Pressure ulcer identification and management

Brenda King

Pressure ulcers were the largest proportion of patient safety incidents in 2011–2012, accounting for 19% of all reports (National Institute for Health and Care Excellence [NICE], 2014). Developing strategies and incentives to help reduce pressure ulcer incidence by stressing the importance of ‘improving nurses’ knowledge in areas of skin care and encouraging carers/relatives, together with patients, to take an active role has been shown to improve outcomes in reducing the development of pressure ulcers (NHS Commissioning Board, 2013). With guidance focusing on prevention as well as treatment, it is important that community services understand both the risks and how to stage pressure ulcers appropriately to provide timely and cost-effective treatment.

KEYWORDS:
- Pressure ulcers
- Risk assessment
- Staging
- Silicone dressings
- Cutimed® Siltec®

Pressure ulcers are a major burden to healthcare systems, patients and carers, affecting 0.77 per 1,000 of the UK adult population (Stevenson et al, 2013; Cross et al, 2017), with 4% (£1.4–2.1 billion) of the annual NHS healthcare budget being spent on their treatment and management (Fosnott et al, 2009; Stevenson et al, 2013). In the community, pressure ulcers are thought to affect approximately 30% of the general population and 20% of those living in residential or nursing homes (NHS institute for Innovation and Improvement, 2013). Prevalence is defined as the number of people within a population with a pressure ulcer divided by the number of people in the total population at a given point in time (Agency for Healthcare Research and Quality, 2014). Reported incidence of pressure ulcers in adults varies from 0–12% in acute care settings, 24.3–53.4% in critical care settings, and 1.9–59% in elderly care settings (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance [NPUAP/EPUAP/PPPIA], 2014; Blenman and Marks-Maran, 2017).

ASSESSING THE RISK

Identifying patients at risk of developing pressure ulcers is the most important factor in prevention, for which assessment is key (Gasper et al, 2009; National Institute for Health and Care Excellence [NICE], 2014; McCoulough, 2016). Indeed, NICE (2014) recommends that every patient should have a risk assessment undertaken by an appropriately trained healthcare professional within six hours of admission, or at first assessment in the community.

Determining if a patient is at risk requires a number of skills, such as:
- Gathering information by talking to the patient, carers and family
- Careful history-taking
- Examining the skin
- Observing mobility
- Assessing a patient’s nutritional status
- Gaining insight into the patient’s/carer’s understanding of pressure ulcers.

Before assessment is carried out, it is vital that healthcare professionals are aware of the known intrinsic and extrinsic factors that increase the risk of skin breakdown (NICE, 2014; NPUAP/EPUAP/PPPIA, 2014; McCoulough, 2016; Table 1).

In addition, some people are more susceptible, for example, patients:
- Who are frail and elderly
- Who are terminally ill
- Who are malnourished

THE SCIENCE

‘A pressure ulcer is defined as localised injury to the skin and 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, although the significance of these is yet to be elucidated’ (EPUAP/NPUAP/PPPIA, 2014).

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A number of tools exist to assess and stage pressure ulcers. However, the NPUAP/EPUAP/PPPIA (2014) staging system has been accepted by NICE (2014) — this has since been updated by NPUAP in 2016 (see below). Pressure ulcers range in severity from stage 1, intact skin with non-blanching erythema, to stage 4, where there is full-thickness tissue loss and exposed bone, tendon or muscle. Stages 2 and 3 range from partial- to full-thickness skin loss, and staging depends on the depth of dermis and the anatomical location involved, for example nose, buttock or heel. Two further stages, unstageable and suspected deep tissue pressure injury (DTPI; depth unknown), were adopted by the USA in 2009 and integrated into the latest guidelines (NPUAP, 2016).

Healthcare professionals need to have a good understanding of the skin, as this will enable them to identify what is missing and help to establish the stage of pressure damage (Table 2).

