



All Wales Tissue Viability Nurse Forum
Fforwm Nyrsys Hyfywedd Meinwe Cymru Gyfan

Essential Elements of Pressure Ulcer Prevention & Management

All Wales Guidance for the
Prevention & Management of Pressure Ulcers

This document has been created by the All Wales Tissue Viability Nurse Forum and is based on the European Pressure Ulcer Advisory/ National Pressure Ulcer Advisory Panel/ Pan Pacific Pressure Injury Alliance (EPUAP/NPUAP/PPPIA) 2014 Guidelines for The Prevention & Treatment of Pressure Ulcers.

Contents

Statement	3
Background	3
Implementation	4
Pressure Ulcer Classification System	5
Essential Elements Flow Chart	6
1. Conduct a Pressure Ulcer Risk Assessment	7
2. Reassess Risk of All patients	8
3. Inspect Skin:	9
Pressure Ulcer Classification	10
Assessment of Pressure Ulcers & monitoring of Healing	11
Wound Care: Cleansing	12
Wound Care: Debridement	12
Surgery for Pressure Ulcers	13
Assessment, Treatment of Infection & Biofilms	14
Wound Dressings: Treatment of Pressure Ulcers	16
4. Keep Moving/Support Surfaces:	17
Repositioning	18
Support Surfaces & Other Devices for Pressure prevention	19
Seating	21
Prevention & Management of Heel Pressure Ulcers	23
5. Manage Incontinence/Moisture:	
Keep the patient Dry & Moisturise Skin	24
6. Optimise Nutrition & Hydration:	24
Other considerations	25
Special populations	27
Spinal Cord injured Individuals & Other	
Wheelchair Dependant Individuals	28
Patients requiring Palliative Care	29
Patients in the Operating Room	30
Paediatric patients	31
Critically Ill patients	32
Bariatric Population	33
Older Adults	34
Medical Device related pressure damage	35

EPUAP/NPUAP/PPPIA - 2014 Statement

The goal of this guideline is to provide evidence based recommendations for the prevention and treatment of pressure ulcers that can be used by health professionals throughout the world. The purpose of the prevention recommendations is to guide evidence based care to prevent the development of pressure ulcers and the purpose of the treatment focused recommendations is to provide evidence-based guidance on the most effective strategies to promote pressure ulcer healing.

The guideline is intended for the use of all health professionals, regardless of clinical discipline, who are involved in the care of individuals who are at risk of developing pressure ulcers, or those with an existing pressure ulcer. The guideline is intended to apply to all clinical settings, including hospitals, rehabilitation care, long term care, assisted living at home, and unless specifically stated, can be considered appropriate for all individuals, regardless of their diagnosis or other health care needs.

Additionally, the guideline may be used as a resource for individuals who are at risk of, or have an existing pressure ulcer, to guide awareness of the range of preventive and treatment strategies that are available. Prevention and treatment of mucosal membrane pressure ulcers are beyond the scope of this guideline. Recommendations are systematically developed statements to assist health professional and patient consumer decisions about appropriate health care for specific clinical conditions. The recommendations may not be appropriate for the use in all circumstances.

The recommendations in this guideline are a general guide to appropriate clinical practice, to be implemented by qualified health professionals subject to their clinical judgment of each individual case and in consideration of the patient consumer's personal preferences and available resources. The guideline should be implemented in a culturally aware and respectful manner in accordance with the principles of protection, participation and partnership.

All Wales TVN Forum

The All Wales TVN Forum has scrutinized the guidelines, taken the strength of evidence into account, considered Welsh ways of working and the needs of the Welsh population and adapted the European Pressure Ulcer Advisory/ National Pressure Ulcer Advisory Panel /Pan Pacific Pressure Injury Alliance (EPUAP/NPUAP/PPPIA) 2014 Guidelines for The Prevention & Treatment of Pressure Ulcers for use within all care settings in Wales.

This adapted document is deliberately succinct, identifying the standard of care the AWTVN Forum expects for service users in Wales. For full explanations and details of the strength of evidence for each statement, please refer to the original EPUAP/NPUAP/PPPIA (2014) guidelines www.epuap.org
<http://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf>

The Case for Preventing Acquired Pressure Ulcers

- **The costs of treating a pressure ulcer are estimated to range from £43 to £374 daily with hospital-acquired pressure ulcers increasing the length of stay by an average of 5–8 days per pressure ulcer (Bennett, Dealey and Posnett, 2012).**
- **In Wales pressure ulcers affected 8.9% of all in hospital patients (The National Wound Audit 2015, Report for NHS Wales).**

Implementation

This guideline has been produced with the intention of being a working document. It is hoped that it will facilitate the introduction of and adherence to clinical guidelines that outline optimal strategies for the prevention and treatment of pressure ulcers through its introduction into local policies and guidelines, evidence based care planning. Organization level support is a key component of pressure ulcer prevention programs. For the full recommendations on implementation at an organizational level or professional level please refer to the Facilitators, Barriers and Implementation strategy section found in the original EPUAP/NPUAP/PPPIA (2014) guidelines

[www.epuap.orghttp://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf](http://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf)

- Assess barriers and facilitators for guideline implementation at professional and organizational levels before implementing a pressure ulcer prevention initiative within the organization.
- Assess knowledge and attitudes of professional staff regularly using validated assessment tools.
- At an organizational level, assess the availability, quality and standards for use of available equipment for the prevention and treatment of pressure ulcers.
- At an organizational level, review availability of and access to support surfaces and establish protocols for procurement that ensure timely access for individuals at risk of, or with an existing pressure ulcer.
- At an organizational level, review and select medical devices available in the facility based on the devices' ability to induce the least degree of damage from the forces of pressure and/or shear.
- Assess staffing characteristics (e.g. nursing care hours, qualifications of staff) and staff cohesion at an organizational level.
- Conduct regular evaluation of organizational performance in pressure ulcer prevention and treatment and provide this information as feedback to the stakeholders.
- Use appropriate quality indicators to monitor pressure ulcer prevention and treatment.
- Conduct regular monitoring of facility-acquired pressure ulcer rates as part of pressure ulcer prevention and treatment initiatives.
- Develop a structured, tailored and multi-faceted approach to overcome barriers and enhance facilitators for protocol implementation.
- Consider optimizing work procedures at a professional level through the introduction of:
 - tailored staff education,
 - role models or designated wound care “champions”,
 - nurse-led quality improvement programs, and
 - cues to perform pressure ulcer prevention.
- Consider optimizing work procedures at an organizational level through the introduction of:
 - an awareness campaign,
 - standardized documentation,
 - standardized repositioning regimens (where the individual's needs will be met),
 - multidisciplinary meetings, and
 - on-site consultations.

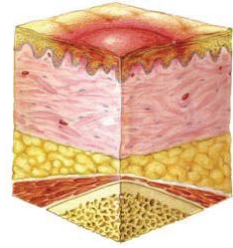
INTERNATIONAL NPUAP/EPUAP PRESSURE ULCER CLASSIFICATION SYSTEM (2014)

A pressure ulcer is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated.

Category/Stage I: Non-blanchable Erythema

Intact skin with non-blanchable redness of a localized area over a bony prominence. Darkly pigmented skin may not have visible blanching; its colour may differ from the surrounding area.

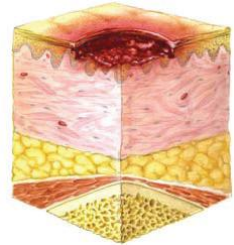
The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue.



Category/Stage II: Partial Thickness Skin Loss

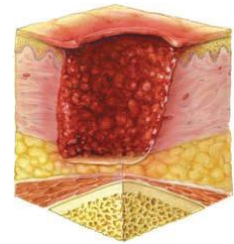
Partial thickness loss of dermis presenting as a **shallow open ulcer** with a red pink wound bed, **without slough**. Also presents as an **intact or open/ruptured serum-filled blister**. Presents as a **shiny or dry shallow ulcer without slough or bruising**.* This Category should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.

**Bruising indicates suspected deep tissue injury.*



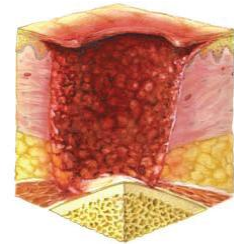
Category/Stage III: Full Thickness Skin Loss

Full thickness tissue loss. Subcutaneous fat may be visible **but bone, tendon or muscle are not**. **Slough may be present** but does not obscure the depth of tissue loss. May include undermining and tunnelling. The depth of a Category/Stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and Category/Stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep Category/Stage III pressure ulcers.



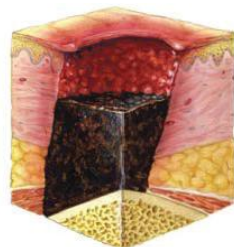
Category/Stage IV: Full Thickness Tissue Loss

Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunnelling. The depth of a Category/Stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Osteomyelitis possible



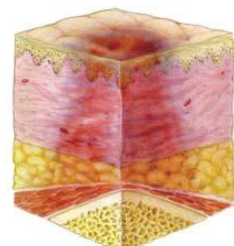
Unstageable: Depth Unknown

Obscured full-thickness skin and tissue loss Full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar is removed, a Category 3 or Category 4 pressure injury will be revealed. Stable eschar (dry, intact) on the heel or ischemic limb should not be softened or removed.



