further management/further investigations etc.)

_____

_____

_____

Wound location:_____

Cause:_____

Barriers to healing:_____

_____

Wound description and management thus far: (or attach Wound assessment chart and management program sheets)

_____

_____

_____

_____

Results of investigations (e.g. pus swab etc):

_____

_____

_____

Medication:(or attach prescription copy) _____

_____

_____

Print name in full:_____**Signature:**_____

Designation: (Nurse/ Doctor/ OT/ Physio/ Other)_____

5. Consent for photography

Western Cape Government
Health

Patient details: (place sticker here)

Client's name:_____DOB:_____

Folder no: _____

Address and tel no: _____

CONSENT FOR PHOTOGRAPHY

I, _____ grant permission for photographs of my wounds to be used for the following purpose/s (tick YES or NO):

	YES	NO
In order to monitor the progress of the wound		
For further consultation with other healthcare providers including surgeon, dermatologist, physician		
For use anonymously in teaching to support scientific evidence		
For use anonymously in research		

.

Signed at: _____on this _____ day of _____ 20 _____

Patient name: _____ Signed: _____

Parent/Guardian name: _____ Signed:_____

Witness name: _____ Signed: _____

Western Cape Government
Health

Patient details: (place sticker here)

Client's name: DOB:

Folder no:

Address and tel no:

Discharge advice sheet

CARE OF CHRONIC WOUNDS

General:

- Please follow dressing instructions given to you.
- Keep dressings in place as instructed.
- Clean and change dressings as per instructions from staff.
- Keep follow up appointments.

Report to clinic if:

- Discharge / wound drainage changes in anyway – colour or amount.
- The wound smell changes.
- Redness or heat increase around the wound.
- Pain from the wound changes or increases.
- If you have any fever.
- If you are unable to manage the dressing changes.

When you change the dressing:

- Wash your hands with soap and water before starting the dressing procedure.
- Clean the wound as instructed.
- Apply only the treatment you have been given.
- Change the dressing as often as needed don't leave the dressing on the wound if too wet. (if you do not have extra dressings – return to your clinic)
- Throw dressings away in a closed plastic bag.

7. Discharge advice sheet - Care of sutured wounds

Western Cape Government
Health

Patient details: (place sticker here)

Client's name: DOB:

Folder no:

Address and tel no:

Discharge advice sheet

CARE OF SUTURED WOUNDS

You will be given a date sutures need to be removed as follows:

- Face – 5 days
- Scalp – 10 days
- Trunk and arms – 14 days
- Legs and joints – 14 days

Wound strips can be left in place until they fall off.

Wound clips need to be removed by medical staff at 10 days or as instructed.

General:

- Keep completely dry for 24 hours
- Keep dry and clean for at least 5 days
- Wash around the wound
- Protect the wound from dirt and dust
- Take medicine as prescribed by the Clinic

RETURN immediately or go to the nearest clinic if:

- Wound starts to pain or pain increases
- Redness or swelling occurs around the wound/ fever
- Wound breaks open
- Wound smells or leaks fluid.

Negative pressure wound therapy

Introduction

- Negative pressure wound therapy (NPWT) is a technique that uses suction to draw out excess exudate and promote wound healing.
- The benefits of using it are improved wound healing, moisture balance control, protection and stimulation of the wound bed and that it can act as a splint for skin grafts.
- It is suitable for the following wounds: open abdominal wounds, burns, pressure ulcers, non-healing lower leg ulcers, diabetic foot ulcers with adequate blood supply, skin flaps and skin grafts (on donor area and graft) and open fractures and other wounds caused by trauma.
- NPWT can also be used in the above wounds for infection control.
- It should not be used with wounds caused by arterial insufficiency, wounds with active bleeding from the wound site, wounds with massive underlying infection or underlying bone infection, wounds still requiring debridement, or cancer wounds that cannot be excised.

History of the wound

- Take a history of the wound and of the patient as on page 8: Initial assessment of the patient with a wound.
- Ask about mobility challenges, previous pressure wounds, incontinence.
- Ask about ideas and fears about NPWT.
- At review, ask about pain, device failure or disconnection or if any problems experienced.

Examination

- On initial assessment:
  - › Look for dead tissue that needs debridement.
  - › If a leg wound, check for arterial insufficiency. If the patient has muscle pain in legs or buttocks on exercise or reduced/absent foot pulses, arterial insufficiency is likely and NPWT should be avoided.
- At review, look for development or worsening of infection, spreading of redness and increased pain.

Management

- Ensure wound is adequately debrided before proceeding with NPWT.
- Commercially produced kits are sold with dressings. The dressing size determines the maximum wound size it can be used on. Follow manufacturer instructions for use
- If a commercially produced kit is not available, construct a vacuum assisted dressing. See box below.
- In open abdominal wounds, adjust the vacuum pressure to prevent protrusion of abdominal organs.

