



— B E L M A T T —
HEALTHCARE TRAINING

Tissue Viability

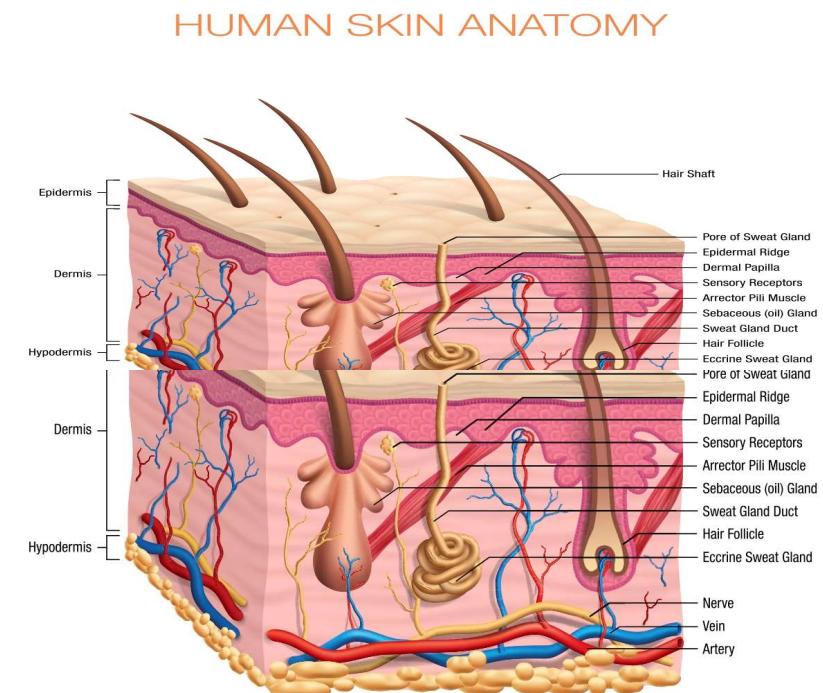
Learning Outcomes

This course will develop your skills in tissue viability by:

- Understanding the anatomy of the skin
- Understanding how wounds heal and the healing process
- Wound classification and assessment and how to grade wounds
- Consider different choices of dressing available.
- Overview of pressure ulcers
- Acknowledging the importance of interdisciplinary working/ referral in all aspects of the wound management process.
- Documentation in the patient's notes to facilitate communication and continuity of care between interdisciplinary team members.
- Implementing wound management practices based on local standards and guidelines.

Skin: structure and function

- Largest organ of the body
- Primary function is protective
- Composed of several layers
 - Outer Epidermis and Stratum Corneum
 - Dermis, containing the capillary network
 - Subcutaneous layer (hypodermis, adipose layer)



Classifying wounds

Wounds may be classified according to the number of skin layers involved:

1. Superficial

- Involves only the epidermis

2. Partial Thickness

- Involves the epidermis and the dermis

3. Full Thickness

- Involves the epidermis, dermis, fat, fascia and exposes bone



Classification of Healing

Three basic classifications exist:

1. Healing by primary intention

- Two opposed surfaces of a clean, incised wound
- (no significant degree of tissue loss) are held together.
- Healing takes place from the internal layers outwards

2. Healing by secondary Intention

- If there is significant tissue loss in the formation of the wound, healing will begin by the production of granulation tissue wound base and walls.

3. Delayed primary healing

- If there is high infection risk – patient is given antibiotics and closure is delayed for a few days e.g. bites

Wound Healing

All wounds heal following a specific sequence of phases which may overlap

The process of wound healing depends on the type of tissue which has been damaged and the nature of tissue disruption

The phases are:

Phase 1: Inflammatory phase

Phase 2: Proliferative phase

Phase 3: Remodelling or maturation phase

Factors Affecting Healing

Immune status

Blood glucose levels (impaired white cell function)

Hydration (slows metabolism)

Nutrition

Blood albumin levels ('building blocks' for repair, colloid osmotic pressure - oedema)

Oxygen and vascular supply

Pain (causes vasoconstriction)

Corticosteroids (depress immune function)

Patient Assessment should include:

- Past and current medical history (including a review of blood tests)
- Current and past drug therapies that may impact on healing.
- Identification of factors which have the potential to delay healing; This may include malnutrition, certain co-morbidities such as diabetes, immobility, frailty, smoking, pressure, lifestyle factors, concordance with treatment, pain and anatomical location of wound.
- Quality of life/ impact of wound on patient's life and wellbeing.

Wound Classification

Wounds can be broadly classified as acute or chronic.

- ***Acute wounds***

Usually heal in an ordered, timely fashion, and are typically seen as post-operative wounds, minor lacerations, abrasions, minor burns and scalds and some trauma wounds.

- **Chronic wounds**

Do not follow this ordered sequence of events and are commonly characterised by delayed healing and recurrent infections (Schultz et al. 2003).

Wound bed assessment based on TIMES acronym – to include:

Tissue – percentages of:	<ul style="list-style-type: none">• Necrosis• Slough• Granulation• Epithelialisation• Hypergranulation
Infection	<ul style="list-style-type: none">• Local (Wound bed only – treat the wound topically)• Systemic (Swab to be taken if patient presenting with a systemic infection or a deteriorating condition. In these cases, oral antibiotics may be advised).• Odour
Moisture (exudate)	<ul style="list-style-type: none">• Volume (Low, Moderate, High)• Type/ consistency (serous, haemoserous, purulent)
Edge	<ul style="list-style-type: none">• Rolled, fragile, hypergranulated
Surrounding skin	<ul style="list-style-type: none">• Excoriated, macerated, oedematous.

Clean Wound Cleansing

- In most cases a clean wound management technique i.e. Irrigation with tap water or showering of wounds should be implemented.
- For patients with chronic wounds such as venous leg ulcers, immersion of the limb in a bucket (lined with disposable plastic bag if using this within a treatment room or a preference of the patient with their own home) and filled with tap water or showering is acceptable.
- The bowl/ bucket should be thoroughly cleaned afterwards using green Clinell wipes and allowed to dry afterwards.
- **Wounds** should not be cleansed with products that potentially leave fibres in the wound e.g. cotton wool or cotton wool containing products
- Cleansing should be achieved by using a gentle sweeping motion over the wound bed. Rubbing the wound should be avoided.

Sterile Wound Cleansing

Sterile wound cleansing should be used when:

1. The individual is immuno-compromised.
2. The wound enters a sterile body cavity (i.e. nephrostomy or central venous line)
3. In these cases, Irrigation with single use sachets or pods of normal saline stored at room temperature is the method of choice.