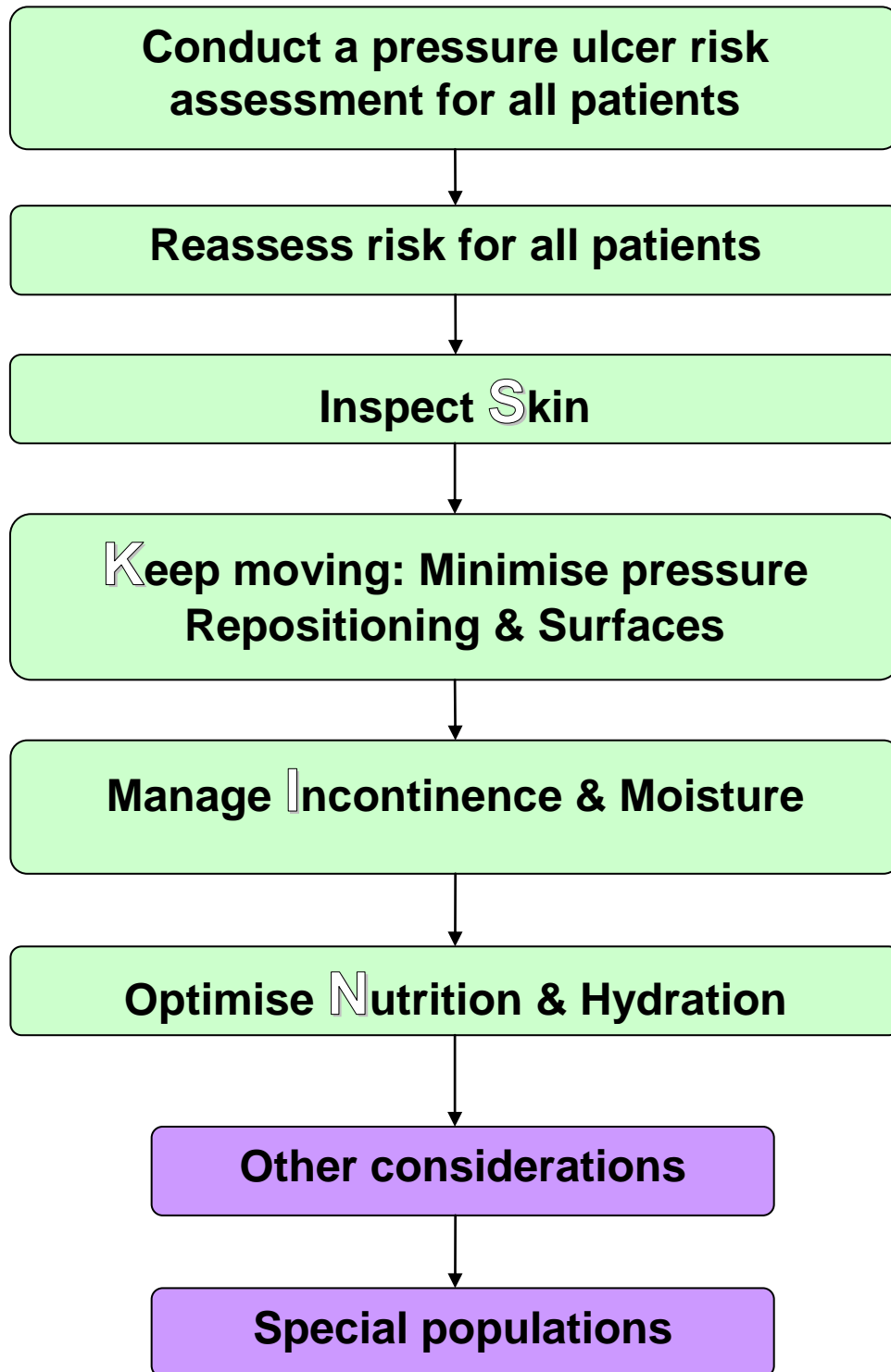
Suspected Deep Tissue Injury: Depth Unknown

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. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue. A deep tissue injury may be difficult to detect in individuals with dark skin tones. Evolution may include a thin blister over a dark wound bed; the wound may further evolve and become covered by thin eschar.



Essential Elements of Pressure Ulcer Prevention & Management

Prevention in individuals at risk should be provided on a continuous basis during the time that they are at risk.



1. Conduct a Pressure Ulcer Risk Assessment for all patients

Prevention in individuals at risk should be provided on a continuous basis during the time that they are at risk and in conjunction with local policy.

There is no universally agreed best approach for conducting a risk assessment; however, expert consensus suggests that the approach be 'structured' in order to facilitate consideration of all relevant risk factors.

Regardless of how the risk assessment is structured, clinical judgment is essential.

Being bedfast or chairfast are usually described as limitations of activity. A reduction in an individual's frequency of movement or ability to move is usually described as having a mobility limitation. Mobility and activity limitations can be considered a necessary condition for pressure ulcer development. In the absence of these conditions, other risk factors should not result in a pressure ulcer. Consider adults & children with medical devices to be at risk for pressure ulcers.

Risk factors identified in a risk assessment should lead to an individualised plan of care to minimise the impact of those variables. Documentation of risk assessments ensures communication within the multidisciplinary team, provides evidence that care planning is appropriate, and serves as a benchmark for monitoring the individual's progress.

What recommendations can be put in place to ensure the pressure ulcer risk assessment of all patients?

- **Conduct a structured risk assessment as soon as possible (but within a maximum of eight hours after admission) to identify individuals at risk of developing pressure ulcers that includes assessment of activity/mobility and a comprehensive skin status.**
- **When using a risk assessment tool, select a tool that is appropriate to the population, is valid and is reliable.**
- **Recognise additional risk factors and use clinical judgment when using a risk assessment tool.**
- **Use a structured approach to risk assessment that is refined through the use of clinical judgment and informed by knowledge of relevant risk factors.**
- **Complete a comprehensive initial assessment of the individual with a pressure ulcer. An initial assessment includes:**
 - **Values and goals of care of the individual and/or the individual's significant others.**
 - **A complete health/medical and social history.**
 - **A focused physical examination that includes:**
 - **Factors that may affect healing (e.g. impaired perfusion and sensation, systemic infection).**
 - **Vascular assessment in the case of extremity ulcers (e.g., physical examination, history of claudication, and ankle-brachial index or toe pressure); and laboratory tests and x-rays as needed.**
 - **Nutrition.**
 - **Pain related to pressure ulcers.**
 - **Risk for developing additional pressure ulcers.**
 - **Psychological health, behaviour, and cognition.**
 - **Social and financial support systems.**
 - **Functional capacity, particularly in regard to repositioning, posture and the need for assistive equipment and personnel.**
 - **The employment of pressure relieving and redistributing manoeuvres.**
 - **Resources available to the individual (e.g. pressure redistribution support surfaces).**
 - **Knowledge and belief about prevention and treatment of pressure ulcers.**
 - **Ability to adhere to a prevention and management plan.**

What recommendations can be put in place to ensure the pressure ulcer risk assessment of all patients? *Continued*

- Consider the impact of mobility limitations on pressure ulcer risk.
- Consider bedfast and/or chairfast individuals to be at risk of pressure ulcer development & complete a comprehensive risk assessment for bedfast and/or chairfast individuals to guide preventive interventions.
- Consider the impact of the following factors on an individual's risk of pressure ulcer development:
 - Perfusion and oxygenation
 - Poor nutritional status
 - Increased skin moisture.
- Consider the potential impact of the following factors on an individual's risk of pressure ulcer development:
 - Increased body temperature;
 - Advanced age;
 - Sensory perception;
 - Haematological measures
 - General health status
 - Document all risk assessments.

2. Reassess Risk for all patients

Risk assessments should be repeated as regularly and as frequently as required by the individual's condition. Reassessment should also be undertaken if there is any change in patient condition

What recommendations can be put in place to ensure reassessment of risk?

- Develop and implement a prevention plan when individuals have been identified as being at risk of developing pressure ulcers.
- Risk factors identified in a risk assessment should lead to an individualized plan of care to minimise the impact of those variables.
- Repeat the risk assessment as often as required by the individual's acuity.
- Undertake a reassessment if there is any significant change in the individual's condition. Inspect skin as frequently as necessary for signs of redness in individuals identified as being at risk of pressure ulceration as ongoing assessment of the skin is necessary to detect early signs of pressure damage. Skin assessment should be ongoing based on the clinical setting and the individual's degree of risk, and prior to the individual's discharge
- Consider individuals with an existing pressure ulcer (any Category/Stage) to be at risk of progression & additional pressure ulcers.

3. Inspect Skin

Ongoing assessment of the skin is necessary to detect early signs of pressure damage. Each health care setting should have a policy in place that includes recommendations for a structured approach to skin assessment relevant to the setting, as well as for clinical areas to be targeted and the timing of assessment/reassessment. It should make clear recommendations for documenting skin assessment and aid communicating information to the wider health care team.

What recommendations can be put in place to ensure inspection of the skin?

