REDUCING PATIENT HARM – PRESSURE ULCER PREVENTION

Version 2: Updated February 2013
Introduction

Welcome to this workbook on the prevention and management of pressure ulcers. In conjunction with pressure ulcer prevention training, the aim of the workbook is to help you understand pressure ulcers – how they form, how they are treated and, crucially, how they can be prevented.

This workbook is aimed at all nursing and healthcare practitioners who provide first line treatment and care to patients. It is not intended for medical staff. This workbook gives managers and staff an opportunity to ensure that the key principles, along with individual’s responsibilities are fully understood. The sections contained within the workbook are up to date, relevant and important to safeguard the health, safety and wellbeing of our patients and staff and to ensure we prevent harm occurring to our patients.

This workbook is for your personal use only. Keep it in a safe but handy place for times when you need to work through it. You will also need to share your answers and thoughts with your Ward Manager / Team Leader who will be responsible for signing off the completion of your workbook and assuring herself/himself of your competency to identify, manage and prevent pressure ulcers.

If you are having difficulty in completing any section of the workbook, please discuss this with your line manager or Link Nurse in the first instance.

Overall aims and learning outcomes

The overall aims of the workbook are to help healthcare staff understand how to:
- protect vulnerable people from the dangers of pressure ulcer development and give best quality, evidence based treatment where a pressure ulcer exists.
- Learning outcomes are focussed on supporting staff who provide care to develop and enhance their capacity to fulfil their role as a care giver.

The overall learning outcomes for the programme are that on completion you will be able to:
- Identify patients/clients at risk of developing pressure ulcers
- Describe the physiology of the skin and the process of wound healing.
- Identify the factors that may contribute to tissue breakdown
- Describe how you would inspect and care of the skin
- Describe the equipment and interventions which can contribute to the prevention of pressure ulcers.
- Assess and stage the degree of tissue damage.

If you are a new starter to the Trust:
- You have 4 weeks from the Induction training session to complete this workbook.
- You have 12 weeks from the Induction training session to complete the e-learning Pressure Ulcer classification guide.

If you are an existing employee:
- You have 4 weeks from receipt to complete this workbook.
- You have 12 weeks from receipt of the workbook to complete the e-learning Pressure Ulcer classification guide.
You and your role

Name: ……………………………………………………………………………………………………………............

Organisation: ……………………………………………………………………………………………………………..........

Department: ………………………………………………………………………………………………………....………….

Name and position of Mentor: …………………………………….........……………………………………………..

Date Workbook commenced: ……………………………………………………………………………………………..

Your role

Use the space below to describe the main duties of your job.

Pressure ulceration is a multifaceted problem that requires a systematic multi-disciplinary approach to care. Education of healthcare professionals is the central theme to any strategy for pressure ulceration prevention.

Pressure ulcers can affect people of all ages, shapes and sizes. Our aim as care providers is to protect these vulnerable people from the dangers of pressure ulcer development or, if they already have one, to provide the best quality, evidence-based treatment that we can. This workbook will help you understand how we can achieve both of these goals. You may already have a basic knowledge of tissue viability issues, in which case this workbook will be a useful reminder of key precautions, prevention and management principles.

Pressure ulceration represents a major burden of sickness and reduced the quality of life for patients and also their carers (Franks et al 2002). Demographic trends, with an increasingly aging population will result in an enlarged at-risk client group. With this in mind it is suggested that the majority of pressure ulcers are preventable (Wilson 2010)

Pressure ulcers remain a Department of Health benchmark standard within the essence of care program details and NICE clinical guidance, which can be found at:

Essence of Care: Patient-focused benchmarks for clinical governance

NICE Guidelines
http://www.nice.org.uk/guidance/index.jsp?action=bypD&o=10972
Unit 1 Principles of care for people at risk of and with existing pressure ulcers

Unit 2 The structure and function of the skin

Unit 3 Factors that may contribute to tissue breakdown

Unit 4 Inspection and care of the skin

Unit 5 Prevention and management techniques

Unit 6 Staging of skin damage

Unit 7 Phases of wound healing and fundamental wound management

Unit 8 Statement of Completion

And finally..
Most pressure ulcers are preventable. There is evidence to suggest that appropriate clinical care can help to prevent the occurrence of pressure ulcers. Gaining an understanding of how pressure ulcers develop prepares us with the knowledge - to stop them forming in the first place.

Unit 1 Principles of care for people at risk of and with existing pressure ulcers

Learning outcomes

You will be able to:

- Identify the Trust objective relating to patient safety.
- Discuss the importance of full patient assessment
- Discuss the importance of regular reassessment and evaluation of care

Pressure ulcers

Pressure ulcers can be devastating for the people they affect. They cause pain and distress. They reduce patients’ ability to get on with their day-to-day lives. They require what are often long and arduous courses of treatment. They make people vulnerable to potentially life-threatening infections.

Principles of care

One of our organisations key objectives is:

Safety: to reduce avoidable Harms to patients.
To achieve a culture of zero tolerance towards avoidable patient harms.

From a patient safety perspective, it is important that we do our best to prevent pressure ulcers from occurring. When a patient develops a pressure ulcer, the hospital or care setting where he or she developed the skin damage may be subject to a review of practice in an attempt to protect other patients from developing pressure ulcers in the future. It is also possible that a patient’s family may take legal action against a care setting if their relative becomes ill due to the development of a pressure ulcer. But the key thing is that most pressure ulcers can be prevented. We are all responsible for caring for and checking patients skin when we are looking after them.

Pressure ulcers are everyone’s responsibility and it is important that the whole team should be involved in their prevention and management.

You should be aware that if a patient is at risk of developing one harm, they are potentially at risk of other harms e.g. falls, malnutrition.

Risk Assessment

On admission the patient should have a Pressure Ulcer risk assessment undertaken. The frequency of re-assessment will be dependent on the risk score of the patient and should be considered in line with clinical judgement. This document is known as the Adapted Waterlow Pressure Ulcer Risk Assessment/Screening Tool. The risk assessment will take into account the patient’s overall assessment of general health, extremes of age, mobility, skin, nutrition status, continence, medication and any trauma or surgery that may impact on the risk.

Pressure ulcer Risk Assessment, Management/Prevention & Treatment guidance (CORP/GUID/003), can be located on the document library on the Trust intranet.

The plan of care will be dependent on the risk score, but may include, timed pressure area care, the use of pressure relieving devices, referral to other specialists for further input and advise e.g. Tissue Viability Advisor/Dietetics.

It is essential that all risk scores and subsequent plans of care are documented and actioned.
The care plan should form the basis for the care you give to the patient but you should always be looking out for signs that his or her condition is changing. Changes in condition may require changes in treatment. Evaluation is the key to making sure that the care you provide is having a positive effect.

**Care Bundle** A care bundle is a group of interventions (or actions) related to a disease/condition which, when carried out together, improve care outcomes.

This organisation has introduced the SKIN Bundle, and uses a communication tool called the Skin and Safety Walk Around Tool (SAS Chart) to monitor a patient’s condition and the care provided in relation to the following areas:

- Skin Inspection
- Keep Moving (Mobility)
- Incontinence
- Nutrition
- Surface
- Availability of Aids
- Falls Risk
- On to the hospital site

**Unit 1: Learning Activity (applicable to all staff)**

**Question 1.** What is the organisational objective that relates to Patient Safety?

**Question 2.** Identify 4 effects of pressure ulcers

1)............................................................................................................................
2)............................................................................................................................
3)............................................................................................................................
4)............................................................................................................................