Advice

- Explain to the patient the process and benefits of NPWT.
- The dressing will remain on the wound for 2-4 days, depending on the level of infection and the efficacy of the dressing. Repeated applications may be necessary after this.
- The patient will have to remain in bed during the course of the treatment if a mobile unit is not available. It is preferable that the patient make use of a bed pan rather than getting up to go to the toilet.
- If the vacuum is disconnected it should not be for more than one hour at a time.
- The patient should inform the nursing staff if a leak is detected in the dressing.

Review

- Monitor that the seal is intact, and the amount and nature of fluid collected.
- If a leak occurs, patch it with a small film dressing. Consider replacing the dressing if the leak persists.
- If large volumes of fluid are collected (over 500ml per day), commence intravenous rehydration in addition to oral rehydration.
- Abandon NPWT if a good seal is not achieved after several attempts and no increase in wound granulation is observed within 7 days.
- Confirm that the treatment is still acceptable to the patient. Remove if the patient refuses further treatment.
- Discontinue NPWT if worsening of infection occurs. See page 63: Wound infections.

Referral

Refer to a surgical centre if the patient has signs of rapidly increasing soft issue infection or systemic infection.

How to construct a low-cost dressing for NPWT using a centralized vacuum

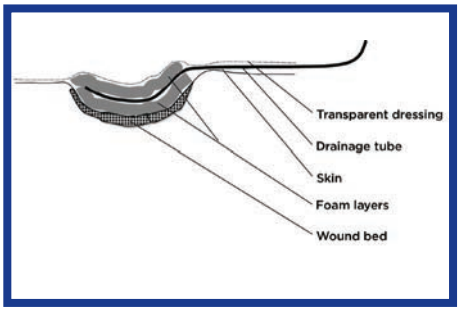
You will need the following equipment:

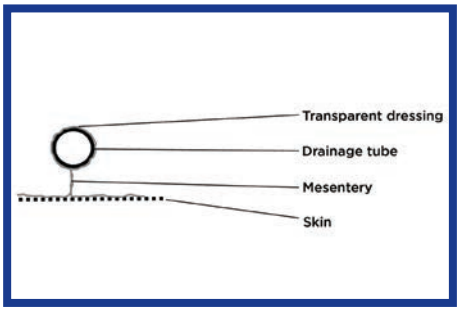
- Sterile gloves, a dressing pack and sterile scissors.
- A length of silicone tubing connected to the wall-mounted vacuum unit.
- A cone-shaped connector to connect the tubing to the drainage tube.
- A non-adherent synthetic dressing, foam or paraffin gauze
- A drainage tube with 5-10 openings at one end (12 fg/14 fg/16 fg nasogastric tubes are used frequently, additional holes can be cut)
- A thin dressing or foam layer to cover the drainage tube. Alternatively, a linear slit can be made in the foam that is placed on the wound bed, to embed the drainage tube.
- A transparent film dressing that is applied over the foam, with at least 3–5 cm overlap on the skin from the edge of the foam covering.

Method for constructing a low cost NPWT dressing:

1. Wash hands, apply sterile gloves, prepare sterile working area and maintain sterility throughout the procedure.
2. An assistant is needed unless you are well skilled and experienced.
3. Prepare the wound bed by removing all debris and dead tissue.
4. Apply the foam / primary dressing to the wound bed after cutting it to a shape that covers the wound bed.
5. Ask your assistant to keep it on the wound and to keep the following components of the dressing in place.
6. Place the drainage tube onto the foam, not on to the wound bed, and cover it with another layer of foam or the dressing selected for this purpose. If the initial layer of foam is thicker than 1 cm, a slit can be cut and the drainage tube placed in it instead of using another layer of foam.
7. Apply the transparent film dressing(s), starting 3–5 cm from the edge of the wound and covering the entire wound with a 3–5 cm overlap on the skin. Do not attempt this part without the help of an assistant to avoid folding the film onto itself.
8. Ensure that the drainage tube is well sealed off where it traverses the skin by folding the transparent film around the tube so that it sticks on itself under the drainage tube where it crosses the skin en route to the suction unit or wall unit. It should form a mesentery.
9. Connect the drainage tube to a chest drain set and a wall-mounted vacuum to facilitate easy measurement of the drainage fluid and to maintain the vacuum when the patient needs to be disconnected from the wall-mounted vacuum.

See figures 1 and 2 and photograph below.





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Useful resources

Wound Healing Association of Southern Africa
https://www.whasa.org

Wounds Canada Institute for Wound Management
https://www.woundscanada.ca

Society for Diabetes Endocrinology, Metabolism, and Diabetes South Africa. Management of diabetic foot ulcers.
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