- **Ensure that a complete skin assessment is part of the risk assessment screening policy in place in all health care settings.**
- **Include an assessment as part of every risk assessment to evaluate any alterations to intact skin. Consider the general status of skin on pressure ulcer risk.**
- **Educate health professionals on how to undertake a comprehensive skin assessment that includes the techniques for identifying blanching response, localised, heat, oedema, and induration.**
- **Conduct a head-to-toe assessment with particular focus on skin overlying bony prominences including the sacrum, ischial tuberosities, greater trochanters and heels. Each time the patient is repositioned is an opportunity to conduct a brief skin assessment.**
- **Increase the frequency of skin assessments in response to any deterioration in overall condition.**
- **Differentiate the cause and extent of erythema. Educate professionals on how to differentiate whether the skin redness is blanchable or non-blanchable that includes the techniques for identifying blanching response, localized heat, oedema, and induration (hardness), especially in individuals with darkly pigmented skin because areas of redness are not easily identified. Use the finger method to assess whether skin is blanchable or non-blanchable.**

Finger pressure method: a finger is pressed on the erythema for three seconds and blanching is assessed following removal of the finger

- **Document all skin assessments, noting details of any pain possibly related to pressure damage. A number of studies have identified pain as a major factor for individuals with pressure ulcers. Several studies also offer some indication that pain over the site was a precursor to tissue breakdown. (see original full guidelines for study references)**
- **Ask individuals to identify any areas of discomfort or pain that could be attributed to pressure damage.**
- **Observe the skin for pressure damage caused by medical devices (e.g., catheters, oxygen tubing, ventilator tubing, semi rigid cervical collars, etc.).**
- **Avoid positioning an individual on an area of erythema where possible**
- **Inspect the skin under and around medical devices at least twice daily for the signs of pressure-related injury on the surrounding tissue or more frequently in individuals vulnerable to fluid shifts and/or exhibiting signs of localised/generalised oedema.**

PRESSURE ULCER CLASSIFICATION

A pressure ulcer classification system is used to aid in the description of the extent of skin and tissue damage presenting as a pressure ulcer. Medical device related pressure ulcers should be classified according to the amount of visible tissue loss using the International NPUAP/EPUAP Pressure Ulcer Classification System, as for other non-device related pressure ulcers.

What recommendations can be put in place to identify & the classification of Pressure Ulcers is correctly performed?

- Differentiate pressure ulcers from other types of wounds - open wounds from various aetiologies (e.g., venous ulcers, neuropathic ulcers, incontinence associated dermatitis, skin tears and intertrigo) may appear similar to a pressure ulcer; however, the treatment of any wound begins with comprehension of its aetiology.
- Use the International NPUAP/EPUAP Pressure Ulcer Classification System (2014) to classify and document the level of tissue loss. including tissue loss in medical device related pressure ulcers.
- Rely on assessment of skin temperature, change in tissue consistency and pain rather than identification of nonblanchable erythema when classifying Category/Stage I, identifying the severity of Category/Stage II to IV, unstageable pressure ulcers pressure ulcers and suspected deep tissue injury (SDTI) in individuals with darkly pigmented skin & may be difficult to detect.
- The full extent and severity of open pressure ulcers may be overlooked without a full assessment of the surrounding skin. Inflammatory redness from cellulitis and deeper tissue damage may be difficult to detect in individuals with darkly pigmented skin. Verify that there is clinical agreement in pressure ulcer classification amongst the health professionals responsible for classifying pressure ulcers.
- Do not use the International NPUAP/EPUAP Pressure Ulcer Classification System to describe tissue loss in wounds other than pressure ulcers.
- Do not categorize/stage pressure ulcers on mucous membranes. The classification system for pressure ulcers of the skin cannot be used to categorize mucosal skin damage.
- Do not categorize/stage moisture lesions as pressure ulcers. The classification system for pressure ulcers of the skin cannot be used to categorize other causes of skin damage.

ASSESSMENT OF PRESSURE ULCERS & MONITORING OF HEALING

Comprehensive assessment of the individual and his or her pressure ulcer informs development of the most appropriate management plan and ongoing monitoring of wound healing.

What recommendations can be put in place to ensure effective assessment & monitoring of healing has taken place?

- **Assess and document physical characteristics including:**
 - **Category/Stage, location, size, tissue type(s), colour, periwound condition.**
- **With each dressing change, observe the pressure ulcer for signs that indicate a change in treatment is required (e.g., wound improvement, wound deterioration, more or less exudate, signs of infection, or other complications). Address signs of deterioration immediately. Signs of deterioration (e.g., increase in wound dimensions, change in tissue quality, and increase in wound exudate or other signs of clinical infection) should be addressed immediately.**
- **Assess the pressure ulcer initially and re-assess it at least weekly.**
- **Use clinical judgment to assess signs of healing such as decreasing amount of exudate, decreasing wound size, and improvement in wound bed tissue.**
- **Assessment of the individual, his or her ability to heal, the risk for development of additional pressure ulcers, and the ulcer itself are important.**
- **Adjust expectations for healing in the presence of multiple factors that impair wound healing.**
- **Reassess the individual, the pressure ulcer and the plan of care if the ulcer does not show signs of healing as expected despite appropriate local wound care, pressure redistribution, and nutrition.**
- **Expect some signs of pressure ulcer healing within two weeks. A two-week period is recommended for evaluating progress toward healing. However, weekly assessments provide an opportunity for the health professional to assess the ulcer more regularly, detect complications as early as possible, and adjust the treatment plan accordingly.**
- **Teach the individual and his or her significant others about:**
 - **The normal healing process.**
 - **How to identify signs of healing or deterioration.**
 - **Signs and symptoms that should be brought to the health professional's attention.**
- **Inflammatory redness from cellulitis and deeper tissue damage in Category/Stage II to IV and unstageable pressure ulcers may be difficult to detect in individuals with darkly pigmented skin.**
 - Prioritise assessment of the following characteristics:**
 - **Skin heat.**
 - **Skin tenderness.**
 - **Change in tissue consistency.**
 - **Pain.**

What recommendations can be put in place to ensure effective assessment & monitoring of healing has taken place? Continued

- Consider using baseline and serial photographs to monitor pressure ulcer healing over time. Photographs should not replace bedside assessment, but may serve as a useful documentation strategy. If used, photographic techniques and equipment should be standardized to ensure accurate representation of the pressure ulcer condition that can be reliably compared over time.
- Document the results of all wound assessments.
- Address signs of deterioration immediately.
- Consider further diagnostic investigations of wound bed tissue when healing does not progress.

WOUND CARE: CLEANSING

Cleansing is an important first step in preparing the pressure ulcer wound bed to heal by removing surface debris and dressing remnants and allowing better wound visualization for assessment.

Refer to **ANTT Core Clinical Guidelines 2016** for principles relating to safe aseptic practice http://antt.org/ANTT_Site/what_is_ANTT.html

What recommendations can be put in place to ensure effective cleansing?

- Cleanse most pressure ulcers with potable water (i.e. water suitable for drinking) or normal saline.
- Cleanse the pressure ulcer at the time of each dressing change.
- Cleanse pressure ulcers with sinus tracts/tunneling/undermining with caution.
- Consider using an aseptic technique when the individual, the wound or the wound healing environment is compromised.
- Contain and properly dispose of used irrigation solution to reduce cross-contamination.
- Consider using cleansing solutions with surfactants and/or antimicrobials to clean pressure ulcers with debris, confirmed infection, suspected infection, or suspected high levels of bacterial colonization.

WOUND CARE: DEBRIDEMENT

DO NOT DEBRIDE STABLE, HARD, DRY ESCHAR IN ISCHAEMIC LIMBS

Conservative sharp debridement and surgical/sharp debridement must be performed by **specially trained, competent, qualified, and licensed health professionals** consistent with local legal and regulatory statutes

The most common methods used for debriding pressure ulcers are: Surgical/sharp Conservative sharp Autolytic Enzymatic Larvae Mechanical (including ultrasound and hydrosurgical)

SURGERY FOR PRESSURE ULCERS

This section focuses on recommendations for surgical management of pressure ulcers. It does not address specific surgical techniques; those decisions are more appropriately made by an experienced surgeon who has an understanding of the unique needs of the individual requiring surgical management of a pressure.

What recommendations can be put in place to ensure surgery is effective?

- Obtain a surgical consultation for possible urgent drainage and/or debridement if the pressure ulcer has advancing cellulitis or is a suspected source of sepsis.
- Obtain a surgical consultation for possible surgical sharp debridement for individuals with undermining, tunneling/sinus tracts, and/or extensive necrotic tissue that cannot be easily removed by other debridement methods as appropriate to the individual's condition and goals of care.
- Evaluate and optimize factors that may influence surgical healing and long term recurrence prior to surgery.
- Evaluate and promote the individual's ability to adhere to a postoperative management plan.
- Evaluate and optimize physical factors that may impair surgical wound healing.
- Procure and maintain equipment for the prevention and treatment of pressure ulcers. Optimally, the individual should be cared for on the high specification pressure redistribution support surface prior to surgery to determine tolerance of the bed (e.g. dyspnea and weightlessness).
- Evaluate and optimize psychosocial factors that often impair surgical wound healing.
- Evaluate the individual for osteomyelitis if exposed bone is present, the bone feels rough or soft, or the ulcer has failed to heal with contemporary therapy.
- Resect infected bone prior to or during surgical closure unless bone involvement is too extensive.
- Confirm the presence of healthy lifestyle choices and a supportive social network prior to discharging the individual from a facility.
- Provide or facilitate access to pressure ulcer prevention education for the individual and his or her caregivers prior to discharge from the facility.
- Select a high specification support surface that provides enhanced pressure redistribution, shear reduction, and microclimate control for individuals with who have undergone pressure ulcer surgery.