**Question 3.** Whose responsibility is it to prevent and manage pressure ulcers?

**Question 4.** What document is used to assess the patient’s risk of developing tissue damage?

**Question 5.** Within how many hours from admission / first visit to your care does this Risk Assessment have to be completed?  *(Circle the right answer)* - 1 Hour / 2 hours / 4 hours / 6 Hours / 12 hours / 24 hours
Question 6. How often/when would you re-assess?

Question 7. Why is it essential that all risk scores and subsequent plans of care are documented and actioned.

Question 8. Following the assessment of Risk factors who plans the patient care?

Question 9. How do you know if the care you have provided has been effective?

Question 10. What is a Care Bundle?

Question 11. What skin care communication tool is used in our organisation, what does it allow you to measure and why is this important?

Question 12. Who is held accountable if documentation is incomplete and inaccurate? (Tick all that apply)
- The Director of Nursing
- Ward Manager
- Pressure Ulcer Prevention Group Link Nurse
- Staff Nurse
- Patient
- Tissue Viability Advisor
- Matron
- Doctor
- Healthcare Assistant
- Patient

Question 13. – Case Study
Roger is a 70-year old male who had a stroke 5 years ago. He lives at home with his wife, who is his main carer. Roger can walk with a stick and is of average build. He generally keeps well and has a good appetite, but has become bed bound after a short illness and continues to remain generally unwell. His wife reports that he is ‘off his food’. He takes ‘heart tablets’ for ‘his circulation problems’. He has been incontinent of urine occasionally of late, but is normally fully continent. His skin is a ‘little thin’ and Roger has begun to complain of a ‘sore bottom’ in the last 2 days, but his skin is not broken anywhere.

Take a look at the Waterlow risk assessment tool.
1. What risk factors may have increased for Roger?
2. What risk score did Roger have prior to his current illness?
3. What risk score does Roger now have?
4. Should we increase the frequency of Risk assessment? Please explain your decision.

Summary
The key messages from the unit are that we are all responsible for ensuring that patients receive the highest quality care at all times, and that pressure ulcers can be prevented in many cases.
Unit 2 – The structure and functions of the skin

Learning outcomes
You will be able to:

- Demonstrate an understanding of the basic structure of the skin
- Identify the key components of the skin
- Explain the main functions of the skin

The skin is often referred to as the largest body organ and serves as the main protective barrier against damage to internal tissues from trauma, ultraviolet light, temperature, toxins and bacteria. The skin is responsible for sensory perception, temperature regulation and excretion of waste products. In addition to preventing harmful substances from entering the body, it also controls the loss of vital substances from the body. It is vital that the skin remains intact to allow the body to perform these essential functions. It is also vital that when the skin is damaged, attempts are made to close the defect as quickly as possible to prevent infection and allow normal functioning to return.

As the skin shows the first signs of pressure damage, it is important that we recognise the skin changes that will alert us to damage occurring.

The structure and functions of the skin
The skin contains a number of accessory organs which assist in its protective role. As we can see in Fig. 1, it consists of two main layers: the epidermis, or outer layer, and the dermis, which lies beneath the epidermis. The thickness of the skin varies depending on the site, with thicker skin being present on areas of the body that experience friction or wear and tear, such as the soles of the feet and palms of the hand. It also varies at extremes of age, when it is thinner.

The skin is supported by a layer of fatty tissue, sometimes known as the hypodermis. This fatty area helps to act as a cushion to protect the body and is also important for insulation.

---

![The Skin](image)

**Fig. 1 The skin**
The Epidermis
The epidermis (or outer layer) contains no blood vessels and is divided into five layers. Cells move from the base of the epidermis up to the surface, changing shape and structure as they go. The outer layer of the epidermis is made up of stratified squamous epithelium or hardened cells which play a role in the skin’s protective function. This may be referred to as the stratum corneum. Epidermal cells line the hair follicles, sebaceous glands and sweat glands. A number of projections which reach down from the epidermis to the dermis can be found at the point at which they join. These are called rete pegs, which help to maintain skin integrity when the skin is under stress. Melanocytes are cells found in the deepest layer of the epidermis. They produce melanin, which helps protect the body from the sun’s harmful rays.

The Dermis
The main function of the dermis is to provide physical support and nutrients to the epidermis. The two layers identified within the dermis are the papillary layer and the reticular layer. Key substances found in the dermis include collagen and elastin. Collagen is an important substance which helps give support and protection within the skin. The amount of collagen we have decreases as we age. The dermis also contains nerve endings, sweat glands, sebaceous glands, hair follicles and blood vessels. The papillary dermis contains smaller blood vessels which supply oxygen, elastic fibres and nutrients to the lower epidermis. These vessels also assist in the removal of waste products from the skin into the general circulation. The nerve endings sense pain, touch, temperature and pressure and are a vital part of the body’s protective mechanisms. There are more nerve endings in certain parts of the body, such as the fingertips and toes. Sweat glands produce sweat, which contains some body waste products, water and salt. Evaporating sweat causes cooling of the body. Sweat from the axilla and groin areas (apocrine glands) is more oily in nature and produces a characteristic odour when digested by the skin bacteria. Sebaceous glands secrete sebum into hair follicles. Sebum is an oily substance that keeps the skin moist and acts as a barrier against foreign substances. Hair follicles produce the various hair types that can be found around the body, so can affect a person’s appearance. Hair is also involved in protecting the body from injury and can improve sensation. The blood vessels within the dermis are involved in temperature regulation. The thicker reticular dermis contains denser connective tissue, larger blood vessels, elastic fibres and bundles of collagen arranged in layers.

Also within the reticular layer are the following key cell types:
- fibroblasts – a key cell involved in repairing tissue damage
- mast cells – which are involved in fighting infection
- lymphatic vessels – the lymphatic system is a key part of the body’s defence against infection
- epidermal appendages or rete pegs – as was explained above, the epidermis and dermis are linked in this way to prevent skin damage
- ground substance – a gel-like substance that helps to support the cells within the dermis and provides structure to the area.

The hypodermis or subcutaneous layer
The hypodermis or subcutaneous layer provides support for the dermis and is made up largely of fatty and connective tissue. It is essential for protection of internal structures and also provides insulation.

Differences in pre-term infants
The skin matures in utero during the third trimester. The skin has not thickened, matured or fully developed in pre-term infants, with the epidermis only a few cells thick. The subcutaneous fat layer is poorly developed and the fibrils connecting the epidermis and dermis are fewer in number and more widely spaced. This underdeveloped skin is thinner and less effective at performing the normal functions of the skin, leaving the pre-term infant at increased risk of heat loss, fluid loss and chemical absorption through the skin. The skin is also more easily damaged, further disrupting the barrier function and leaving pre-term infants at increased risk of infection. Regardless of gestational age, the skin of pre-term infants matures to that of a term infant 2–4 weeks after birth.
The functions of the skin

The skin has six main functions:

• protection
• sensation
• temperature regulation
• excretion
• metabolism
• non-verbal communication.

Protection
The skin acts as a barrier to prevent the entry of substances that may be harmful and the loss of vital substances from the body. It also provides protection against physical trauma such as pressure, shearing and friction. As we get older, there is a decrease in the collagen present in the skin, which causes it to appear thinner and less elastic. This affects the ability of the skin to protect the underlying structures of the body. The skin has a slightly acidic pH which helps to protect it from certain bacteria, but if this is altered in, for instance, patients/clients who have episodes of incontinence, it can be prone to damage. The skin is also at risk of damage if it becomes excessively moist through, for example, wound fluid or incontinence.