Wound Care Technique (1)

Wash and dry hands	Apply non – sterile gloves
Open	Dressing pack
Apply	Plastic apron
Remove	Bandages/ old dressings and place in plastic waste bag
Assess	Wound status
Dispose	Of soiled gloves, apply hand gel.
Open	The dressings/ bandages required onto the sterile field avoiding contact with the dressings. Non- sterile secondary dressings such as absorbent pads should be placed to one side.
Open	Sterile scissors and probes (if applicable) on to sterile field
Apply and Cleanse	Non - sterile gloves and cleanse wound if using the dressing pack tray, add tap water and place tray next to sterile field.

Wound Care Technique (2)

Apply	Emollient to skin (If applicable) If using a tub (not a pump action) this should be decanted from the pot using a spatula or clean glove. Do not dip contaminated hands back in to the pot.
Remove	Gloves, dispose of in waste bag and apply hand gel
Apply	Sterile gloves from sterile field
Pick up and apply	Dressings to the wound, using sterile scissors to cut to size if applicable.
Apply	Secondary dressings and bandages if applicable.
Remove	Gloves and apron and place in waste bag.
Ensure	Bag is well sealed or double bagged before being disposed of in general waste bin.
Wash	Wash hands.

Wound Debridement

- ***Sharp debridement*** (e.g., Using a scalpel) should not be attempted unless the clinician holds a certificate in this skill.
- ***Debridement*** of necrotic heels should not be attempted until the patient's arterial status to the foot has been established. This should be determined by undertaking a lower limb assessment and using a handheld Doppler device.
- In all wounds, if debridement is indicated, first line use of dressings such as a hydrogel sheet, an alginate, a gelling fibre dressing or a hydrocolloid should be used to assist the process. An antimicrobial dressing should not be used unless wound has been assessed as infected.

Pressure Sore

Pressure sores occur when there is too much pressure on the skin for too long. This reduces blood flow to the area. Without enough blood, the skin can die, and a sore may form.

The patient's health status must be recorded and supported by use of the relevant assessment tools (e.g., Care pathways, MUST and Maelor, Waterlow).

Wound Assessment

To ensure optimum wound management and patient comfort is achieved, a holistic wound assessment must include:

- **Detailed Visual Examination:** e.g., for signs of venous or arterial disease, skin damage from localised pressure.
- **Aetiology (type):** e.g., ulceration, diabetic foot ulcer, pressure ulcer, moisture lesions, Fungating, burn, laceration, post-surgical.
- **Location:** Including number of wounds.
- **Size:** Including length, width, depth, position/extent of sinuses, undermining of surrounding skin.
- In line with best practice a photographic record and wound tracing must be undertaken.
- **Exudate:** Including type, colour, approximate amount/extent of strike through on current wound management product, odour.

Wound Assessment

Wound Bed:

Healthy granulation tissue, epithelialisation, slough, brown/black eschar.

Wound Margins:

Increasing, decreasing, static, colour, rolled, induration, erythema.

Surrounding Skin:

Dry, eczematous, fragile, maceration, oedema, colour, erythema.

Signs of Infection:

Suspected, confirmed and details of any swab results.

Pain:

Wound related, at dressing or post dressing change. That is Neuropathic or Nociceptive and/or a combination of both.

Factors Affecting wound Healing

Age:

The skin's resistance to injury reduces with the ageing process and cell replication is slower. This increases susceptibility to pressure ulcer formation.

Immobility:

Individuals who are chair fast or bed fast are at an increased risk of pressure ulcer development. The patient's ability to reposition him/herself affects risk. Mobility may be restricted by a patient's conscious level, medication, acute illness, severe chronic or terminal illness, weight and pain.

Skin/Tissue Condition:

This is adversely affected by age, dehydration, oedema and moisture. Other factors include malnutrition and hypoxia. Poor Circulation: delayed healing and tissue breakdown is frequently associated with poor circulation, and this may be due to local pressure, vascular disease or diabetes mellitus

Immune Response:

e.g. Allergies to topical applications can delay healing.

Obesity:

Adipose tissue has poor vascularity. These patients are at a high risk of postoperative wound problems.

Medication:

Anti-Inflammatory drugs (can suppress the preliminary inflammatory response), topical or systemic corticosteroids (can repress the immune system and decrease the multiplication of fibroblasts).

Wound Cleansing

The Aim of wound cleansing is:

- To remove gross contamination with minimal pain and tissue trauma.
- NICE guidelines for the prevention and treatment of surgical site infection state that sterile saline should be used for wound cleansing up to 48 hours after surgery, after which tap water should be used (NICE 2008).
- Tap water is therefore mostly used in the community for cleansing wounds. It is easily accessible, efficient and cost effective.
- Where tap water is of high quality (drinkable) it is as good as other methods such as sterile water or saline and more cost-effective. (Fernandez & Griffiths 2008). The fluid should be close to body temperature.
- The use of liners in bowls or buckets reduces the risk of cross infection.

Wounds should *only* be cleansed to:

- Remove excess exudate
- Remove slough and / or necrotic tissue
- Remove remnants of previous dressing products Facilitate accurate assessment of the wound Promote patient comfort

Debridement

- Dead tissue in the form of slough and necrosis can, if present in a wound, delay healing and promote infection. Debridement describes any method by which such materials are removed and consequently the potential to achieve wound healing enhanced.
- Monofilament debridement product is a convenient and easy to use product that is well tolerated by patients and is effective for sloughy wounds and hyperkeratotic skin around acute or chronic wounds (NICE 2014).
- Debridement can also be achieved either using wound care products (including Larvae) or by conservative sharp debridement.
- If conservative sharp debridement is necessary referral must be made to the relevant professional (Haycocks & Chadwick 2008).
- The TVN or Podiatrist carrying out sharp debridement will have completed a validated educational programme in the subject.

Dressing selection should include the following characteristics:

1. Maintenance of a moist environment (where appropriate)
2. Controlled exudate management
3. Allow gaseous exchange
4. Provide thermal insulation
5. Non – adherent to wound bed
6. Be non – allergic and non – sensitising
7. Impermeable to micro – organisms
8. Comfortable and conforming
9. Acceptable to the patient
10. Cost effective

Single Use

- A device (dressing products, bandages, scissors, forceps etc.) designated for 'single use' must not, under any circumstances be re – used.
- It should only be used on an individual patient during a single procedure and then discarded.
- It is not intended to be reprocessed and used again, even on the same patient.
- The symbol below is used on medical device packaging indicating 'do not re – use' and may replace any wording (MHRA 2006).