What recommendations can be put in place to ensure effective debridement?

HEELS

- Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as “the body’s natural (biological) cover” and should not be removed.
- Perform a thorough vascular assessment prior to debridement of lower extremity pressure ulcers to determine whether arterial status/supply is sufficient to support healing of the debrided wound.

GENERAL

- Select the debridement method(s) most appropriate to the individual, the wound bed, and the clinical setting.
- Use mechanical, autolytic, enzymatic, and/or biological methods of debridement when there is no urgent clinical need for drainage or removal of devitalized tissue.
- Assess wound daily for signs of erythema, tenderness, oedema, purulence, fluctuance, crepitation, and/or malodour (i.e. signs of infection) and consult an appropriate medical professional urgently in the presence of any of these symptoms. Urgent debridement may be considered in the presence of the above symptoms if consistent with the individual’s wishes and overall goals of care.
- Debride devitalized tissue (tissue that is nonviable or necrotic) within the wound bed or edge of pressure ulcers when appropriate to the individual’s condition and consistent with overall goals of care.

ASSESSMENT, TREATMENT OF INFECTION & BIOFILMS

Bacteria are present on all skin surfaces. When the primary defence provided by intact skin is lost, bacteria will reside on the wound surface. When the bacteria (by numbers or virulence in relation to host resistance) cause damage to the body, infection is present. Wound infection may also be associated with biofilms. Wound healing is delayed and/or may be abnormal when pressure ulcers have significant bacterial burden and infection.

Follow Local:

- **Wound Management Guidelines on the assessment, diagnosis and treatment of infection.**
- **Infection control policies to prevent self-contamination and cross-contamination.**

What recommendations can be put in place to ensure effective assessment, diagnosis & treatment of infection & presence of biofilm in pressure ulcers?

Have a suspicion of local infection in a pressure ulcer in the presence of:

- lack of signs of healing for two weeks
- friable granulation tissue
- malodour
- increased pain in the ulcer
- increased heat in the tissue around the ulcer
- increased drainage from the wound or change in the nature of the wound drainage (e.g. new onset of bloody drainage, purulent drainage)
- increased necrotic tissue in the wound bed; and/or pocketing or bridging in the wound bed.

What recommendations can be put in place to ensure effective assessment, diagnosis & treatment of infection & presence of biofilm in pressure ulcers?

Continued.

- Consider using tissue biopsy and quantitative swab technique to determine the presence of bacterial bioburden/biofilm of the pressure ulcer.
- In the absence of clinical signs of infection, the quantity of organisms (microbial load) is believed to be the best indicator of wound infection. The gold standard method for examining microbial load is quantitative culture of viable biopsied wound tissue.
- Optimize the host response by:
 - evaluating nutritional status and addressing deficits
 - stabilizing glycemic control
 - improving arterial blood flow
 - reducing immunosuppressant therapy if possible
- Many systemic factors contribute to the development of pressure ulcers. If these same factors can be improved, the individual's intrinsic ability to fight infection can usually also be improved.
- Prevent contamination of the pressure ulcer.
- Consider the use of tissue appropriate strength, non-toxic topical antiseptics for a limited time period to control bacterial bioburden.
- Consider the use of topical antiseptics in conjunction with maintenance debridement to control and eradicate suspected biofilm in wounds with delayed healing.
- Consider the use of topical antiseptics for pressure ulcers that are not expected to heal and are critically colonized/topically infected.
- Limit the use of topical antibiotics on infected pressure ulcers, except in special situations where the benefit to the patient outweighs the risk of antibiotic side effects and resistance.
- Use systemic antibiotics for individuals with clinical evidence of systemic infection, such as positive blood cultures, cellulitis, fasciitis, osteomyelitis, systemic inflammatory response syndrome (SIRS), or sepsis. Judicious use of systemic antibiotics remains an important consideration.
- Drain local abscesses.
- Evaluate the individual for osteomyelitis if exposed bone is present, the bone feels rough or soft, or the ulcer has failed to heal with prior therapy. Permanent healing of the pressure ulcer is unlikely until osteomyelitis is controlled.
- Assessment of an ulcer covered with dry, stable eschar should be performed at each dressing change and as clinically indicated to detect the first signs of any developing infection. Clinical indications that the dry, stable eschar requires assessment and intervention include signs of erythema, tenderness, oedema, purulence, fluctuance, crepitus, and/or malodour (i.e. signs of infection) in the area around the dressing. Consult a medical practitioner/vascular surgeon urgently in the presence of these symptoms.

WOUND DRESSINGS: TREATMENT FOR PRESSURE ULCERS

Generally maintaining a moist ulcer bed is the ideal when the ulcer bed is clean and granulating to promote healing or closure. The selection of the wound dressing should be based on the tissue in the ulcer bed, the condition of the skin around the ulcer bed and the goals of the person with the ulcer.

The type of dressing may change over time as the ulcer heals or deteriorates. Refer to **Local Clinical Practice Guideline** for a more complete description of all dressing types as well as discussion of indications and contraindications for their use.

What recommendations can be put in place to ensure effective wound management takes place?

General Recommendations

- Select a wound dressing based on the:
 - ability to keep the wound bed moist
 - need to address bacterial bioburden
 - nature and volume of wound exudate
 - condition of the tissue in the ulcer bed
 - condition of peri-ulcer skin
 - ulcer size, depth and location
 - presence of tunnelling and/or undermining
 - goals of the individual with the ulcer
- Protect peri-ulcer skin.
- Assess pressure ulcers at every wound dressing change and confirm the appropriateness of the current dressing regimen.
- Follow manufacturer recommendations, especially related to frequency of dressing change.
- Change the wound dressing if faeces seep beneath the dressing.
- The plan of care should guide usual dressing wear times and contain provisional plans for dressing changes as needed (for family, the individual, and staff) due to soilage, loosening, etc.
- Ensure all wound dressing products are completely removed with each dressing change.
- Consider NPWT as an early adjuvant for the treatment of deep, Category/Stage III & IV pressure ulcers.

Caution: Negative pressure wound therapy is not recommended in inadequately debrided, necrotic or malignant wounds; where vital organs are exposed; wounds with no exudate; individuals with untreated coagulopathy, osteomyelitis or local/systemic clinical infection. Cautious use by an experienced health professional is recommended for individuals on anticoagulant therapy; in actively bleeding wounds; or where the wound is in close proximity to major blood vessels.

- Debride the pressure ulcer of necrotic tissue prior to the use of NPWT. NPWT is intended for use in pressure ulcers free of necrotic tissue.
- Follow a safe regimen in applying and removing the NPWT system.
- Evaluate the pressure ulcer with each dressing change.
- The optimal dressing change interval is not well-established, and should be based on characteristics of the individual and the wound.
- If pain is anticipated or reported consider:
 - placing a non-adherent interface dressing on the wound bed, underneath the foam
 - lowering the level of pressure, and/or changing type of pressure (continuous or intermittent); and/or using a moist gauze filler instead of foam.
- Educate the individual and his/her significant others about negative pressure wound therapy when used in the community setting.

4. Keep Moving/Support surfaces

Two key components have proven especially effective in minimising pressure. Recommendations in this section of the guideline address the role of repositioning and support surfaces in both the prevention and treatment of pressure ulcers. Repositioning in relation to heel pressure ulcers is discussed in a separate section of the guideline, **Repositioning to Prevent and Manage Heel Pressure Ulcers**. The **Medical Device Associated Pressure Ulcers** section of the guideline includes comprehensive recommendations on preventing device related pressure ulcers through appropriate positioning of the device and the individual.

REPOSITIONING

The use of repositioning should be considered in all at-risk individuals as a prevention strategy. High pressures over bony prominences, for a short period of time, and low pressures over bony prominences, for a long period of time, are equally damaging. In order to lessen the individual's risk of pressure ulcer development, it is important to reduce the time and the amount of pressure she/he is exposed to.

When an individual is seated in a chair, the weight of the body causes the greatest exposure to pressure to occur over the ischial tuberosities. As the loaded area in such cases is relatively small, the pressure will be high, therefore, without pressure relief, a pressure ulcer will occur very quickly.

What recommendations can be put in place to minimise pressure through repositioning?

General Repositioning for All Individuals

- Reposition all individuals at risk of, or with existing pressure ulcers, unless contra-indicated.
- Consider the condition of the individual and the pressure redistribution support surface in use when deciding if repositioning should be implemented as a prevention strategy.
- Record repositioning regimes, specifying frequency and position adopted, and include an evaluation of the outcome of the repositioning regime.

Repositioning Frequency

- Consider the pressure redistribution support surface in use when determining the frequency of repositioning.
- Determine repositioning frequency with consideration to the individual's:
 - tissue tolerance,
 - level of activity and mobility,
 - general medical condition,
 - overall treatment objectives,
 - skin condition and comfort
- Regular positioning is not possible for some individuals because of their medical condition, and an alternative prevention strategy such as providing a high-specification mattress or bed may need to be considered.
- Establish pressure relief schedules that prescribe the frequency and duration of weight shifts.
- Teach individuals to do 'pressure relief lifts' or other pressure relieving manoeuvres as appropriate.
- Regularly assess the individual's skin condition and general comfort. Reconsider the frequency and method of repositioning if the individual is not responding as expected to the repositioning regime.
- Frequent assessment of the individual's skin condition will help to identify the early signs of pressure damage and, as such, her/his tolerance of the planned repositioning schedule. If changes in skin condition should occur, the repositioning care plan needs to be re-evaluated.