Sensation
The nerve endings in the skin allow the body to detect pain and changes in temperature, touch and pressure. This is a protective mechanism designed to remove us from dangerous situations. Nerve endings decrease in number as we age, which may have an impact on the protective function of the skin.

Temperature regulation
The skin allows the body to respond to changes in temperature by constricting or dilating the blood vessels within it. The sweat glands produce sweat, which stays on the skin and allows the body to cool down as it evaporates. When the body is cold, the hair erector pili muscles contract, raising the hair and trapping warm air next to the skin.

Excretion
The skin excretes waste products in sweat, which contains water, urea and albumin. Sebum is an oily substance excreted by the sebaceous glands which helps to lubricate and protect the skin. As we age, sebum secretion decreases and this can lead to the skin becoming drier, flaky and more fragile.

Metabolism
The skin enables the synthesis of vitamin D when ultraviolet light is present. Vitamin D is essential in allowing the body to manufacture certain hormones.

Non-verbal communication
The skin can convey changes in mood through colour changes, such as blushing. It also gives clues about the physical wellbeing of individuals.
Unit 2: Learning Activity

Question 1. Use the list below to label the skin appendages in the diagram.

![Diagram of the skin](image)

<table>
<thead>
<tr>
<th>Dermis</th>
<th>Fat/Collagen/Fibroblasts</th>
<th>Epidermis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweat gland</td>
<td>Sebaceous glands</td>
<td>Nerve</td>
</tr>
<tr>
<td>Capillaries</td>
<td>Hair</td>
<td>Muscle</td>
</tr>
<tr>
<td>Arteriole</td>
<td>Subcutaneous Tissue</td>
<td>Sensory Nerve Ending</td>
</tr>
</tbody>
</table>

Question 2. Identify the roles of the Dermis and Epidermis?

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………

Question 3. Key substances in the dermis are collagen and elastin, what are they and what is their function.

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………
Question 4. What role do the following structures play?

a) Sebaceous glands ...

b) Sweat glands ...

c) Blood vessels ...

Question 5. The skin is our largest organ and it has many functions, please identify 5.

1.

2.

3.

4.

5.

Question 6. How do you think an older person’s skin differs from that of a younger person?

Question 7. Can you think of 3 examples of how healthy skin can become damaged?

1.

2.

3.
Summary
This unit has aimed to give you baseline knowledge of the key structure and functions of the skin. In the next unit, you will learn about some of the factors that can lead to skin breakdown, including individual patient-related issues and some environmental issues that you may be able to influence.

Unit 3 – Factors that may contribute to tissue breakdown

Learning outcomes
You will be able to:
- Describe intrinsic factors that contribute to pressure ulcer development.
- Demonstrate awareness of the extrinsic factors that may lead to skin damage.
- Discuss the key differences between pressure damage and excoriation.

Factors that may contribute to tissue breakdown
Some people may be more vulnerable to developing pressure ulcers than others. When you are caring for a patient, it is important to be aware of the characteristics or factors that might cause him or her to become vulnerable to pressure damage. These are shown in Table 1. The table includes factors that are influenced by the external environment (extrinsic factors) and internal, innate factors (intrinsic factors).

<table>
<thead>
<tr>
<th>Factors</th>
<th>Intrinsic</th>
<th>Extrinsic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health status</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Posture</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Moisture</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sensory impairment</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Systemic signs of infection</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Nutritional status / body weight</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Previous pressure damage</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pain status</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Psychological and social factors</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Medication</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Cognitive status</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Blood flow</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Extremes of age</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pressure</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Shear</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Friction</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Moisture</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multifactorial</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 1 Common factors found in people with pressure ulceration

Intrinsic factors
Health status
Patients who suddenly become very unwell (acute illness) may be vulnerable to skin breakdown. Those who have had an illness for a longer period of time (chronic illness) may also be vulnerable. This is especially the case for patients with vascular/arterial disease, which causes a poor blood supply to the lower legs, and those with type 1 diabetes, who may have a loss of sensation in their feet in addition to a poor blood supply.

Children who may be vulnerable to skin breakdown include those with epidermolysis bullosa, congenital cardiac anomalies, spina bifida and cerebral palsy, which may cause decreased peripheral circulation and sensory impairment.
Mobility
Immobility may be the greatest risk to skin integrity. Our normal response to pressure is to move or reposition ourselves. When patients are unable to reposition themselves in this way, tissue breakdown may occur. A patient’s ability to move may be affected by a number of factors.

Posture
Proper posture when sitting is a key part of maintaining skin integrity. Anatomical changes in some patients may mean the pelvis is tilted either forwards, backwards or sideways, which can cause unusual pressure distribution.

Sensory impairment
Reduced awareness of pressure can lead to reduced spontaneous movement. Patients who have had a stroke or a spinal cord injury are among those who may have sensory impairment.

Level of consciousness
Patients who are having surgery and are unconscious will not have the ability to reposition themselves. Others, such as people who have had a head injury, may have a reduced level of consciousness or be unconscious. Reduced natural movement is similar to reduced mobility and can affect the skin’s integrity.

Systemic signs of infection
An elevation in body temperature, such as when a patient has an infection, may affect tissue integrity through an increase in moisture due to sweating (older patients who have infections may not develop a high temperature, so other signs and symptoms such as generally feeling unwell or the onset of confusion will need to be monitored).

Nutritional status
Patients with extremes of weight (either emaciation or obesity) are likely to be at higher risk of pressure ulceration. There is a clear link between patients having poor nutritional status and the development of pressure ulcers. It is essential that we do not overlook the importance of a well-balanced diet. Additionally, vulnerable individuals may be at risk of pressure damage if they lose weight rapidly. Adequate nutrition for all individuals being treated within health care settings is seen as a priority by our organisation. The Trust policy identifies that the Malnutrition Universal Screening Tool (MUST) be part of the admission procedure for adults admitted to hospital and that a personal nutritional care plan related to the MUST score be developed. It is emphasised, however, that the MUST tool is not suitable for application to children, so any child whose nutritional input is causing concern should be referred to a dietician.

Previous pressure damage
Scar tissue from, for example, an old pressure ulcer is never as strong as undamaged tissue. It may have little or no blood supply, which makes it more vulnerable to breakdown.

Pain status
We may reduce the number of times we move or reposition ourselves when in severe pain. It is important to assess a patient’s and, if necessary, make sure he or she has adequate analgesics to allow repositioning with comfort.

Psychological and social factors
Very depressed people (acute depression) can have feelings of apathy and may become less active.
**Medication**
Some medications, such as antihistamines or strong analgesics, can make a patient feel drowsy, and inotropes, steroids and chemotherapy agents can affect tissue perfusion. In addition, long-term use of steroids can cause thinning of the skin and therefore put the patient at risk of skin damage. The skin can become vulnerable if such medications are being used and the patient is not able to move as freely as normal.

**Cognitive status**
The cognitive state relates to thought processes. If the thought processes are altered due to confusion or a condition such as Alzheimer’s disease, the patient may be unable to recognise the risk of sitting or lying still for long periods of time without repositioning.

**Blood flow**
It is essential for the skin to have a good blood supply to provide necessary oxygen and nutrients and remove waste products. Damage to skin integrity is more likely if the blood flow is reduced.