Causes of Pressure Ulcers

Pressure damage in adults from prolonged immobility often occur in the following areas:

1. Sacrum, heels, femoral trochanter and buttocks but damage can also occur elsewhere e.g., spine, ears or elbows.

2. Medical Device Related Pressure Ulcer:

This is a pressure ulcer that has developed due to the presence of a medical device (NHS Development 2018).

3. Moisture-associated Skin Damage:

Inflammation and erosion of the skin caused by prolonged exposure to various sources of moisture, including urine or stool, perspiration, wound exudates, mucus or saliva.

4. Pressure and Moisture-associated Skin Damage:

This is a combination of the above and should be reported based on the category of pressure damage Shear – shearing forces occur when deeper tissues near the bone slide, while the skin remains at its point of contact with the supporting surface (Waterlow 2005). This most commonly occurs when any part of the supported body is on a gradient.

5. Bed positioning and body shape and size influence focal shear forces.

Pressure Ulcer Management

- Equipment selection, positioning/repositioning, wound treatment plan, nutritional treatment plan, pain management plan and education and advice for patients and carer(s).
- Patients with identified risk factors may require referral to other members of the multidisciplinary team where appropriate i.e. Tissue Viability, Dietician, Physiotherapy, Wheelchair Services and Continence.
- Patient education is an important piece of pressure ulcer prevention and management. The patient, family and care givers are paramount in the prevention, management and treatment of pressure ulcers.

Equipment and Positioning

***Pressure redistribution** is the main approach used in the prevention of pressure ulcers.

The **overall aim** is to reduce the magnitude and duration of any pressure exposure.

The effects of pressure and shear can be minimised by:

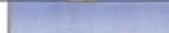
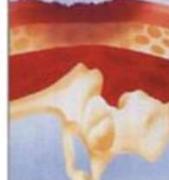
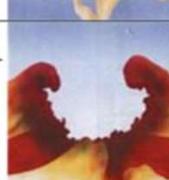
- Correct positioning of the patient e.g., use of a profiling bed
- Protection of high-risk areas e.g., offloading pressure from heels
- Using appropriate moving and handling techniques and equipment
- The use of the 30-degree tilt to position patients in such a way to minimise the impact on bony prominences can also reduce the risk of pressure damage.
- The frequency of timing and positional change will be determined by the individual's tissue tolerance, vulnerable areas, level of mobility, general medical condition and overall treatment objectives. The frequency of repositioning must be included in the patients care plan and repositioning chart.

Pressure Ulcer Reporting

Document and report all pressure ulcers category 2 and above, pressure ulcers identified on admission to the service/ ward and moisture associated skin damage as an incident using the trust clinical incident reporting system (NHS Development 2018).

Where skin damage is caused by a combination of moisture associated skin damage and pressure, it will be reported based on the category of pressure damage (NHS Development 2018).

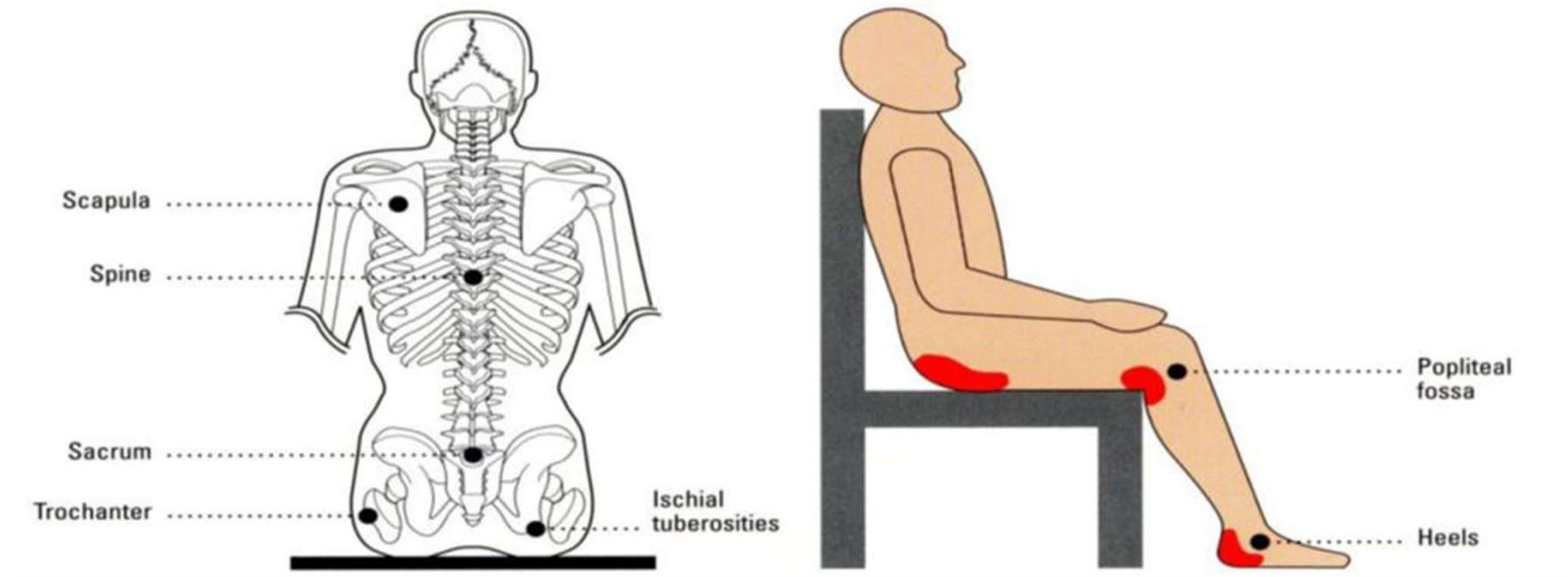
The following EPUAP Pressure Ulcer Classification System

Category (Grade) 1: Non-blanchable erythema Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its colour may differ from the surrounding area. The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue.	 	 
Category (Grade) 2: Partial thickness skin loss Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured blister. This category should not be used to describe skin tears, tape burns, and incontinence associated dermatitis, maceration or excoriation.	 	 
Category (Grade) 3: Full thickness skin loss Full thickness skin loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunnelling. The depth of a Category (Grade) 3 pressure ulcer varies by anatomical location and can be shallow or deep. Bone/tendon is not visible or directly palpable.	 	 
Category (Grade) 4: Full thickness tissue loss Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present. Often includes undermining and tunnelling. The depth of a Category (Grade) 4 pressure ulcer varies by anatomical location and can be shallow or deep; ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis likely to occur. Exposed bone/muscle is visible or directly palpable.	 	 
Ungradable: Full thickness skin or tissue loss – depth unknown Full thickness tissue loss in which actual depth of the ulcer is completely obscured by slough or necrosis in the wound bed. The true depth cannot be determined; but it will be either Category (Grade) 3 or 4	 	 
Suspected Deep Tissue Injury – depth unknown Purple or maroon localized area of discoloured intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. Deep tissue injury may be difficult to detect in individuals with dark skin tones. These should be regarded as Category (Grade) 3 or 4	 	 