What recommendations can be put in place to minimise pressure through repositioning? continued

Repositioning Techniques

- Reposition the individual in such a way that pressure is relieved or redistributed. Repositioning of an individual is undertaken to reduce the duration and magnitude of pressure over vulnerable areas of the body and to contribute to comfort, hygiene, dignity, and functional ability.
- When choosing a particular position for the individual, it is important to assess whether the pressure is actually relieved or redistributed.
- Avoid positioning the individual on bony prominences with existing non-blanchable erythema.
- Non-blanchable erythema is an indication of the early signs of pressure ulcer damage. If an individual is positioned directly onto bony prominences with pre-existing non-blanchable erythema, the pressure and/or shearing forces sustained will further occlude blood supply to the skin, thereby worsening the damage and resulting in more severe pressure ulceration.
- Avoid subjecting the skin to pressure and shear forces. Use manual handling aids to reduce friction and shear. Lift, don't drag, the individual while repositioning.
- Do not leave moving and handling equipment under the individual after use, unless the equipment is specifically designed for this purpose.
- Avoid positioning the individual directly onto medical devices, such as tubes, drainage systems or other foreign objects.
- Do not leave the individual on a bedpan longer than necessary.

Repositioning Individuals in Bed

- Use the 30° tilted side-lying position (alternately, right side, back, left side) or the prone position if the individual can tolerate this and her/his medical condition allows.
- Encourage individuals who can reposition themselves to sleep in a 30° to 40° side lying position or flat in bed if not contraindicated.
- Avoid lying postures that increase pressure, such as the 90° side-lying position, or the semi-recumbent position.
- Limit head-of-bed elevation to 30° for an individual on bedrest unless contraindicated by medical condition, feeding and digestive considerations, to facilitate breathing and/or prevent aspiration and ventilator associated pneumonia. If sitting in bed is necessary, avoid head-of-bed elevation or a slouched position that places pressure and shear on the sacrum and coccyx.
- Elevating the head of the bed may be medically necessary. In these cases, semi-Fowler's position is preferred. Individuals should be positioned and supported to prevent sliding down in bed and creating shear forces.
- Individuals placed in the prone position may be at increased risk for the development of facial pressure ulcers. At each rotation, assess other body areas (i.e. breast region, knees, toes, penis, clavicles, iliac crest, symphysis pubis).

Additional Recommendations for Individuals with Existing Pressure Ulcers

- Do not position an individual directly on a pressure ulcer nor area(s) of suspected deep tissue injury with intact skin. Pressure reduces perfusion to injured tissues. Continued pressure on an existing pressure ulcer will delay healing and may cause additional deterioration. If pressure over the area cannot be relieved by repositioning, select an appropriate support surface.

SUPPORT SURFACES & OTHER DEVICES FOR PRESSURE ULCER PREVENTION

Pressure ulcer risk factors vary from person to person. Support surfaces are specialised devices for pressure redistribution designed for management of tissue loads, microclimate, and/or other therapeutic functions (i.e. any mattress, integrated bed system, mattress replacement, overlay, or seat cushion, or seat cushion overlay). Not all support surfaces are compatible with every care setting and should not therefore be based solely on the perceived level of risk for pressure ulcer development or the category of any existing pressure surfaces. Surfaces should be chosen on an individual basis depending on the needs of the individual for pressure redistribution and other therapeutic functions. In all cases, the manufacturer's recommendations for the use and maintenance should be followed.

Refer to the *Clinical Practice Guideline* <http://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf> for a consensus opinion on the minimum characteristics for a product to be considered a high specification foam mattress.

What recommendations can be put in place to minimise pressure with support?

General Recommendations for Mattress and Bed Support Surfaces

- Select a support surface that meets the individual's needs. Consider the individual's need for pressure redistribution based on following factors:
 - level of immobility and inactivity
 - need for microclimate control and shear reduction
 - size and weight of the individual
 - risk for development of new pressure ulcers
 - number, severity, and location of existing pressure ulcer(s)
- Choose a support surface that is compatible with the care setting.
- Consider the weight of the bed, the structure of the building, the width of doors, the availability of uninterrupted electrical power, and safe location for the pump/motor, including its ventilation. Plans should be in place for the contingency of power failure.
- Examine the appropriateness and functionality of the support surface on every encounter with the individual.
- Identify and prevent potential complications of support surface use.
- Proper selection and operation of support surfaces is the key to preventing complications.
- Verify that the support surface is being used within its functional life span, as indicated by the manufacturer's recommended test method (or other industry recognized test method) before use of the support surface.
- Repositioning is still required for pressure relief and comfort when a support surface is in use. However, the frequency of repositioning may alter as a result of using a support surface.
- Use a pressure redistribution surface to offload pressure points on the face and body while in the prone position.
- Choose positioning devices and incontinence pads, clothing and bed linen that are compatible with the support surface. Limit the amount of linen and pads placed on the bed.
- Use a high specification reactive foam mattress rather than a non high specification reactive foam mattress for all individuals assessed as being at risk for pressure ulcer development.

What recommendations can be put in place to minimise pressure with support surfaces continued.

Mattress and Bed Support Surfaces for Pressure Ulcer Prevention

- Pressure redistributing support surfaces are designed to either increase the body surface area that comes in contact with the support surface (to reduce interface pressure) or to sequentially alter the parts of the body that bear load, thus reducing the duration of loading at any given anatomical site.
- There is no evidence of the superiority of one higher specification foam mattress over any other higher specification foam mattresses
- Review the characteristics of foam mattresses used in the facility for pressure ulcer prevention to ensure they are high specification.
- Consider using other reactive support surfaces for individuals assessed as being at risk for pressure ulcer development.
- Use an active support surface (overlay or mattress) for individuals at higher risk of pressure ulcer development when frequent manual repositioning is not possible.
- Do not use small cell alternating pressure air mattresses or overlays. Alternating pressure air mattresses with small air cells (diameter < 10 cm) cannot be sufficiently inflated to ensure pressure relief over the deflated air cells.

Mattress and Bed Support Surfaces for Individuals with Existing Pressure Ulcers

- Consider replacing the mattress with a support surface that provides more effective pressure redistribution, shear reduction, and microclimate control if:
 - the individual cannot be positioned off the existing pressure ulcer
 - has pressure ulcers on two or more turning surfaces (e.g. the sacrum and trochanter) that limit turning options
 - fails to heal or demonstrates deterioration despite appropriate comprehensive care
 - the individual is at high risk for additional pressure ulcers; and/or 'bottoms out' on the existing support surface.
- When pressure ulcers deteriorate or fail to heal, the clinician should consider replacing the existing support surface with one that will provide a properly matched support surface in terms of pressure, shear, and microclimate for the individual. Changing the support surface is only one of several strategies to consider. More frequent repositioning, preventive interventions and local wound care should also be intensified as needed.
- Before replacing the existing mattress:
 - evaluate the effectiveness of previous and current prevention and treatment plans; and
 - set treatment goals consistent with the individual's goals, values, and lifestyle.
- Consider using a high specification reactive foam mattress or non-powered pressure redistribution support surface for individuals with Category/Stage I and II pressure ulcers.
- Select a support surface that provides enhanced pressure redistribution, shear reduction, and microclimate control for individuals with Suspected Deep tissue injury; Category/Stage III, IV; and Unstageable pressure ulcers.
- For all practical purposes, evolving deep tissue injury should be provided the same level of pressure redistribution as a Category/Stage III or IV pressure ulcer. Offloading and pressure redistribution may allow reperfusion of ischemic and injured tissue, limiting the extent of infarcted or dead tissue. Once the ulcer has fully evolved, support surface needs can be re-evaluated.

SEATING

Repositioning Seated Individuals

- Use a split leg sling mechanical lift when available to transfer an individual into a wheelchair or bedside chair when the individual needs total assistance to transfer. Remove the sling immediately after transfer.
- Position the individual so as to maintain stability and his or her full range of activities whilst also offloading the heels and providing adequate pressure relief to other vulnerable areas..
- Select a seated posture that is acceptable for the individual and minimizes the pressures and shear exerted on the skin and soft tissues
- Provide adequate seat tilt to prevent sliding forward in the wheelchair or chair, and adjust footrests and armrests to maintain proper posture and pressure redistribution.
- Ensure that the feet are properly supported either directly on the floor, on a footstool, or on footrests when sitting (upright) in a bedside chair or wheelchair.
- To avoid shear and friction select a seat with an appropriate seat-to-floor height for the individual. If the individual's feet cannot be positioned directly on the ground, footrest height should be adjusted so as to slightly tilt the pelvis forward by positioning the thighs slightly lower than horizontally.
- Avoid the use of elevating leg rests if the individual has inadequate hamstring length. If the hamstring length is inadequate and elevating leg rests are used, the pelvis will be pulled into a sacral sitting posture, causing increased pressure on the coccyx and/or sacrum.
- Limit the time an individual spends seated in a chair without pressure relief