**Extremes of age**
Newborn babies and very elderly people have more fragile skin. The skin gets thinner and can become dry as we get older.

**Extrinsic factors**
The external forces or extrinsic factors that may lead to skin damage are pressure, shear, friction and moisture.

**Pressure**
The blood vessels in the skin supply oxygen and nutrients and are responsible for removing waste products. If high levels of pressure are applied, particularly to skin over bony prominences, the blood vessels can become compressed. If interruption to blood flow is sustained over a period of time, the skin and underlying tissue can become damaged, leading to skin breakdown. Infants and children can suffer pressure ulcers due to pressure over bony prominences, but they more commonly occur under equipment, such as splints, masks and tubing.

**Shear**
In addition to unrelieved pressure, shearing forces can intensify the destructive effect on the skin. Shear is caused when the body slips down; the underlying structures move, but the skin stays in the same position. This may result in deeper layers tearing away from the top layer of the skin. An example of shear is when a person slides down the bed or chair; the skin stays stationary while the skeleton and attached tissues move.

**Shearing force** is a mechanical force parallel, rather than perpendicular, to an area of tissue. In this illustration, gravity pulls the body down the incline of the bed. The skeleton and attached tissues move, but the skin remains stationary, held in place by friction between the skin and the bed linen. The skeleton and attached tissues actually slide within the skin, causing skin to pucker in the gluteal area.
**Friction**
Skin damage can be caused by friction due to, for instance, rubbing against sheets. Footwear can also cause rubbing and blistering.

**Moisture (can be both extrinsic and intrinsic)**
If an area of the skin is wet due to incontinence or even excessive sweating, it can become macerated (waterlogged). This may lead to an alteration in the resilience of the epidermis (top layer of the skin) to external force. This is known as excoriation. Further skin breakdown can occur if this condition is left untreated. Pressure, shear and friction, in combination with moisture, can make an individual very susceptible to skin damage.

**Multifactorial**
A patient will often have several of these factors, which work together to impact on skin integrity.

**Shearing force**
Shear is a mechanical force parallel, rather than perpendicular, to an area of tissue. In this illustration, gravity pulls the body down the incline of the bed. The skeleton and attached tissues move, but the skin remains stationary, held in place by friction between the skin and the bed linen. The skeleton and attached tissues actually slide within the skin, causing skin to pucker in the gluteal area.

**What can we do to prevent skin damage?**
Some important steps can be taken to reduce the risk to patients who are vulnerable to skin damage. **These include:**
- inspecting the skin regularly
- making sure all surfaces, such as the bed and chair, are appropriate to the patient
- assisting the patient to reposition him or herself on a regular basis if he or she is unable or has difficulty doing so
- using manual handling aids to minimise shear and friction.
Unit 3: Learning Activity

Question 1. Define pressure damage and what causes it?

Question 2. Discuss the importance of repositioning.

Question 3. How often would you reposition a patient who is identified as High Risk or has some pre-existing tissue damage, please give your rational for your answer.

Question 4. Identify 5 extrinsic and 5 intrinsic factors that can make a patient vulnerable to developing a pressure ulcer.

Question 5. What can we do to prevent skin damage?

Question 6. Explain the importance of continence care for patients to prevent skin damage.

Question 7. How is a patient’s nutritional status assessed and what is the correlation of good nutrition to the prevention of skin damage?
Question 8. Why should you use lifting aids to move patients who require assistance?

Question 9. What is the difference between pressure damage and excoriation?

Question 10. What effect can poor circulation have on skin integrity?

Question 11. Why is it important to ensure that bedding is not creased and wrinkled?
Question 12- Case Study

Mrs Norman is a 76-year old female has been admitted to a medical ward. She has a raised temperature, feels pain when passing urine and generally feels unwell. She has also been incontinent of urine at times as she has not been able to get to the toilet quick enough. She is normally quite active around the house.

1. How would you carry out a skin inspection?
2. What factors in particular do you have to consider when inspecting Mrs Norman’s skin?
3. Identify potential risks to her skin.
4. What measures can be taken to minimise potential skin damage?

Summary
We have explored factors that may contribute to tissue breakdown in this unit. It is important to consider these factors in all patients in your care to minimise damage.
Unit 4 – Inspection and care of the skin

Learning outcomes

You will be able to:

- Demonstrate the fundamental principles of skin assessment.
- Discuss the importance of observing, recording and reporting skin damage.
- Demonstrate awareness of issues relating to patient/client dignity and safety.

All patients who are at risk of developing a pressure ulcer should have their skin inspected regularly; if it is not possible to do so because of the patient’s condition, this should be documented clearly in his or her records.

Why is skin inspection important?

Skin inspection helps us to identify any early changes in the skin which may lead to a pressure ulcer. When we inspect the skin, we are looking for an area (or areas) of redness (erythema). When you see such an area, compare it to the skin nearby. If nearby skin appears normal in colour, the area of redness may be an early warning sign of pressure damage. You should also conduct a blanching test, which involves applying light pressure with your finger to the area.

If the area of skin turns white on pressure then quickly becomes red again after the pressure is removed, this indicates that the microcirculation is intact.

If the skin remains red on finger pressure, it indicates damage to the microcirculation.

It is extremely important to identify, report and record early changes in the skin; if we intervene quickly and appropriately to stop further damage, we can prevent tissue loss.

Early identification of skin changes may prevent further damage.

People with darker skin

This simple inspection may be more difficult in people with darker skin, as redness is more difficult to see. Studies have shown early pressure changes in darker skin can be missed. You may still see redness, but the skin may also look blue or have a purple hue or a bruised appearance.

Other changes you may note in darker skin include a change in temperature compared to nearby skin (this can be either coolness or warmth), or a change in skin consistency (either a firm or “spongey” feel).

The key to assessing individuals with dark skin is to combine visual assessment, touch, risk assessment and the history of the patient/client to determine the likelihood of pressure ulceration.

Which areas of the skin are vulnerable to damage?

Most pressure damage in adults occurs on the sacrum or heel, but any area where the skin lies close to bone can be vulnerable. Fig. 1 & 2 shows some of the bony areas that have potential for pressure damage.
As you can see from Figures 1 & 2, damage can occur at virtually any bony area of the body. It is important to inspect all areas paying particular attention to bony prominences.

In infants and small children, the occiput (the back of the head) is the most common bony prominence over which tissue damage occurs. This is due to the relatively increased size of the head in proportion to the rest of the body.

Special factors to consider
Special attention should be paid when we carry out a skin inspection with patients who are incontinent of urine, faeces or both.

When should the skin be inspected?
This will depend on the patient you are caring for and his or her level of risk. As a minimum, the skin should be inspected at repositioning or after any episodes of incontinence.

We must always maintain the dignity of the patient. It is important to explain what you are doing and why, and to gain consent for what you propose.

Before carrying out a skin inspection, it is important to consider the environment. Make sure the room is warm and that the light is bright enough for you to carry out your inspection. Only expose the area of skin you are inspecting and cover it again before moving on to the next area.

The examination should always move from head to toe, inspecting all bony areas (as outlined in Fig. 1). If the person is bedbound, ask him or her to roll from side to side (if able to do so) to allow you to examine the back and sacrum. The patient may need assistance with this action from two or more people.

Cleaning the skin
Cleaning the skin with a gentle soap and warm water is adequate for normal daily hygiene, but soap and water should not be used if the patient has moisture damage (maceration) of the skin in the groin and/or buttock area. Foam cleansers are considered to be better for vulnerable skin.