Adapted from NPUAP/EPUAP Guide to pressure ulcer grading: www.epuap.org

MAELOR Score Pressure Ulcer Risk Assessment

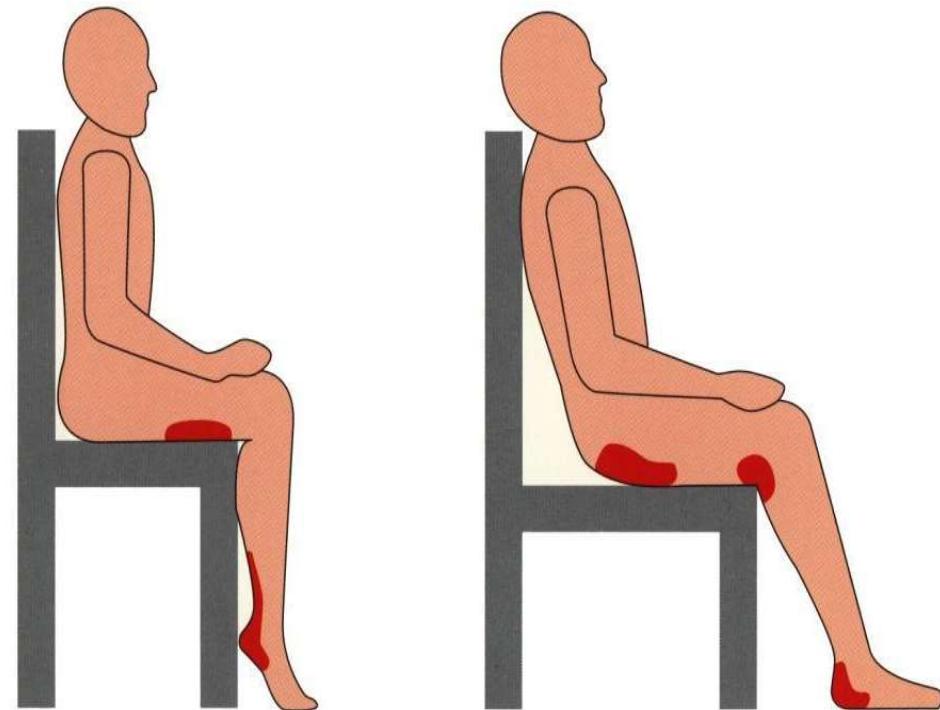
RISK ASSESSMENT Assign one value to each category	Date	ASSESSMENTS									
		1	2	3	4	5	6	7	8	9	10
Ambulation											
Ambulant without assistance	0										
Ambulant with assistance	2										
Chairfast (longer than 12 hours)	4										
Bedfast (longer than 12 hours)	6										
Mobility – Range of Body Movements											
Full active range of movements	0										
Requires assistance from one carer to move	2										
Requires assistance from two or more carers to move	4										
Immobile due to pain or other condition	6										
Skin condition in Pressure Areas											
Healthy	0										
Rash and/or dehydrated	2										
Advanced age (60+) and/or papery skin	4										
Oedema and/or redness (blanches with pressure)	6										
Pressure ulcer present (note grade below)	6										
Predisposing Disease											
None	0										
Chronic stable	2										
Acute or chronic unstable (critical)	4										
Palliative care	6										
Levels of Consciousness (to commands)											
Alert	0										
Lethargic/Confused	1										
Semi-comatose (responds to stimuli)	2										
Comatose (absence of response to stimuli)	3										
Nutritional Status											
Maintains weight, eating/drinking all meals	0										
TPN/NGF/oral sip feeds/NBM (short term)	1										
Eats/drinks very little/losing weight	2										
Unable/refuses to eat/emaciated/critically ill	3										
Incontinence - Bladder											
Total control/catheterized	0										
Occasional (less than 2 per 24 hours)	1										
Usual (more than 2 per 24 hours)	2										
Total (no control)	3										
Incontinence - Bowel											
Total control/stoma	0										
Occasional (less than 2 per 24 hours)	1										
Usual (more than 2 per 24 hours)	2										
Total (no control)	3										
Pain (patient's report)											
None	0										
Mild	1										
Moderate	2										
Severe	3										
SEE OVERLEAF: FOR PRESSURE ULCER GRADING SYSTEM AND GUIDELINES FOR COMPLETION		TOTAL									
Adapted from Medley Re: North East Wales NHST		Initials									
		Grade of ulcer									



Pressure Risk Areas

The “at risk” areas are:

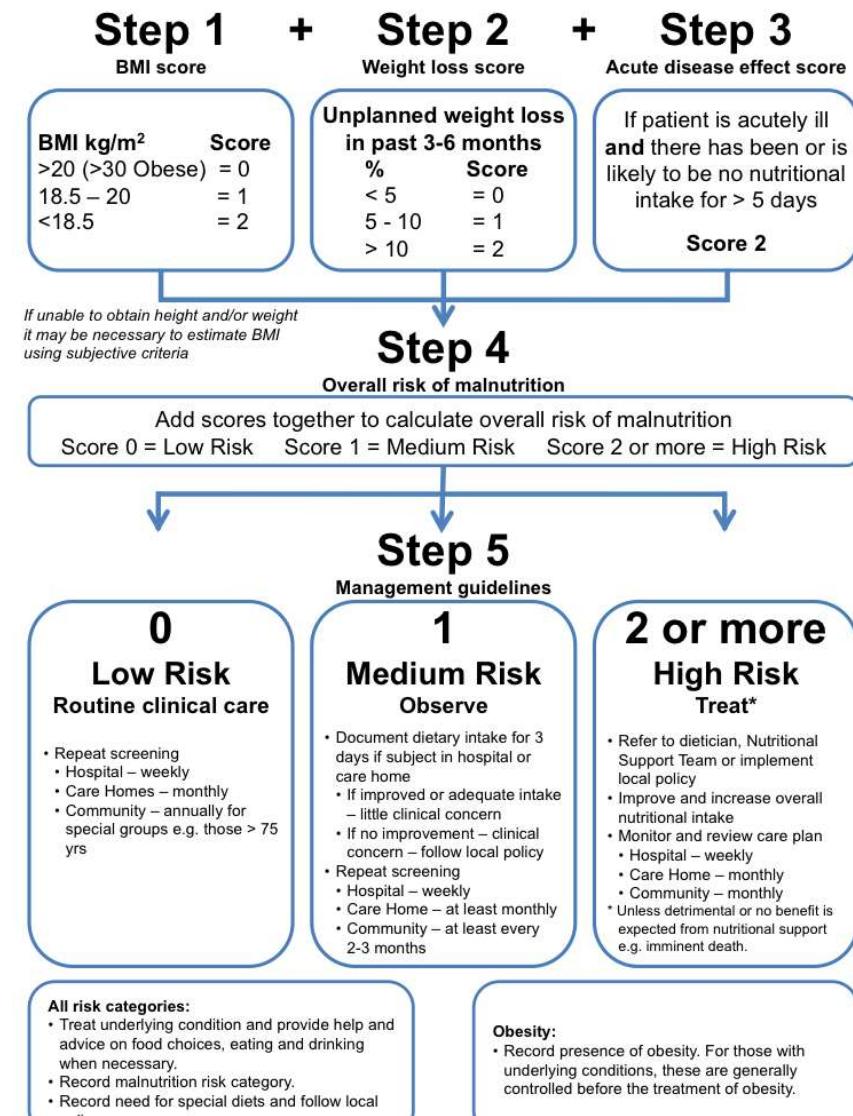
- ❖ Ischial tuberosities
- ❖ Sacrum
- ❖ Trochanter
- ❖ Popliteal Fossa
- ❖ Scapula
- ❖ Heels



From Seating and Pressure Ulcer: Clinical Practice Guideline (Tissue Viability Society 2009)

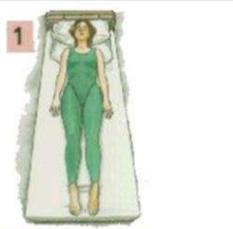
MUST

Assessment Tool



Re-assess subjects identified at risk as they move through the care setting or if their clinical condition changes significantly.

Positioning of Patients

Semi-recumbent position			
	The patient's lower back should be positioned as far into the pillows as possible, to support the lumbar spine. Plump or fold the lower pillow if necessary		The legs are supported as in diagram 3 and 4 of the recumbent position. Ensure the heels are clear of the mattress and the feet are correctly positioned.
	An additional pillow is placed underneath the others. The corner is carefully positioned under the buttock to 'tilt' the body and give clearance to the ischial tuberosities and sacrum		The full semi-recumbent 30° 'tilt' position
Recumbent position			
	Lie the patient in the centre of the bed. Use one or two pillows to support the head and neck.		Support the full leg by placing it centrally on another pillow. Ensure that the heel overhangs the edge of the pillow.
	Use a further pillow to support the lumbar region and shoulder. This 'tilts' the patient onto one buttock and lifts the sacrum clear of the mattress. Use your hand to check this clearance.		An additional pillow gives further comfort to any unsupported areas of the other leg.
	The full recumbent 30° 'tilt' position.		It may be necessary to use an extra pillow to prevent 'foot drop'.

Equipment / Positioning

The effects of pressure and shear can be minimised by:

- Protection of high-risk areas e.g., offloading pressure from heels.
- Using appropriate moving and handling techniques and equipment.
- The use of the 30-degree tilt to position patients in such a way to minimise the impact on bony prominences can also reduce the risk of pressure damage.
- The frequency of timing and positional change will be determined by the individual's tissue tolerance, vulnerable areas, level of mobility, general medical condition and overall treatment objectives. The frequency of repositioning must be included in the patients care plan and repositioning chart.
- It is the responsibility of the health care professional to provide the most appropriate support surface to meet the individual patient needs for pressure redistribution, microclimate control and comfort (EPUAP 2009).

Pressure Ulcer Prevention

- The involvement of the patient and/or carer in the prevention of pressure ulcers is vital.
- Explanation should be given about pressure ulcer risk factors, their implications and strategies for their prevention.
- The patient and/or carer's experience in successfully preventing pressure ulcers should be considered when planning care. Patient information should be verbal, supported by written information as appropriate.
- The patient/carer should be involved in the long-term care planning which may involve other members of the Community Health Care Team.

Prevention of Pressure Ulcers

**There are three
principles of action to
prevent pressure ulcers:**

Redistribution
of Pressure

Preventing
damage to
the skin

Improving
tissue
resistance

Pressure sores are grouped by the severity of symptoms.

Stage I is the mildest stage.

Stage IV is the worst.

Stage I

A reddened, painful area on the skin that does not turn white when pressed. This is a sign that a pressure ulcer may be forming. The skin may be warm or cool, firm or soft.