Repositioning the Individual with Existing Pressure Ulcers in a Chair

- Minimize seating time and consult a seating specialist if pressure ulcers worsen on the seating surface selected.
- Consider periods of bed rest to promote ischial and sacral ulcer healing.
- Weigh the risks and benefits of supported sitting against benefits to both physical and emotional health.
- If sitting in a chair is necessary for individuals with pressure ulcers on the sacrum/coccyx or ischia, limit sitting to three times a day in periods of 60 minutes or less. Consult a seating specialist to prescribe an appropriate seating surface and/or positioning techniques to avoid or minimise pressure on the ulcer.
- Sitting is important to reducing the hazards of immobility, facilitating eating and breathing, and promoting rehabilitation. While sitting is important for overall health, every effort should be made to avoid or minimize pressure on the ulcer.
- Avoid seating an individual with an ischial ulcer in a fully erect posture (in chair or bed).
- Modify sitting time schedules and re-evaluate the seating surface and the individual's posture if the ulcer worsens or fails to improve.
- Use a pressure-redistributing/alternating seat cushion for individuals sitting in a chair whose mobility is reduced and who are thus at risk of pressure ulcer development.
- Inspect and maintain all aspects of a seating support surface to ensure proper functioning and meeting of the individual's needs.
- Seating cushions should be inspected for signs of wear on a daily basis. The support surface (chairs and wheelchairs) should be inspected according to the manufacturer's recommendations.
- Place the feet of the individual on a footstool or footrest when the feet do not reach the floor.
- Provide complete and accurate training on use and maintenance of a seating support surface (including wheelchairs) and cushion devices delivered to the individual.

Seating continued.

General Recommendations on Seating Support Surfaces

- Individualise the selection and periodically re-evaluated seating support surface and associated equipment for posture and pressure redistribution with consideration to:
 - body size and configuration;
 - the effects of posture and deformity on pressure distribution; and
 - mobility and lifestyle needs.
- Select a stretchable/breathable cushion cover that fits loosely on the top surface of the cushion and is capable of conforming to the body contours. A tight, non-stretch cover will adversely affect cushion performance.
- Assess the cushion and cover for heat dissipation. Select a cushion and cover that permit air exchange to minimize temperature and moisture at the buttock interface.
- Use a pressure-redistributing/alternating seat cushion for individuals sitting in a chair whose mobility is reduced and who are thus at risk of pressure ulcer development.
- Inspect and maintain all aspects of a seating support surface to ensure proper functioning and meeting of the individual's needs.
- Seating cushions should be inspected for signs of wear on a daily basis. The support surface (chairs and wheelchairs) should be inspected according to the manufacturer's recommendations.
- Provide complete and accurate training on use and maintenance of a seating support surface (including wheelchairs) and cushion devices delivered to the individual.

Seating Support Surfaces for Individuals with Existing Pressure Ulcers

- Refer individuals to a specialist seating professional for evaluation if sitting is unavoidable.
- Select a cushion that effectively redistributes the pressure away from the pressure ulcer. Cushion construction achieves pressure redistribution in one of two basic methods: immersion/envelopment or redirection/off-loading.
- Use alternating pressure seating devices judiciously for individuals with existing pressure ulcers. Weigh the benefits of off-loading against the potential for instability and shear based on the construction and operation of the cushion.

Prevention and Management of Heel Pressure Ulcers.

The posterior prominence of the heel sustains intense pressure, even when a pressure redistribution surface is used.

- Inspect the skin of the heels regularly.
- Ensure that the heels are free of the surface of the bed. Ideally, heels should be free of all pressure.
- The following 'devices' should not be used to elevate heels:
 - Synthetic sheepskins;
 - Cut-out ring/ donut-type devices
 - Intravenous fluid bags
 - Water-filled gloves
- Use a foam cushion under the full length of the calves to elevate heels. Avoid areas of high pressure, especially under the Achilles tendon.
- Pillows or foam cushions used for heel elevation should extend the length of the calf to avoid areas of high pressure, particularly under the Achilles tendon. Flex the knee slightly (5° to 10°) to avoid popliteal vein compression and increased risk of a deep vein thrombosis.
- Heel suspension devices are preferable for long term use to elevate and offload the heel, or for individuals who are not likely to keep their legs on the pillows.
- Apply heel suspension devices according to the manufacturer's instructions.
- Remove the heel suspension device periodically to assess skin integrity.

5. Manage Incontinence/Moisture: Keep the Patient Dry & Moisturise Skin

The mechanical properties of the stratum corneum are changed by the presence of moisture and as a function of temperature.

Dry skin also seems to be a significant and independent risk factor for pressure ulcer development. It is important to note that skin damage from moisture is not a pressure ulcer, but that presence of skin damage from moisture may increase the risk of pressure ulceration.

What recommendations can be put in place to ensure effective management of Incontinence/moisture?

- Consider individuals with skin conditions such as dry skin, erythema to be at risk of pressure ulcer development.
- Keep the skin clean and dry using a pH balanced skin cleanser.
- Use skin emollients to hydrate dry skin in order to reduce risk of skin damage.
- Protect the skin from exposure to excessive moisture with a barrier product in order to reduce the risk of pressure damage.
- Develop and implement an individualized continence management plan.
- Cleanse the skin promptly following episodes of incontinence
- Protect the skin from exposure to excessive moisture with a barrier product in order to reduce the risk of pressure damage.
- Consider using a skin moisturiser to hydrate dry skin in order to reduce risk of skin damage.
- Do not massage or vigorously rub skin that is at risk for pressure ulceration for pressure ulcer prevention. As well as being painful, rubbing the skin can also cause mild tissue destruction or provoke an inflammatory reaction, particularly in the frail elderly.

6. Optimise Nutrition & Hydration

Nutrition screening is the process used to identify individuals who require a comprehensive nutrition assessment due to characteristics that put them at potential nutritional risk.

Malnutrition or under nutrition is a reversible risk factor for pressure ulcer development, early identification and management of malnutrition is very important. The recommendations in this section are predominantly for adult individuals and have been derived from evidence conducted in adult populations. Recommendations for nutritional assessment and treatment in paediatric populations are presented in the section *Special Populations: Paediatric Individuals*.

What recommendations can be put in place to optimise nutrition and hydration?

- Have a nutritional screening policy in place along with recommended frequency of screening for implementation.
- Use a valid and reliable nutrition screening tool to assess the nutritional status of every individual at risk of pressure ulcers using a valid, reliable and practical tool for nutritional screening that is quick and easy to use and acceptable to both the individual and health care worker.
- Screen nutritional status for each individual at risk of or with a pressure ulcer:
 - at admission to a health care setting;
 - with each significant change of clinical condition; and/or
 - when progress toward pressure ulcer closure is not observed.
- Refer individuals screened to be at risk of malnutrition and individuals with an existing pressure ulcer to a registered dietitian or an inter-professional nutrition team for a comprehensive nutrition assessment.
- Provide and encourage adequate daily fluid intake for hydration for an individual assessed to be at risk of or with a pressure ulcer. This must be consistent with the individual's comorbid conditions and goals.
- Monitor individuals for signs and symptoms of dehydration including change in weight, skin turgor, urine output, elevated serum sodium, and/or calculated serum osmolality. Fluid serves as the solvent for vitamins, minerals, glucose and other nutrients and transports nutrients and waste products through the body
- Provide additional fluid for individuals with dehydration, elevated temperature, vomiting, profuse sweating, diarrhea, or heavily exuding wounds.
- Refer each individual with nutritional risk and pressure ulcer risk to a registered dietitian and also, if needed, to a multidisciplinary nutritional team that includes a registered dietitian, a nurse specializing in nutrition, a physician, a speech and language therapist, an occupational therapist, and when necessary a dentist.
- Follow relevant and evidence based guidelines on enteral nutrition and hydration for individuals at risk of pressure ulcers, who show nutritional risks or nutritional problems.
- Offer high-protein mixed oral nutritional supplements and/or tube feeding, in addition to the usual diet, to individuals with nutritional risk and pressure ulcer risk because of acute or chronic diseases, or following a surgical intervention.

Other Considerations - PAIN

Pain assessment and management

Pressure ulcers are painful. Individuals with pressure ulcers experience ulcer related pain that can be quantified and differentiated from other pain, and this pain occurs both during procedures and at rest. Assess the impact of pressure ulcer pain on the individual's quality of life. Pressure ulcers have measureable and persistent impact on health-related quality of life measures. Educate the individual, caregivers, and health care providers about causes, assessment and management of pressure ulcer pain.

Assess for Pressure Ulcer Pain

- Assess all individuals for pain related to a pressure ulcer or its treatment and document findings.
- An initial pain assessment should include the following four elements:
 - a detailed pain history including the character, intensity and duration of pressure ulcer pain
 - a physical examination that includes a neurological component
 - a psychosocial assessment
 - an appropriate diagnostic work-up to determine the type and cause of the pain
- Assess for pressure ulcer related pain in adults using a scale that is valid and reliable & incorporates the individual's cognitive ability.
- Assess for deterioration of the ulcer or possible infection when the individual reports increasing intensity of pain over time.