Patients who have continence problems are particularly vulnerable to developing moisture damage or excoriation of the skin. Foam cleansers should always be used to clean the skin after an episode of incontinence, with strict adherence to the principle of individualised canisters for each patient/client. It is also worth noting that oils and lotions may be prescribed to treat the skin damage. It is important to ensure that these are re-applied following washing.

In relation to neonates, skin cleansing may be contraindicated, depending on the age and health status of the infant. Plain water and dilute emollients may be used for cleaning the nappy area, but the skin should be irrigated and not wiped if moderately or severely excoriated and either patted dry or allowed to air-dry, depending on the extent of the excoriation. Barrier films and creams can be used according to our local guidelines.

A good-quality absorbent nappy should be used and changed frequently. Baby wipes should never be used in neonates (the use of soft cotton swabs and water is preferred), and care should be taken to use only non-perfumed, neutral pH cleansing products. Routine use of moisturisers in neonates is not recommended as they have been proven to increase the risk of nosocomial infection.

Protecting excoriated skin
This condition is often very painful. If the patient is incontinent, further damage can occur due to chemical irritants in urine and faeces. Barrier creams or barrier films should be used to prevent further damage to areas of excoriation.

They should be applied sparingly to all areas of excoriation. As a general rule, barrier creams should be used on unbroken skin and films on broken skin.
Excoriation assessment
It is important to be aware of the extent of excoriation the individual has to treat it appropriately and monitor any improvement or deterioration.

Moisturising the skin
As we get older, our skin produces less of our natural moisturiser, sebum. The skin can become dry and flaky as a result. If you see dryness while examining a person’s skin, report this to a more senior member of the health care team. Treatment with an emollient moisturiser at least twice a day will help reduce dryness.

Protecting the skin
The following key principles are of great importance in protecting the skin of the patients we care for:

- Closely inspect the skin for areas of redness, dryness or excoriation and record changes
- Report changes to a senior member of the health care team to enable measures to be put in place to help prevent further damage, such as the use of pressure redistributing equipment.
- Assist the patient to change position frequently, the frequency will be dependent on the risk, to relieve pressure
- Keep the skin dry wherever possible, or if the patient is incontinent, meet their hygiene needs as a matter of priority.
Unit 4: Learning Activity

Question 1. Why is skin inspection important?

Question 2. What are you looking for when you inspect the skin?

Question 3. How would you conduct a blanching test?

Question 4. What is the difference between Blanchable Erythema and Non Blanchable Erythema?

Question 5. How can you assess patients with darkly pigmented skin?

Question 6. Please list 9 areas of the skin that are vulnerable to becoming damaged by pressure?
Question 7. When should the skin be inspected?

Question 8. What should you use to clean the skin of an adult patient?

Question 9. What should not be used on neonates and why?

Question 10. What key principles can we adopt to protect the skin?

Question 11. What would you do if the patient refuses to change position bearing in mind to document the word “refused” is simply not enough.

Summary
It is important to remember the frequency of skin inspection should be determined by the patient’s level of risk. Any changes should be reported in a timely fashion.
Unit 5 - Staging of skin damage
What is a pressure ulcer?
A pressure ulcer is an area of skin and tissue damage caused by pressure, shear, friction or a mixture of these factors. Pressure is the direct force on the skin and tissues which affects the patient if he or she remains in one position for too long. This is common when patients are being cared for in bed or sitting up in a chair for long periods of time without moving or being moved. Two hours is the maximum allowable time in one position for many patients. The blood supply to the tissues is reduced or cut off when tissue is compressed against bone for long periods of time; the tissue may die as a result. This may cause blue/black skin damage, which can appear like bruising on the skin. It is important to recognise that superficial and deep tissue damage can occur to patients who are unable to change their own position. This may mean that the damage you can see on the skin may also involve the deeper tissues.

This individual’s ulcer has deep damage caused by shearing and pressure.

Moisture-related skin damage
Moisture-related skin damage is often assessed as being due to pressure damage, but these are different things. If patients are incontinent and urine or faeces come into prolonged contact with the skin, the chemicals within the urine or faeces can cause the skin’s protective function to break down. This leads to areas of damage to the skin that are painful for the patient and which can be extensive.

Severe moisture damage.
When patient’s are incontinent of faeces and urine, they will experience changes in their skin condition. Their skin may be fiery and red in appearance. There may be small breaks in the skin or ulcers may be present. The skin may also be very moist due to the damage caused by urine or faeces. Pain may be experienced by the patient, but not in all cases.
The skin of the patient opposite has been in prolonged contact with urine and faeces. As you can see, the incontinence has caused damage to the skin: the upper layer has been destroyed to reveal the dermis.
If a patient/client is consistently incontinent of urine for a prolonged period of time, specialist advice should be sought.
The next step is deciding the following:

• What type of skin damage exists?
• Is the damage due to moisture, pressure, shearing, friction, or a combination?

The pressure ulcer classification tool can help you answer these questions. The differential factors are: causes; location; shape; depth; necrosis; and edges and colour of the wound. The individual’s history and the site of the skin damage will also help you to decide which type of skin damage has occurred.

Staging of pressure ulcers is essential to:

• identify the level of skin and tissue damage present
• identify early damage to trigger treatment
• enable preventative equipment to be used appropriately
• assess the wound and apply appropriate dressings
• identify wound infection.

Staging of pressure damage

Moisture Lesion

Moisture lesions are attributed to moisture (incontinence or perspiration) with a much more focused area of damage than pressure ulcers. There may be a linear wound in the natal cleft between the buttocks or on the cheeks of the buttocks, with a wound often being present on both buttocks (a copy or kissing lesion). Moisture lesions are superficial (partial thickness skin loss). In cases where the moisture lesion gets infected, the depth and extent of the lesion can be enlarged/deepened extensively.

Moisture lesions, frequently caused by incontinence, are often wrongly classified as pressure ulcers. Moisture must be present (e.g. shining, wet skin caused by urinary incontinence or diarrhoea).

A moisture lesion may occur over a bony prominence. However, pressure and shear should be excluded as causes, and moisture should be present.

A combination of moisture and friction may cause moisture lesions in skin folds. A lesion that is limited to the anal cleft only and has a linear shape is no pressure ulcer and is likely to be a moisture lesion. Peri-anal redness/skin irritation is most likely to be a moisture lesion due to faeces.

Diffuse, different superficial spots are more likely to be moisture lesions. In a kissing ulcer (copy lesion) at least one of the wounds is most likely caused by moisture (urine, faeces, transpiration or wound exudate).

It is important to identify the cause of lesions as the treatment and management of pressure ulcers and moisture lesions differ. A moisture lesion will not heal if treated purely by pressure reduction/relief. However, the presence of moisture may increase the risk of pressure ulceration so some pressure ulcer risk management is required.

STAGE 1: non-blanchable erythema of intact skin. Discolouration of the skin, warmth, oedema, induration or hardness may also be used as indicators, particularly on individuals with darker skin.

Stage 1 ulcers are sometimes hard to detect. To test the skin on an area of redness, apply finger pressure for 10 seconds and then stop. If the area turns white then red, the small local blood vessels are intact and functioning. If the skin remains red and does not change colour, the vessels are damaged: this is a Stage 1 ulcer. (This test is known as the blanching test).

STAGE 2: partial-thickness skin loss involving epidermis, dermis, or both. The ulcer is superficial and presents clinically as an abrasion or blister.