**TREATMENT**

Management of pressure ulcers involves wound care, adjunctive therapies and support surfaces (NICE, 2014). Patients and their carers should have the opportunity to make informed decisions about their care and treatment in partnership with healthcare professionals. If the patient is under 16, their family or carers should also be given information and support to help the child or young person make decisions about their treatment (NICE, 2014; NPUAP/EPUAP/PPPIA, 2014).

Treatment falls into the following key areas:

- **Nutrition**
- **Support surfaces**
- **Repositioning**
- **Wound care**.

**Practice point**

Identification and prevention of pressure ulcers is seen as an indication of the quality of care given (Vowden and Vowden, 2015).

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**Table 1: Risk factors for pressure ulcer development**

<table>
<thead>
<tr>
<th>Intrinsic</th>
<th>Extrinsic</th>
</tr>
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<tbody>
<tr>
<td>Extremes of age</td>
<td>Pressure</td>
</tr>
<tr>
<td>Acute illness</td>
<td>Shear</td>
</tr>
<tr>
<td>Sensory impairment</td>
<td>Moisture</td>
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<tr>
<td>Altered level of consciousness</td>
<td></td>
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<tr>
<td>Vascular disease</td>
<td></td>
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<tr>
<td>Patient receiving palliative care</td>
<td></td>
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<tr>
<td>Cognitive impairment</td>
<td></td>
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<tr>
<td>Previous history of pressure damage</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
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<tr>
<td>Malnutrition</td>
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- Who are sedated and/or anaesthetised
- With spinal cord injuries
- With a fractured neck of femur
- With neurological disorders
- Who are unable to reposition themselves.

As patients may be visited at home by healthcare professionals from various health and social care disciplines, assessment needs to take a multidisciplinary approach.

**Skin assessment**

Once a patient has been identified as being at high risk of pressure ulcer development, it is important that a visual inspection of the skin is carried out by anyone suitably trained to recognise early signs of skin damage, taking into consideration:

- Pain
- Discolouration
- Skin integrity
- Variations in heat
- Firmness and moisture due to oedema or incontinence.

It is also important to observe if the skin appears dry or inflamed, particularly over bony prominences (NICE, 2014; NPUAP/EPUAP/PPPIA, 2014).

Healthcare assistants, relatives or carers who provide personal care, and therefore see the skin, play an important role in identifying changes in the skin. Understanding what these changes mean and acting on them can be the difference between skin damage improving or deteriorating. For example, requesting and using appropriate equipment, using turning charts, or upgrading mattresses can all be put in place as preventive measures (NPUAP/EPUAP/PPPIA, 2014; NICE, 2014).

The following definitions are a useful guide to aid skin inspection:

- **Reactive hyperaemia:** this is a normal response to pressure, which we all experience. It can be seen as a bright flush (erythema) associated with the release of an obstruction to the circulation and resultant increase in blood flow.
- **Blanching erythema:** this is a normal response and indicates that the circulation is intact. It can be seen as a reddened area that temporarily turns white or pale when pressure is applied with a fingertip. In highly pigmented skin, this may appear as a purplish/blue discoloration. Blanching erythema over a pressure site is usually due to normal reactive hyperaemic response.
- **Non-blanching erythema:** this is indicative of damage to the microcirculation and is classed as a stage 1 pressure ulcer. There is observable alteration to intact skin when compared to adjacent or opposite areas of the body.

**STAGING PRESSURE ULCERS**

Staging pressure ulcers correctly can be a challenge for many community staff. The literature suggests that clinicians are often unable to stage pressure ulcers reliably (Defloor et al, 2006; Fletcher et al, 2011), with the All Wales Tissue Viability Nurse Forum and Welsh Wound Innovation Centre identifying that staging may be inaccurate in up to 18% of patients (AWTVN and WWIC, 2016). Furthermore, it can be subjective (Wounds UK, 2013).