Stage II

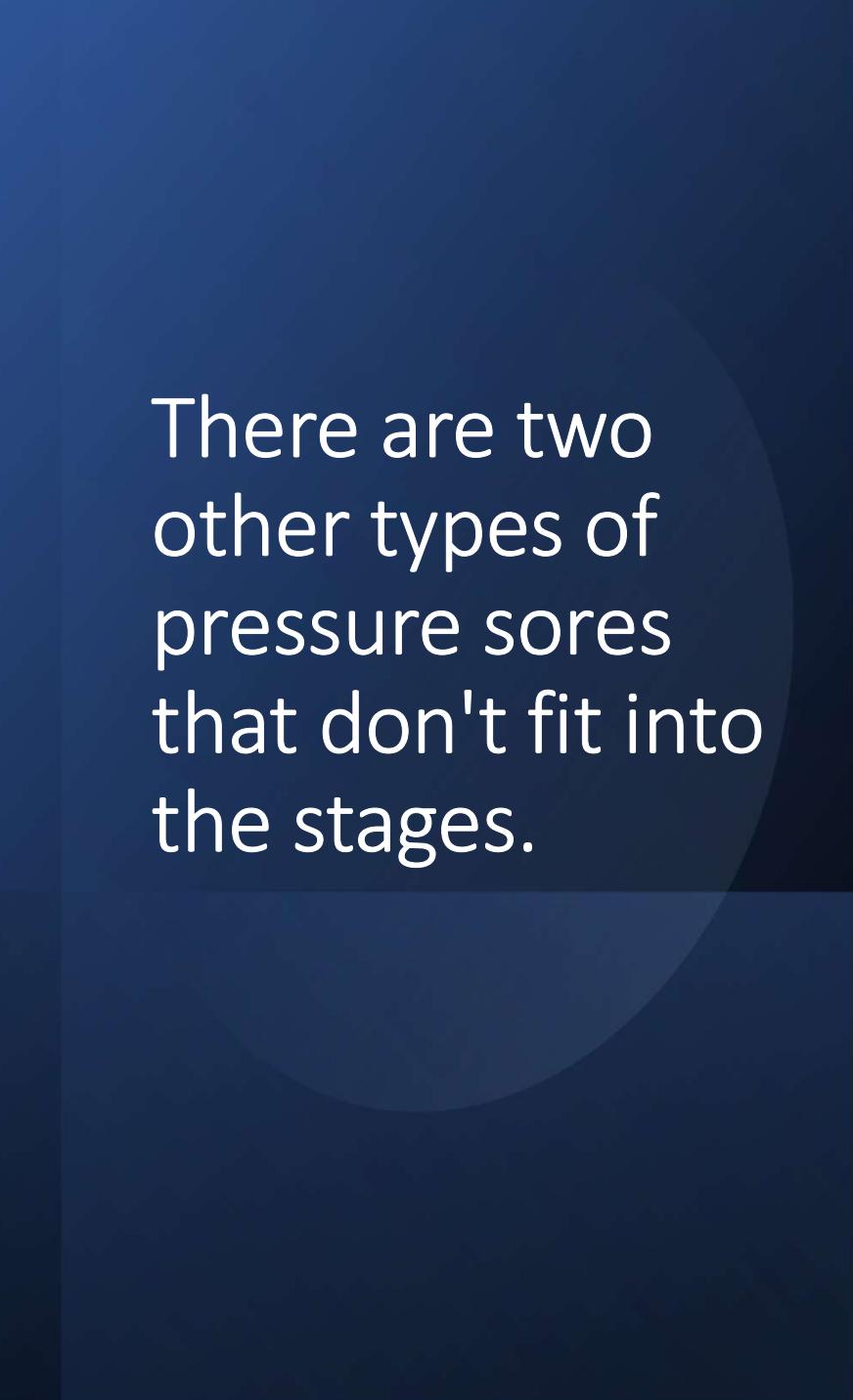
The skin blisters or forms an open sore. The area around the sore may be red and irritated.

Stage III

The skin now develops an open, sunken hole called a crater. The tissue below the skin is damaged. You may be able to see body fat in the crater.

Stage IV

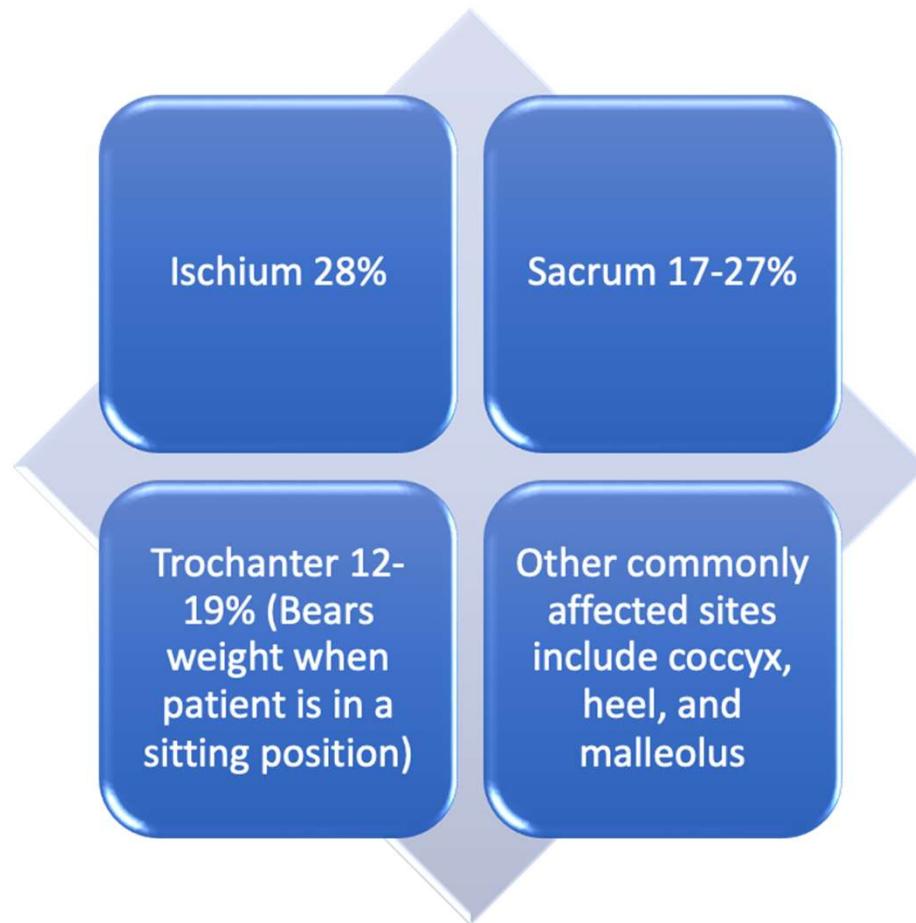
The pressure ulcer has become so deep that there is damage to the muscle and bone, and sometimes to tendons and joints.



There are two other types of pressure sores that don't fit into the stages.

- Sores covered in dead skin that is yellow, tan, green, or brown.
- The dead skin makes it hard to tell how deep the sore is. This type of sore is "**unstageable**."
- Pressure sores that develop in the tissue deep below the skin. This is called a **deep tissue injury**.
- The area may be dark purple or maroon. There may be a blood-filled blister under the skin.
- This type of skin injury can quickly become a stage III or IV pressure sore.

Most common pressure ulcer sites



Treatment

- Proper medical care
- Turn patient every 2 hours
- Frequent dressing changes
- Proper nutrition- High protein diet indicated as a high amount of protein is lost through the wound
- Pressure relief in wheelchair, specialty support surfaces
- Continued wound assessment

Support surfaces

Include overlays (water, gel , foam, air)

Specialty beds

- Low air loss beds (**Flexicare**) have cushions filled with air that keep pressures below the capillary closing pressures.
- Air fluidized beds (**Clinitron**) use warm air forced through silicone beads to mimic a fluid medium.

Which support surface is best?

- No study has shown conclusively that one surface performs better than the others!
- Must individualize your approach
- If a patient has a Stage III or IV ulcer, the patient should be utilizing a pressure relief product. Consult with your tissue viability nurse.

Wound Infection

- **Presentation:**

Foul odour, greenish drainage, dull white base (versus red granulation tissue). Can have cellulitis, with erythema, warmth, swelling, tenderness.