Stage 2 ulceration is generally referred to as superficial damage. They can be caused by a number of factors such as pressure, shearing, friction and, in some cases, moisture.

Stage 2 ulceration can deteriorate if appropriate treatment is not initiated, so treatment which involves repositioning, pressure-reducing supports, nutritional care and mobilising (if possible) should be implemented, in addition to an appropriate wound management regime.
**STAGE 3:** full thickness skin loss involving damage to, or necrosis of, subcutaneous tissue that may extend down to, but not through, underlying fascia.

Stage 3 ulceration may be the result of prolonged unrelieved pressure, shearing and friction forces on the tissue. Tissue death can occur under the surface of the skin due to the impact of pressure and shearing on the blood vessels, which become damaged, resulting in local tissue being starved of oxygen and nutrients. Once this occurs, the tissue will change colour and begin to break down, which explains why we often see areas of yellow or black necrotic or dead tissue in deep pressure ulcers.

There is a risk of infection in patients who have deep pressure ulceration due to the dead tissue and the fact that bacteria may be able to enter the wound and multiply. The cornerstone of treatment for these patients is the use of pressure-redistributing supports such as mattresses and seating cushions. Repositioning should take place at least every two hours. Appropriate dressings that can cope with wound fluid/exudate and which can be effective in a cavity wound should be used. Wounds should also be assessed for debridement by an expert to remove necrotic tissue and promote healing. Attention should be paid to the fluid and dietary intake of the patient, and dietary supplements may be required.

**STAGE 4:** extensive destruction, full thickness skin loss with exposed muscle, bone or tendon

Stage 4 tissue damage is the deepest and most severe stage of pressure ulcer. As with stage 3 pressure ulcers, there is a risk of infection due to the presence of dead tissue in the wound. Necrotic or sloughy tissue should be removed by an expert, if appropriate.

Repositioning should be carried out at least two hourly where possible, and pressure redistributing supports such as a mattress or seating cushions should be used to assist in redistributing pressure. Where possible, it is helpful to remove all pressure from the affected area. On heels, it may be necessary to use specific pressure-reducing devices which allow the heel to be completely free of pressure. As with all patients with pressure ulceration, they must have appropriate medical care and adequate nutrition and hydration with the use of supplements guided by senior practitioners or the dietetic department.

**Unstageable**

The true stage of a wound with Eschar (Necrosis) cannot be determined until the Eschar is removed and the wound bed exposed. This wound must be monitored and staged when the Eschar is removed.

As a general rule, the deeper the level of damage, the higher the stage of sore. It must be remembered, however, that a 2 cm ulcer on the heel may be reaching bone, and is therefore a Stage 4 ulcer, but that 2 cm of skin loss on a patient’s buttock may only represent a Stage 2 or 3.

Debridement of wounds should only be undertaken by a skilled practitioner. When debriding heel areas, vascular assessment should be carried out to avoid the risk of infection and permanent limb damage. Debridement may not be a suitable option in patients who are dying.

**Summary**

You have learned in this unit how to stage pressure ulcers and about excoriation. Pressure ulcers and any open wounds are at risk of infection, primarily due to the fact that the skin has been damaged. Add to this the presence of dead or sloughy tissue and moisture and we can recognise that these wounds offer an ideal site in which bacteria can grow.
Unit 5 – Learning Activity

Question 1. Look at the picture below. Can you name the type of damage you see?

a). How would you treat this person’s skin?

b). Which barrier products are available to you?

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..

Question 2. Define a moisture lesion and what causes it?

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..

Question 3. What type of tissue damage is present below? List four things you would do to provide the best care for this patient

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..

………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
………………………………………………………………………………………..
Question 4. What type of tissue damage is present below? List four things you would do to provide the best care for this patient

Question 5. What type of tissue damage is present below? List four things you would do to provide the best care for this patient

Question 6. What type of tissue damage is present below? What stage of pressure ulcer is this? List four things you would do to provide the best care for this patient and what type of dressing you would use.
Question 7. What type of tissue damage is present below? What stage of pressure ulcer is this? List four things you would do to provide the best care for this patient and what type of dressing you would use.

...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................

Question 8. What type of tissue damage is present below? What stage of pressure ulcer is this? List four things you would do to provide the best care for this patient and what type of dressing you would use.

...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................
...........................................................................................................................

Question 9. This is a combination of 3 different problems can you identify them on the picture?

Skin lesion due to removal of sticking plaster

A moisture lesion

Pressure ulcer caused by a urinary catheter
<table>
<thead>
<tr>
<th>Pressure Ulcer</th>
<th>Moisture Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Unit 6 - The wound healing process
The main aim of the wound healing process is to restore the area of damage to normal strength and function (or as normal as possible). The newly healed wound will not be as strong as before and will still be prone to damage. Wound healing will not always be the ultimate aim for some patients, particularly those nearing the end of life; instead, the aim will be to make life easier for the patient and improve his or her quality of life. Realistic goals should be set, involving the patient and carers.

The wound healing process can be affected by a number of external and internal influences, so it is essential that we assess the whole person when treating a patient with a wound.

Wounds are often divided into acute or chronic, and healing by primary intention or secondary intention.

Acute wounds
Acute wounds are those that arise as a result of surgery or trauma. They most commonly have a relatively short, uneventful healing time. Burns are acute wounds but will heal slowly (like a chronic wound) because of the area and depth of tissue damage involved.

Chronic or long-term wounds
These are wounds such as pressure ulcers, leg ulcers, diabetic foot ulcers and malignant wounds. Chronic wounds tend to have prolonged healing times, are prone to episodes of infection, and may have increased levels of exudate due to prolonged inflammation.

Types of healing
Primary intention or primary closure refers to the healing of a wound in which the wound edges have been brought together by sutures, clips, staples or glue. Often there is minimal tissue loss and the healing process is relatively short.

Secondary intention healing refers to wounds that are open. These wounds may be deep and will heal from the bottom of the wound. Eventually, the wound edges will come together.

Wound healing
The wound healing process can be divided into four main phases, which do not occur in isolation. This means that it is difficult to place a definite timescale on the sequence of events (Table 1). You should also note that the healing process may be much quicker among children.

<table>
<thead>
<tr>
<th>Stage or phase of healing</th>
<th>Timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemostasis (blood clotting)</td>
<td>Within approximately 10 minutes</td>
</tr>
<tr>
<td>Inflammation</td>
<td>Approximately 3−5 days</td>
</tr>
<tr>
<td>Proliferation</td>
<td>Approximately 28 days</td>
</tr>
<tr>
<td>Maturation</td>
<td>Up to 18 months</td>
</tr>
</tbody>
</table>

Table 1 Stages and healing times

It is important to remember that the wound healing process will be slower in chronic wounds and in individuals who are ill.

Haemostasis (blood clotting)
Wounds caused by surgery or trauma are likely to bleed. When the skin is damaged, the body begins healing by creating a blood clot which will prevent too much blood being lost. During this time, the body will send cells and chemical messengers to the area; these will help to start healing the wound.