Prevent Pressure Ulcer Pain

- Use a lift or transfer sheet to minimize friction and/or shear when repositioning an individual,
- Position the individual off the pressure ulcer whenever possible. Continued positioning on a pressure ulcer can result in increased pressure, pain and damage to the area.
- Avoid postures that increase pressure, such as Fowler's position greater than 30° or 90° side-lying position, or the semi-recumbent position

Manage Pressure Ulcer Pain

- Organise care delivery to ensure that it is coordinated with pain medication administration and that minimal interruptions follow. Set priorities for treatment.
- Pain management includes performing care after administration of pain medication to minimize pain experienced and interruptions to comfort for the individual.
- Encourage individuals to request a 'time out' during any procedure that causes pain.
- Reduce pressure ulcer pain by keeping the wound bed covered and moist, and requires less frequent changing (Note: Stable dry eschar is usually not moistened).
- Consider the use of non-pharmacological pain management strategies to reduce pain associated with pressure ulcers.
- Encourage repositioning as a means to reduce pain, if consistent with the individual's wishes.
- Use adequate pain control measures, including additional dosing, prior to commencing wound care procedures.
- Consider using topical anaesthetics to reduce or eliminate pressure ulcer pain.
- Work with the multi-disciplinary health care team to develop a holistic plan to manage chronic pressure ulcer pain. This should be developed with input from a range of health professionals (e.g., pain specialists, medical professionals, nursing and allied health professionals), the individual and his or her caregivers.

The recommendations in *Special Populations* are intended to supplement and not replace the general recommendations outlined in this guideline.

**Spinal Cord Injured Individuals and Other
Wheelchair Dependent Individuals**

Patients Requiring Palliative Care

Patients in the Operating Room

Paediatric Patients

Critically Ill Patients

Bariatric Patients

Older Adults

Medical Device related pressure damage

Spinal Cord Injured Individuals and Other Wheelchair Dependent Individuals

The recommendations included in other sections of the guideline are generally appropriate to individuals with spinal cord injury (SCI). This population-specific section of the guideline includes recommendations specific to, or of particular relevance for individuals with SCI.

Preventing Pressure Ulcers During the Acute Care Phase

- Transfer the individual off a spinal hardboard/backboard as soon as feasible after admission to an acute care facility in consultation with a qualified health professional.
- Replace an extrication cervical collar with an acute care rigid collar as soon as feasible in consultation with a qualified health professional.

Seating Surfaces

- Refer individuals to a seating professional for evaluation.
- Select a pressure redistribution cushion that:
 - provides contour, uniform pressure distribution, high immersion or offloading
 - promotes adequate posture and stability
 - permits air exchange to minimize temperature and moisture at the buttock interface
 - has a stretchable cover that fits loosely on the top cushion surface and is capable of conforming to the body contours
- Assess other seating surfaces commonly used by the individual and minimize the risk they may pose to skin.

Repositioning and Mobility

- Maintain proper positioning and postural control.
- Use variable-position seating (tilt-in-space, recline, and standing) in manual or power wheelchairs to redistribute load off of the seat surface. Tilt the wheelchair before reclining.
- Encourage the individual to reposition regularly while in bed and seated.
- Provide appropriate assistive devices to promote bed and seated mobility.
- Establish pressure relief schedules that prescribe the frequency and duration of weight shifts.
- Teach individuals to do 'pressure relief lifts' or other pressure relieving manoeuvres as appropriate. Identify effective pressure relief methods and educate individuals in performance of methods consistent with the ability of the individual.

Additional Repositioning Recommendations for Individuals With Existing Pressure Ulcers

- Consider periods of bed rest to promote ischial and sacral ulcer healing.
 - Ideally, ischial ulcers should heal in an environment where the ulcers are free of pressure and other mechanical stress.
- Develop a schedule for progressive sitting according to the individual's tolerance and pressure ulcer response in conjunction with a seating professional.
- Promote and facilitate self-management for individuals with SCI. Provide individuals with SCI and their caregivers with structured and ongoing education on prevention and treatment of pressure ulcers at a level appropriate to their education background.

Electrical Stimulation for Preventing Pressure Ulcers

- There is emerging evidence that electrical stimulation induces intermittent tetanic muscle contractions and reduces the risk of pressure ulcer development in at-risk body parts, especially in individuals with SCI.
- Consider the use of electrical stimulation for anatomical locations at risk of pressure ulcer development in individuals with spinal cord injury.

Patients Requiring Palliative Care

It is important to implement preventive and treatment interventions in accordance with the individual's wishes, and with consideration to overall health status. The goals of palliative wound care are comfort for the individual and limiting the impact of the wound on quality of life, without the overt intent of healing. The main of the guidance section outlines general recommendations that remain appropriate for individuals receiving palliative care.

- Consider using a Risk Assessment Tool for pain, specific to adult individuals in palliative care.
- Assess the impact of the pressure ulcer on quality of life for the individual and his/her significant others.
- Assess the individual initially and at any change in their condition to re-evaluate the plan of care.
- Assess the pressure ulcer initially and with each dressing change, but at least weekly (unless death is imminent), and document findings.
- Reposition and turn the individual at periodic intervals, in accordance with the individual's wishes, comfort and tolerance.
- Pre-medicate the individual 20 to 30 minutes prior to a scheduled position change for individuals who experience significant pain on movement.
- Consider the individual's choices in turning, including whether she/he has a position of comfort, after explaining the rationale for turning.
- Consider changing the support surface to improve pressure redistribution and comfort.
- Strive to reposition an individual receiving palliative care at least every 4 hours on a pressure redistributing mattress such as viscoelastic foam, or every 2 hours on a regular mattress.
- Document turning and repositioning, as well as the factors influencing these decisions (e.g., individual wishes or medical needs).
- Strive to maintain adequate nutrition and hydration compatible with the individual's condition and wishes. Adequate nutritional support is often not attainable when the individual is unable or refuses to eat, based on certain disease states. Offer nutritional protein supplements when ulcer healing is the goal.
- Set treatment goals consistent with the values and goals of the individual, while considering input from the individual's significant others. The goals should aim to enhance quality of life for the individual
- An individual receiving palliative care whose body systems are shutting down often lacks the physiological resources necessary for complete healing of the pressure ulcer. As such, the goal of care may be to enhance quality of life, to maintain or improve the status of the pressure ulcer rather than heal it.
- Monitor the pressure ulcer in order to continue to meet the goals of comfort and reduction in wound pain, addressing wound symptoms that impact quality of life such as malodor and exudate. Select a wound dressing that requires less frequent changing and is less likely to cause pain.
- Consider use of topical metronidazol, charcoal or activated charcoal dressings to effectively control pressure ulcer odour associated with anaerobic bacteria and protozoal infections.
- Consider use of external odour absorbers or odour maskers for the room.
- Do not under treat pain in individuals receiving palliative care.
- Educate the individual and his or her significant others regarding skin changes at end of life.
- Validate that family care providers understand the goals and plan of care.

Patients in the Operating Room

During surgery, patients are immobile, positioned on a relatively hard surface, are not able to feel the pain caused by pressure and shearing forces, and are unable to change their position in order to relieve pressure. Additional recommendations on high specification support surfaces, including their maintenance, are found in the guideline section *Support Surfaces*. The guideline section on *Medical Device Related Pressure Ulcers* includes additional recommendations for reducing risk associated with external devices.

Recommendations

- Consider additional risk factors specific to individuals undergoing surgery including:
 - duration of time immobilized before surgery
 - length of surgery
 - increased hypotensive episodes during surgery
 - low core temperature during surgery
 - reduced mobility on day one postoperatively
- Use a high specification reactive or alternating pressure support surface on the operating table for all individuals identified as being at risk of pressure ulcer development.
- Position the individual in such a way as to reduce the risk of pressure ulcer development during surgery.
- Use additional support surfaces (e.g. facial pads) to offload pressure points on the face and body while in the prone position.
- Do not position the individual directly on a medical device unless it cannot be avoided.
- Ensure that the heels are free of the surface of the operating table. Ideally, heels should be free of all pressure, a state sometimes called 'floating heels'.
- Use heel suspension devices that elevate and offload the heel completely in such a way as to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon.
- Heel suspension devices are preferable for immobilized individuals in the operating room.
- Position the knees in slight flexion when offloading the heels.
- Positioning the knees in slight flexion prevents popliteal vein compression and decreases the risk of peri-operative deep vein thrombosis.
- Consider pressure redistribution prior to and after surgery.
- Place the individual on a high specification reactive or alternating pressure support surface both prior to and after surgery.
- Document the individual's position and the anatomical areas under increased interface pressure during surgery.
- Position the individual in a different posture preoperatively and postoperatively than the posture adopted during surgery.
- Also see medical device related pressure damage section

Paediatric Patients

The recommendations outlined in other sections of this guideline are generally appropriate for the prevention and treatment of pressure ulcers in paediatric populations. Of particular relevance to children is the guideline section *Medical Device related Pressure Ulcers*. An exception is the chapter *Nutrition in Prevention and Treatment*, which provides recommendations for nutritional intake for adult populations, based on research conducted in adults.

Pressure Ulcer Risk Assessment

- Perform an age appropriate risk assessment that considers risk factors of specific concern for paediatric and neonate populations, including:
 - activity and mobility levels
 - body mass index and/or birth weight
 - skin maturity
 - ambient temperature and humidity
 - nutritional indicators
 - perfusion and oxygenation
 - presence of an external device
 - duration of hospital stay
- Consider children with medical devices to be at risk for pressure ulcers.
- Consider using a reliable and valid paediatric pressure ulcer risk assessment tool to facilitate a structured assessment.