- **Systemic bacteremia:**

Chills, anorexia, nausea/vomiting, fever, increased white count, mental status changes, glucose intolerance in diabetics.

- Signs of bacteremia/cellulitis-this may require iv antibiotics

Wound Cultures

Should not be routinely performed, as the cultures will always be positive

Exception- If antiseptic such as Betadine is used prior to local debridement, and an abcess or other sequestered collection is exposed

Occasionally, cultures are taken for burn wounds

When are topical antibiotics indicated for pressure ulcers?

*If a pressure ulcer does not heal after 2-4 weeks of optimal treatment, can try silver sulfadiazine or triple antibiotic ointment x 2-3 weeks

Osteomyelitis

- Must keep in mind , especially with a Stage IV pressure ulcer or if ulcer over a bony prominence
- 25% of nonhealing ulcers have bone infection
- Gold standard- Bone biopsy
- Imaging- XRay, MRI

Best treatment for a pressure ulcer?

NO ONE RIGHT ANSWER!

Keep in mind:

1. PREVENTION
2. Must correct the underlying problem
3. Wounds must be cleaned/ dead tissue removed before healing can occur
4. Keep wound moist- Permits cells to perform migration/mitosis

Documentation

- It is a legal requirement that all interventions are fully documented in the patient's treatment record.
- The organisations Wound Management electronic patient clinical system should be used to record all information.
- All staff must ensure that rationale is fully recorded for any interventions thought to be clinically inappropriate e.g., full skin inspection/photograph and mapping and MUST assessment.

Wound Management

- On-going evaluation of wound healing should be performed through continuous monitoring and formal re-assessment to ensure that the treatment objective/s are being met.
- Evaluation and re-assessments should be documented in the patients notes.
- Patients whose wounds failing to progress as expected (i.e. 40% reduction of wound surface area at 6 weeks) should be referred immediately to Tissue Viability using the Tissue

Wound Dressings

The choice of dressing should be influenced by:

- Wound type
- Wound size and depth
- Tissue type
- Amount of exudate
- Location of the wound
- Skin condition of the patient
- Presence/absence of infection
- Characteristics of dressings available (size, wear time, showerproof etc)
- Treatment goals
- Cost effectiveness
- Patients' acceptance/tolerance of the dressing.

Clinical appearance

Describes the type of material present

In the base of the wound:

- Slough (yellow)
- Necrotic tissue (black)
- Infected tissue (green)
- Granulating tissue (red)
- Epithelialising (pink)



Sloughy wound

Aim: To liquefy slough and aid its removal

- Dead cells accumulated in exudate
- Prepare wound bed for granulation
- Assess wound depth and exudate levels
- Hydrogels, hydrocolloids, alginates and hydro fibre dressings

Sloughy, Yellow Wounds

- The wound is covered or partially covered in soft, moist, dead tissue, mainly yellow in colour but possibly ranging from white through to dark grey or brown. This tissue is composed of dead cells accumulated in exudate and should be removed to reduce the risk of infection.
- The exudate levels must be accurately assessed before choosing the most suitable product.

Aim of management:

- To de-slough, prevent infection.
- Dressings: after determining the exudate levels, hydrogel or hydrocolloid dressings to encourage autolysis should be used.

Dressings for Sloughy wounds

- The wound must be monitored for signs of infection and managed with dressings containing honey (eg Activon) or silver (eg Aquacel AG, Acticoat), and a decision made as to whether systemic antibiotics are required if there is a host response to the wound infection.
- Alternative methods may include larval therapy (biological debridement), in which sterilised maggots (available on prescription) work quickly and selectively to digest necrotic material by secreting bactericidal enzymes. Larval therapy has been demonstrated to be effective against methicillin-resistant *Staphylococcus aureus* and beta-haemolytic streptococcus. Although larval therapy has been widely practised throughout the UK for almost 20 years, it does make many feel squeamish.
- Debrisoft, as endorsed by the National Institute for Health and Clinical Excellence (NICE), is a more recent innovation. It is a pad made of soft, polyester fibres secured and knitted together and cut at a special angle, length and thickness to effectively cleanse and debride skin and the wound bed. The product is quick and simple to use and is effective on acute wounds such as gravel rash and for mechanically removing slough from chronic wounds prior to assessment. The European Wound Management Association has published useful guidance on debridement.

Necrotic wounds

- The tissue in the wound is dead and presents as dry, leathery material from the destruction of cells and blood vessels, which may completely cover the wound and make assessment impossible.
- **Aim of management:** To rehydrate the tissue, stimulate autolysis and prevent infection.
- **Dressings:** the most commonly used is the amorphous or hydrogel dressing together with a semi-permeable secondary dressing, which is designed to release moisture to soften and ‘dissolve’ dead tissue. Alternatively, hydrocolloid dressings are also designed to create a warm, clean, moist environment in which autolysis will occur, and protect the wound.
- **Autolysis** relies on the inherent ability of the body through its enzymes, immune system and moisture to liquefy and eliminate necrotic and sloughy tissue. It is painless and only necrotic tissue or slough is liquefied when appropriate dressings are used; however, it can take a long time and may cause maceration of the wound and wound edges. Alternatively, the wound may be debrided surgically by a suitably qualified clinician, if this can be tolerated.

Infected wound

Aims:

Reduce exudate, odour and promote healing.

- Clinical signs of infection
- Swab wound – systemic antibiotics
- Treat symptomatically: exudate and odour control
- Change dressings daily



Granulating wound

Aims:

Support granulation, protect new tissue, keep moist.

- Assess depth and exudate levels
- Moist wound surface – non-adherent dressing
- Treat over-granulation
- Hydrocolloids, foams, alginates



Epithelialising wound

Aims:

To provide suitable conditions for re-surfacing.

- Films, hydrocolloids
- Disturb as little as possible



Dressing choice

Non-adherent wound contact materials

Films

Hydrogels

Hydrofibre dressings

Hydrocolloids

Foams

Alginates

Miscellaneous

Overview of various wounds and appropriate clinical dressings.