**Inflammation**
The inflammatory phase of wound healing lasts approximately 3–5 days in acute wounds, but could take much longer in chronic wounds. The inflammatory phase begins as soon as the injury is sustained. During inflammation, the body sends cells to the wound which help to digest bacteria (bugs), dead cells and "dirt". The wound might appear red, swollen, hot and painful when this phase is taking place. These signs will be difficult to recognise in chronic (long-term) wounds. Key cells will move to the wound to clear up the debris. White blood cells are among the important blood cells involved in this part of healing. They digest bacteria and dead cells to prepare the wound to heal. Cells from the immune system are also involved in protecting the body from infection during the inflammatory phase. You may see a tissue called “slough” appearing in some acute and chronic or long-term wounds during the inflammatory phase. This tissue is a combination of dead tissue and cells, white cells and bacteria. Once wound debris and bacteria are removed by the white cells, the body can begin to grow new tissue.

**Proliferation**
The wound is filled with granulation tissue and is covered over with epithelial tissue (epithelium) during this phase. New blood vessels grow at this time, allowing the body to produce tissue called granulation tissue. Again, chemical messengers are involved in starting this process. A special cell called a fibroblast produces a substance called collagen. Collagen is one of the main building blocks of new tissue in the body. The newly formed blood vessels are able to deliver oxygen and nutrients to the healing tissues. Once granulation tissue has filled the wound, new skin cells (epithelium) will grow across the surface. In the image above, you can see granulation tissue in the centre of the wound.

**Maturation**
The maturation phase of wound healing may take up to 18 months to complete. It is sometimes known as the “remodelling” phase of healing, during which the wound is strengthened and the scar will change colour. Collagen bundles that were once laid down within the wound in an irregular fashion are now remodelled to form stronger, more organised layers. The blood vessels will decrease, which may leave the scar looking less red; in many cases, the scar appears “silver” or white in colour.

**Factors that can affect healing**
Wound healing can be affected by a number of factors which may slow down or stop the process.

**Internal factors you should consider when treating a patient with a wound include:**

- **age** – older individuals have slower healing due to changes within the skin which reduce blood and nerve supply
- **general poor health** – patients with poor health are likely to have slower healing; conditions such as poor circulation, bronchitis, diabetes, anaemia and kidney disease can affect healing, as do many others, particularly those that limit mobility and cognitive function
- **nutritional status** – patients with poor nutrition are likely to have slow healing, as the body requires extra energy and nutrients when a wound is healing
- **psychological influences** – patients with wounds may experience anxiety (which has been shown to reduce healing rates) or depression, possibly due to the wound or its associated pain; they may be distressed by the smell and fluid from the wound and if dressings do not stay in place drug therapy – some medication, such as steroids, can slow down or prevent healing; it is important to know which medicines patients are taking.
External factors that can affect healing include:
- **mechanical stress** – such as pressure, shearing or friction on the wound equipment – equipment should be appropriate for the patient to help maximise healing
- **social support** – some patients may have little or no social support; this can affect their ability to care for themselves and their wound care products – it is important to use the correct products for the individual and for the wound to improve healing.

**Assessing a wound**
The first step in treating a wound appropriately is to carry out an assessment of the patient and the wound. Wound assessment should be carried out by a qualified nurse; however, all staff caring for patient with wounds should be able to assess changes in wound status.

**Assessment of the wound should include the following:**
- the patient’s history
- the wound history (cause of the wound)
- the position or site of the wound
- the size of the wound (measure the area and depth, if possible)
- the type of tissue in the wound (this may be necrotic, sloughy, granulation and epithelialising).

**How much fluid or exudate is coming from the wound?**
You should ask the following.
- Is the wound leaking?
- Is the wound dry?
- Are the dressings wet when you remove them?

Assess the condition of the surrounding skin – the surrounding skin can be affected by moisture from the wound and can also be damaged by dressings which adhere strongly to the skin.

**Assess the wound for signs of infection which include:**
- raised temperature – the patient/client may have an increased temperature due to bacteria in the wound
- localised redness – the wound or the skin around the wound (2 cm margin) are red and hot to touch
- spreading redness – a large area around the wound is red and hot to touch (more than 2 cm from the wound edge)
- pain – the individual may feel an increase in pain in the wound when it is infected
- increased wound fluid – bacteria in a wound can cause the body to respond by producing more fluid
- pus – yellow/grey or green liquid which leaks from the wound and is the result of bacteria destroying the tissue in the wound
- wound breakdown – infected wounds may become wider or deeper and the healing process may be interrupted
- odour – some wounds will have a strong smell, often due to dead tissue and bacteria being present; this may be due to infection.

**Wound dressings**
Wound dressings are one part of the overall treatment but should not be considered the only treatment. Attention must be paid to the other needs of the individual, such as nutrition, hydration, medical care and pressure ulcer prevention.
A large number of wound dressings are available, and no one dressing can be used on all wound types. It is important to be able to decide what the patient and the wound needs, and to use dressings that meet these needs. It is important to use dressings that reduce the risk of damage to the skin surrounding the wound. Harsh adhesives can cause damage when removed without due care.
Choosing a dressing also depends on the dressings that are available in our local formulary/guidelines which should be consulted for guidance.
Protecting the surrounding skin
It is also important to observe and report changes in the surrounding skin when dressing the wound, as this may become damaged due to fluid leaking from the wound or from removal of adhesive dressing products. Using some warm water or adhesive remover can help to dissolve the adhesive and make removal easier.

Pain in pressure ulcers
Patients with a pressure ulcer may experience pain due to the ulcer and also when the dressing is changed. They should have appropriate medication at all times to minimise pain, especially prior to dressing changes. If you utilise a pain assessment tool in your care setting, this can help you to gauge the level of pain a patient is experiencing. Pain should be assessed before, during and after wound care is carried out, and at other times of the day and night.

Summary
The wound healing process in some wounds is straightforward and relatively fast (average of two weeks). Healing is sometimes slower in chronic or long-term wounds due to other health problems and poor nutritional state. Wound assessment techniques and wound assessment tools should be used to underpin treatments used. Dressing selection should be based on the wound assessment, tissue type, exudates level, and the presence or absence of infection. The patient should be involved in the decision where possible.
Unit 6 - Learning Activity
Question 1. Identify the main aim of the wound healing process.

Question 2. Identify internal and external factors that can affect wound healing.

Question 3. Explain the difference between primary and secondary intention.

Question 4. Identify the 4 phases of wound healing and briefly describe each one.
Question 5. What factors can affect wound healing?

Question 6. Identify what you should consider when assessing a wound and why.

Question 7. Identify the signs and symptoms of a wound infection.
Unit 7 - Prevention and management techniques

Learning outcomes

• demonstrate an awareness of key pressure-redistributing equipment
• state the importance of correct moving and assistance techniques and be able to use them
• use appropriate equipment when needed
• make sure that equipment is properly maintained, cleaned and decontaminated.

The main reason a pressure ulcer develops is lack of movement (or reduced mobility) leading to prolonged pressure. Pressure relieving devices are not a substitute for regular repositioning of your patient.

Mobility

Mobility can be reduced for some patients either in the short term, such as a person who is generally well and active but who has a period of acute illness, or over a longer term with someone who is permanently disabled. Lack of movement increases the risk of an individual developing a pressure ulcer. It is important to encourage movement to the degree that the patient is able, including moving about in bed. This may also involve helping the patient out of bed to sit in a chair, or helping him or her to take short walks about the room.

Pressure redistribution

Carrying out informal and formal pressure ulcer risk assessment and assessing the patient’s skin will help to determine the type of interventions needed. The equipment and techniques available for pressure redistribution are listed below:

• repositioning
• specialist mattresses
• specialist beds
• specialist cushions
• other aids, such as “monkey poles” and heel protectors.