Assessment and Monitoring

- Engage the family or legal guardian involved in the individual's care when establishing goals of care.
- Conduct and document a skin assessment at least daily and after procedures for changes related to pressure, friction, shear, moisture.
- Assess the skin on occiput for neonate and paediatric individuals.
- Inspect the skin under and around medical devices at least twice daily for the signs of pressure related injury on the surrounding tissue.

Pain

- Assess for pain in neonates and children using a validated scale.

Nutritional Management

- Conduct an age appropriate nutritional assessment for neonates and children. A paediatrician, dietitian or other qualified health professional should conduct an age appropriate nutritional assessment to identify nutritional requirements for neonates and children with or at risk of pressure ulcers.
- Regularly reassess the nutritional requirements of critically ill neonates and children who have, or are at risk of, a pressure ulcer.
- Develop an individualized nutrition care plan for neonates and children with, or at risk of, a pressure ulcer.
- Ensure all neonates and children maintain adequate hydration.
- When oral intake is inadequate, consider enteral or parenteral nutritional support in neonates and children who are at risk of a pressure ulcer or have an existing pressure ulcer and who are also identified as being at risk of malnutrition.

Paediatric Patients continued

Repositioning

- Ensure that the heels are free of the surface of the bed.
- Frequently reposition the head of neonates and infants when they are sedated and ventilated.

Selection of Support Surfaces

- Select an age appropriate, high specification support surface for children at high risk of pressure ulcers.
- The efficacy and safety of using a support surface designed for an adult individual for preventing pressure ulcers in the paediatric population has not been investigated thoroughly. When selecting a pressure redistribution support surface for children, consideration should be given to the specific bony prominences most at risk.
- Select a high specification support surface for premature infants and younger children to prevent occipital pressure ulcers.

Ensure that the individual's height, weight and age are consistent with the manufacturer's recommendations when placing a paediatric individual on a low-air-loss bed or alternating pressure support surface. This recommendation is based on expert opinion. The manufacturer's weight recommendations for low-air-loss beds should be followed.

Critically Ill Patients

- Consider the need to change support surfaces for individuals with poor local and systemic oxygenation and perfusion to improve pressure redistribution, shear reduction, and microclimate control and utilise additional features (e.g., turn assistance, percussion) as needed.
- Consider the need to change support surfaces for individuals who cannot be turned for medical reasons such as spinal instability and haemodynamic instability. Resume routine repositioning as soon as these conditions stabilise.
- Consider slow, gradual turns allowing sufficient time for stabilisation of haemodynamic and oxygenation status.
- Consider more frequent small shifts in position to allow some re-perfusion in individuals who cannot tolerate frequent major shifts in body position.
- Prevent shear injury when lateral-rotation features are used. Assess skin frequently for shear injury. Secure the individual with bolster pads (provided by the manufacturer) to prevent sacral shearing. The individual should be aligned properly in the centre of the surface.
- Continue to turn the individual and assess skin for pressure and shear damage. Consider discontinuing lateral rotation at the first sign of tissue damage, and re-evaluate the individual and the support surface. Weigh the risks and benefits of continued lateral rotation for individuals in respiratory distress.
- Change lateral-rotation support surface to a support system with improved pressure redistribution, shear reduction, and microclimate control and without rotation when there is evidence of shear injury. Position the individual off the area of injury as much as possible.
- Also see medical device related pressure damage section

Bariatric Population

The recommendations below highlight important considerations in the care of bariatric individuals and should be considered in conjunction with the recommendations in the main sections of this guideline.

Recommendations for the Organization

- Provide safe, respectful care and avoid injuries to both the individual and health professionals.
- Maximize workplace safety by implementing organization-wide bariatric management strategies that address manual handling techniques.
- Provide pressure redistribution support surfaces and equipment appropriate to the size and weight of the individual.

Assessing the Bariatric Individual

- Assess all skin folds regularly. Access adequate assistance to fully inspect all skin surfaces and folds. Pressure ulcers develop over bony prominences, but may also result from tissue pressure across the buttocks and other areas of high adipose tissue concentration.
- Differentiate intertriginous dermatitis from Category/Stage I and II pressure ulcers.
- Refer bariatric individuals to a registered dietitian or an interprofessional nutrition team for a comprehensive nutrition assessment and weight management plan. The bariatric individual can be malnourished despite the appearance of being well fed.

Equipment Selection

- Ensure the individual is provided with a bed of appropriate size and weight capacity specifications.
- Use beds that adequately support the weight of the individual.
- Check routinely for 'bottoming out' of the support surface.
- Ensure that the bed surface area is sufficiently wide to allow turning of the individual without contact with the side rails of the bed.
- Consider selecting a support surface with enhanced pressure redistribution, shear reduction and microclimate
- Use wheelchairs and chairs that are wide and strong enough to accommodate the individual's girth and weight.
- Use a pressure redistribution cushion designed for the bariatric individual on seated surfaces.
- Where appropriate, provide bariatric walkers, overhead trapezes on beds, and other devices to support continued mobility and independence.

Repositioning

- Avoid pressure on skin from tubes, other medical devices and foreign objects.
- Use pillows or other positioning devices to offload the pannus or other large skin folds and prevent skin-on-skin pressure.

Pressure Ulcer Care

- Provide adequate nutrition to support healing.
- Bariatric individuals, despite their size, may lack adequate nutrients to support healing of pressure ulcers.
- Assess pressure ulcers carefully for signs of infection and delays in healing.
- Monitor wound dressing materials closely, especially in large cavity wounds.

Older Adults

Assessment and Care Planning

- Consider the individual's cognitive status when conducting a comprehensive assessment and developing a pressure ulcer prevention and/or treatment plan.
- Incorporate the individual's cognitive ability into the selection of a pain assessment tool.
- Ensure pressure ulcers are correctly differentiated from other skin injuries, particularly incontinence-associated dermatitis or skin tears.
- Set treatment goals consistent with the values and goals of the individual.
- Engage the family or legal guardian when establishing goals of care and validate their understanding of these goals. Goals of care should be established in collaboration with the individual and his or her significant others and should be reflective of the older adult's values and goals of care, particularly as end-of-life approaches.
- Educate the individual and his or her significant others regarding skin changes in aging and at end of life.

Care of Vulnerable Aged Skin

- Protect aged skin from skin injury associated with pressure and shear forces
- Use a barrier product to protect aged skin from exposure to excessive moisture in order to reduce the risk of pressure damage.
- Select atraumatic wound dressings to prevent and treat pressure ulcers in order to reduce further injury to frail older skin.
- Develop and implement an individualized continence management plan.

Repositioning

- Regularly reposition the older adult who is unable to reposition independently.
- Consider the condition of the individual and the pressure redistribution support surface in use when deciding if repositioning should be implemented as a prevention strategy.
- Exercise caution in position selection and manual handling technique when repositioning the older adult.
- Frequently reposition the head of older adults who are sedated, ventilated or immobile.

Medical Device related pressure damage.

Risk for Medical Device Related Pressure Ulcers

- Consider adults & children with medical devices to be at risk for pressure ulcers.

Recommendations for Selecting and Fitting a Medical Device

- Review and select medical devices available in the facility based on the devices' ability to induce the least degree of damage from the forces of pressure and/or shear.
- Facilities, with the input of the health professional, should provide medical devices that will minimize skin damage. This may include selection of softer, more flexible devices.
- Ensure that medical devices are correctly sized and fit appropriately to avoid excessive pressure.
- Apply all medical devices following manufacturer's specifications.
- Failure to follow the manufacturer's application instruction can result in harm (e.g., skin damage) to the individual and can be a source of liability.
- Ensure that medical devices are sufficiently secured to prevent dislodgement without creating additional pressure.
- In situations in which simple repositioning does not relieve pressure, it is important not to create additional pressure by placing excessive dressings beneath tight devices.

Recommendations for Assessment of the Skin and Medical Device

- Inspect the skin under and around medical devices at least twice daily for the signs of pressure related injury on the surrounding tissue.
- Conduct more frequent (greater than twice daily) skin assessments at the skin-device interface in individuals vulnerable to fluid shifts and/or exhibiting signs of localized or generalized oedema.
- The health professional should apply any type of medical device cognizant of the potential for tissue expansion and worsening oedema. Depending on the type/purpose of the device, loosening, replacement or removal (i.e., compression stockings) may be advised.
- Classify medical device related pressure ulcers using the International NPUAP/EPUAP Pressure Ulcer Classification System, with the exception of mucosal pressure ulcers.
- Pressure ulcers related to medical device use are not a new category of pressure ulcer, and should be classified according to level of tissue loss using the International NPUAP/EPUAP Pressure Ulcer Classification System outlined in the *Classification of Pressure Ulcers* section of this guideline. The classification system for pressure ulcers of the skin cannot be used to categorize mucosal pressure ulcers.
- Educate the individual with a medical device in the community setting and his/her caregivers to perform regular skin inspections.

Medical Device related pressure damage continued.

Recommendations for Prevention of Medical Device Related Pressure Ulcers

- Remove medical devices that are potential sources of pressure as soon as medically feasible.
- Keep skin clean and dry under medical devices.
- Moisture underneath a medical device creates an environment in which the skin is more vulnerable to alterations in skin integrity, including irritant dermatitis and ulceration.
- Reposition the individual and/or the medical device to redistribute pressure and decrease shear forces.

This Guidance should be read in conjunction with: *Pressure Ulcer Reporting and Investigation - All Wales Guidance October 2017*