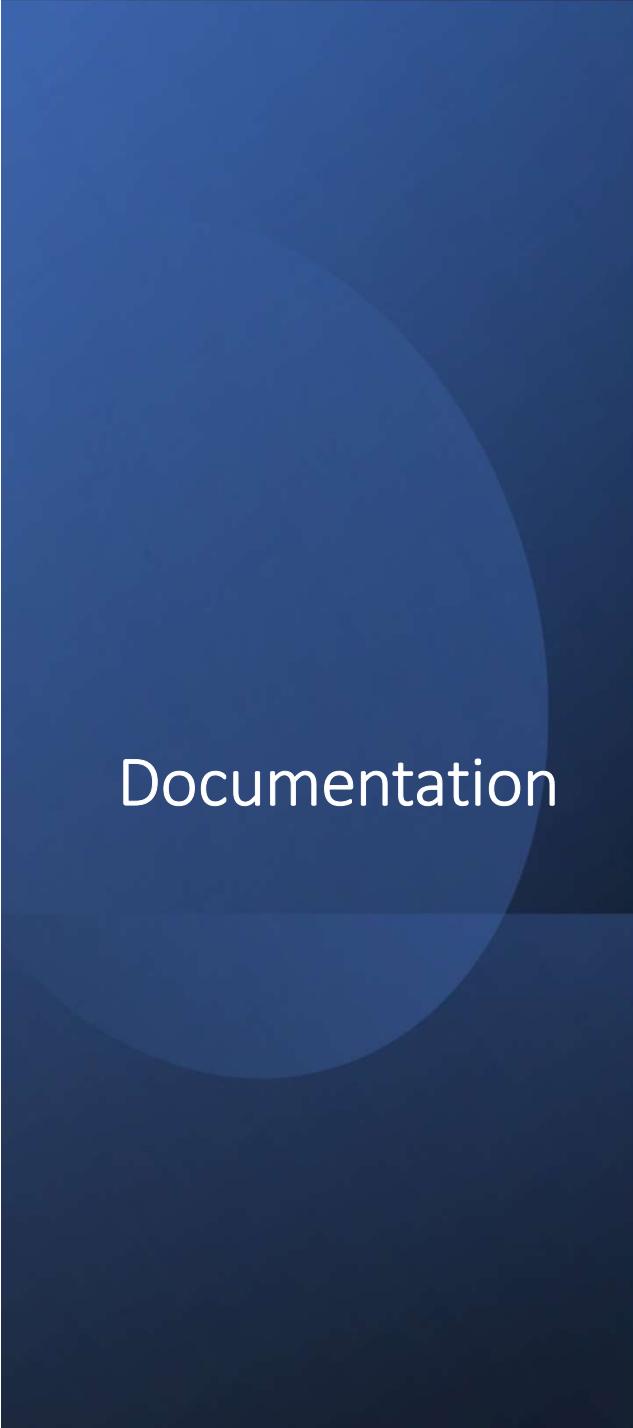
Variety	Description	Characteristics	Appropriate dressing
Diabetic foot ulcer	Caused by neuropathy and lower extremity vascular disease	Lack of supply of oxygen and blood in the wound bed; long-term stagnation in the inflammatory phase	Silver ion foam dressing, hydrofiber dressing, UrgoStart Contact dressing, Mepilex Lite Dressing, hyaluronic acid, Biatain Non-adhesive Dressing
Pressure injury	Caused by stress and tissue tolerance	A local injury to the skin or subcutaneous soft tissue occurring at the site of the bone prominence or the compression of the medical device	Foam dressing, hydrocolloids dressing, multi-layered soft silicone foam dressings, polyurethane film, Mepilex Ag dressing, polyurethane foam dressing
Burn and scald	Tissue damage caused by heat	A large amount of exudate; prone to infection; severe cases can injure subcutaneous and submucosal tissues	Moist occlusive dressing (AQUACEL Ag), ACTICOAT™ with nano silver
Chronic venous leg ulcer	Caused by high pressure of the blood in the leg veins	Lack of blood supply to the wound; a large amount of necrotic tissue and abnormal exudate on the surface of the ulcer, accompanied by multiple bacterial infections	Alginate dressing, AQUACEL Ag dressing, Urgotul Silver dressing, ALLEVYN Hydrocellular foam dressings, Mepilex foam dressing
Radiation dermatitis	Local skin lesions caused by radiation	Slow cell proliferation; decreased cytokine activity; decreased collagen content	Film dressing (Airwall), silver-containing hydrofiber, film dressing (3M™ Cavilon No Sting Barrier Film), Mepilex Lite dressing
Split-thickness skin grafting	None	Hypertrophic scars; hypopigmentation; hyperpigmentation	Polyurethane foam (ALLEVYN™), calcium alginate (Kaltostat), AQUACEL Ag (Convatec), Alginate Silver (Coloplast)

Dressings

- Where possible, avoid the use of tape for securing dressings, particularly on fragile skin.
- Where anatomically possible, consider a tubular bandage (i.e., blue line) for keeping dressings in place.
- Where possible, do not apply adhesive dressings to the lower legs. Dressings should be secured with K Soft wool and bandage. The type of bandage will be based on the clinical/ patient assessment and may include a retention bandage or a compression bandage).
- If using a dressing with an adhesive border, ensure manufacturer's instructions are followed when removing the dressing to avoid skin stripping/ trauma.
- Refer to the skin barrier pathway for managing incontinence associated dermatitis/ moisture lesions and superficial pressure damage to buttocks/ sacral area. Dressings are not indicated for these conditions.

Ordering Dressings

- Use the size closest to the dimensions of the wound.
- Only Issue or prescribe enough for the course of treatment or a maximum of a 2 weeks supply. This includes the stock taken out to the patient's home that is supplied via ONPOS.
- Do not layer dressings as this will be counterproductive.
- Asepsis should be maintained when applying the dressings to the wound (Sterile scissors should be used to cut the dressings and sterile gloves worn when handling/ applying the dressing)
- Once opened, any remaining dressing must be disposed of and not retained and used on another day.
- Only renew the dressing in line with manufacturers guidance or when clinically indicated (e.g. – as per level of exudate/ strikethrough).
- Do not pack a wound if depth/ underlying structures is unknown.
- Old/ residual dressings should be removed or irrigated out before new dressings are applied.
- Avoid the use of adhesive dressings for managing moisture lesions. Follow the skin barrier pathway for guidance. (Accessed from Tissue Viability website)
- If the selected dressing does not appear to be effective, contact Tissue Viability for advice.



Documentation

- All patients with a wound will have a completed wound assessment form in their notes within 4 weeks of presentation to case load.
- All patients with a wound will have a wound progression chart in their notes that will map the healing process.
- All patients should have a current wound care plan in their notes that reflects the treatment objectives agreed with them at the point of assessment/ re-assessment.
- Photographs should be uploaded to care notes and then deleted from the device used, in line with information governance policy.
- Documentation in the individuals' notes must facilitate communication and continuity of care between interdisciplinary team members.

Conclusion

- Wound care is becoming more complex as the range of wounds increases
- Correction of the underlying causative factors is essential
- Key principles must be adhered to with regard to basic patient and wound assessment