This organisation has access via a contract to specialist pressure relieving devices. For further guidance on which pressure relieving device should be used and how to order a device, please refer to local policies and Tissue Viability Intranet Website at the link below:
http://fcsharepoint/divisions/medical/tissueviability/Pages/default.aspx

Repositioning

Repositioning is one of the essential elements of caring for someone at risk of developing a pressure ulcer and is equally important if the patient already has a pressure ulcer. The time period between repositioning is dependent on the patient’s risk status. It is important to remember to encourage patients to reposition themselves if they are physically and cognitively able. All patients must have Skin and Safety Walk Around Tool completed, which incorporates a repositioning chart. This will provide you with a useful record of the number of times the patient has been repositioned and can also help with decision making on whether the frequency of repositioning is appropriate or should be amended.

Repositioning is important for patients not only while they are in bed, but also while in a chair. Best practice for the prevention and management of pressure ulcers suggests that individuals at risk of developing a pressure ulcer, or those who have a pressure ulcer, should not be positioned in a seat for more than two hours without being repositioned. Community staff will advise, agree and document an appropriate care plan for repositioning and share this with other care agencies. This generally means returning the patient to bed for a period of time. Anyone who has to reposition patients needs to have access to training on the movement and handling of patients.
## Unit 7 - Learning Activity

**Question 1** - Can you identify all the equipment the trust has provided to help you reduce the risk to your patient? *(hint – there are 4 different types of mattresses)*

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Question 2**. Can you identify all the multidisciplinary team members you may need to involve help you reduce the risk to your patient?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Question 3**. How often should you attend the Tissue Viability update sessions at Clinical Skills Centre?

.................................................................................................................................

**Summary**

It is important to be aware of the pressure-redistributing equipment available in your area, how to obtain and return it and how the most important factor to prevent pressure ulcers is the importance of repositioning your patient depending on their level of risk.
Unit 8 Workbook Completion Statement

Reducing Patient Harm - Pressure Ulcer Prevention Workbook

Please only sign and return when you are satisfied that your staff member has completed all the units within the workbook and has a full understanding of pressure ulcer prevention and management.

THE WORKBOOK SHOULD BE KEPT BY THE EMPLOYEE

A PHOTOCOPY of this completion statement ONLY MUST be sent to Learning and Development, Home 1, for input on to the Trusts Central Training Database (OLM) as evidence that your staff member has completed the training.

A further copy should be placed in your staff members personal development file.

This is to confirm the Pressure Ulcer Prevention Workbook has been completed by:

Surname: (Block Capitals) ........................................................................................................

Forename: (Block Capitals) ....................................................................................................

Job Title: ..............................................................................................................................

Department/Ward/Team ........................................................................................................

Division/Directorate: ...........................................................................................................

Date completed: ...................................................................................................................

Staff Signature: ....................................................................................................................

Manager: (Print Name) ........................................................................................................

Manager: (Signature) ...........................................................................................................

Return copy to Learning and Development, 42 Whinney Heys Road

Date Sent: ............................................................................................................................
And finally...

You have now completed The Prevention and Management of Pressure Ulcers: an educational workbook. Well done! You may now find it useful to revisit the learning outcomes for the course and reflect on what you have achieved by working through the workbook.

You will find the workbook useful for future reference. You may also wish to keep it in your professional development portfolio as it will help you demonstrate your learning and your commitment to providing quality care.
Glossary

**Aseptic technique** - Technique used to prevent cross infection of wounds by minimising wound contact, using sterile solutions and sterile wound dressings.

**Bacteria** - Microorganisms which can live normally on the human body but which can cause infection if allowed to multiply in, for example, a wound.

**Barrier cream** - A preparation to protect the outermost layer of the skin from contaminants.

**Best practice statements** - Statements of best practice focus on specific aspects of care. They are usually developed after wide consultation, taking into account a broad range of views from health professionals.

**Blanching** - The skin whitening that occurs when pressure is applied, indicating that microcirculation is intact.

**Care bundles** - A care bundle is a structured way of improving the process of care and patient outcomes.

**Cellulitis** - Inflammation and infection of the cells, associated with redness, heat, swelling and pain.

**Collagen** - A substance found in human tissue which provides structure and support within the tissue. Collagen is required for wound healing.

**Debridement** - The removal of dead or contaminated tissue by surgical (scalpel, scissors), chemical or enzymatic means, larval therapy, or through autolysis (a process in which the body’s own enzymes break down, or “lyse”, dead (or de-vitalised) tissue).

**Erythema** - Non-specific redness of the skin that can be localised or general in nature, as seen in inflammation surrounding wounds, or in areas where prolonged pressure has closed off the local blood supply resulting in inflammatory changes. It may be associated with cellulitis or reactive hyperaemia.

**Extrinsic** - Factors that are external or outside, for example the surface a person lies on.

**Excoriation** - Damage to the skin caused by urine, faeces or wound exudates, resulting in painful, red, superficial skin damage.

**Exudate** - Clear fluid that has passed through the walls of a damaged or overextended vein and which varies from a thin watery to a thick sticky fluid, depending upon the condition of the wound. Often contains growth factors when a wound is acute, and may contain bacteria and dead white cells when the wound is chronic. Bacteria indirectly cause permeability of the vein wall and this results in increased exudate production.

**Fibroblasts** - A key cell involved in wound healing which lays down collagen within a healing wound.

**Infection** - The presence of multiplying bacteria in body tissues, resulting in the spread of cellular injury. This would be apparent from any one or more of the classical signs of inflammation: erythema, heat, swelling, and pain.

**Intrinsic** - Factors that are internal, or present within the individual, such as other conditions or illnesses the person may have.

**Inflammation** - The phase of the wound healing process where the body clears debris and bacteria from the wound by sending white cells and other key cells to the wound site.

**Maturation** - The phase of wound healing where the wound is strengthened with collagen synthesis.

**Multidisciplinary pathway** - Utilising all health care professionals appropriate to the patient's/client’s needs.

**Neonate** - Infant in the first four weeks after birth.
**Non-blanching erythema** - There is no skin colour change when light finger pressure is applied.

**Pressure-redistributing product** - Any product, mattress, bed or cushion which can reduce pressure on at-risk areas by redistributing or altering the surface area on which the person rests.

**Proliferation** - The phase of the wound healing process where the body fills the wound with new granulation tissue and the wound is covered with epithelial tissue.

**Repositioning** - Changing the position of a person to effect pressure reduction by moving them off an area at risk of damage.

**Risk assessment tool** - A tool which looks at the risk factors of a person and calculates his or her risk of developing a pressure ulcer. This will include assessing nutritional state, general health and mobility.

**Sebum** - A substance secreted by glands in the skin which helps to moisten and protect the skin.

**Slough** - A mixture of dead white cells, dead bacteria, rehydrated necrotic tissue and fibrous tissue. Can be “soft” slough and easily cleaned away or fibrous slough, which can resist even sharp debridement.

**Specialist mattress** - A mattress which is designed to reduce pressure on at-risk areas. Normally these are low air loss or alternating pressure systems. This may be an overlay which rests on tops of the normal mattress or a full mattress replacement which is used instead of the mattress.

**Systemic** - Referring to the whole of the body rather than one component.

**Waterlow Risk Assessment Tool** - The risk assessment tool developed by Judy Waterlow which calculates the risk of a person developing a pressure ulcer.
Bibliography


Royal College of Nursing (2005)


This workbook is based on work carried out and published by NHS Education for Scotland, March 2010.