**Table 2**

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure ulcers</td>
<td>Unstageable</td>
<td>Partial</td>
<td>Full</td>
<td>Full</td>
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<tr>
<td>Unstageable</td>
<td>Depth unknown</td>
<td>Depth</td>
<td>Depth</td>
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<tr>
<td>Depth pressure injury</td>
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<td>Unknown</td>
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<tr>
<td>Location involved</td>
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<td>Nose</td>
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<td>Heel</td>
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For example, requesting and using appropriate equipment, using turning charts, or upgrading mattresses can all be put in place as preventive measures (NPUAP/EPUAP/PPPIA, 2014; NICE, 2014).
<table>
<thead>
<tr>
<th>Stage 1: Non-blanchable erythema of intact skin</th>
<th>Stage 2: Partial-thickness skin loss with exposed dermis</th>
<th>Stage 3: Full-thickness skin loss</th>
<th>Stage 4: Full-thickness skin and tissue loss</th>
<th>Unstageable: obscured full-thickness skin and tissue loss</th>
<th>Deep tissue pressure injury (DTPI): persistent non-blanchable deep red, maroon, purple discoloration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact skin with a localised area of non-blanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Colour changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury.</td>
<td>Partial-thickness loss of skin with exposed dermis. The wound bed is visible, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue, slough and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture-associated skin damage (MASD), including incontinence-associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive related skin injury (MARSII), or traumatic wounds (skin tears, burns, abrasions).</td>
<td>Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunnelling may occur. Fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss, this is an Unstageable Pressure Injury.</td>
<td>Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar are visible. Epibole (rolled edges), undermining and/or tunnelling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss, this is an Unstageable Pressure Injury.</td>
<td>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 stage 3 or stage 4 pressure injury will be revealed. Stable eschar (i.e. dry, adherent, intact without erythema or fluctuance) on the heel or ischaemic limb should not be softened or removed.</td>
<td>Intact or non-intact skin with localised area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood-filled blister. Pain and temperature change often precede skin colour changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full-thickness pressure injury (Unstageable, stage 3 or stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions.</td>
</tr>
<tr>
<td>What is missing? nothing. The skin is intact, no visible tissue loss and stays red when pressed with finger tip.</td>
<td>What is missing? The epidermis and dermis are exposed.</td>
<td>What is missing? The epidermis, dermis, subcutaneous fat, may be missing or visible.</td>
<td>What is missing? Epidermis, dermis, subcutaneous fat, muscle with tendon and bone exposed.</td>
<td>What is missing? The epidermis and dermis but the depth of tissue loss is obscured by sloughy tissue, dry black eschar. Appropriate dressings need to be applied and careful observations before full classification can be defined.</td>
<td>What is missing? There is no breakage in the skin, on examination it may be firm, mushy or boggy and warmer or cooler to touch when compared to other parts of the skin.</td>
</tr>
</tbody>
</table>
Nutrition
Nutritional screening is used to identify individuals who need comprehensive nutritional assessment due to characteristics that put them at potential risk. This can be undertaken by any member of the healthcare team, and should be conducted on admission to the healthcare facility, or at first visit in community settings (NPRAPEPUAP/PPPIA, 2014). While poor nutrition may not be the direct cause of pressure damage, it is possible that it may increase tissue vulnerability (Mathus-Vliegen, 2001), and can affect the healing process (Stacey, 2016). If malnutrition is indicated, nutritional intervention will be required, and involve carers improving the patient’s protein intake. In some cases, protein-rich energy supplements may be prescribed. It is also important to ensure that patients do not become dehydrated, as this can result in dry flaky skin, which is vulnerable to trauma and injury.

Support surfaces
Woodhouse and Graham (2014) discussed the importance of working in collaboration with community services to provide appropriate training and equipment by developing a mattress/equipment selection tool utilising the Braden risk assessment score with NPUAP/EPUAP/PPPIA (2014) stages to ensure that patients have the specific pressure-relieving device to suit their needs (NHS Quality Improvement Scotland, 2009). Several factors need to be taken into account when placing equipment in the community setting. For example, it is important to ensure that patients have the appropriate room to accommodate bedframes, heights and mattress specifications, as well as considering the patient’s upper body strength and ability to self-move. Requesting and using appropriate equipment, using turning charts or upgrading mattresses, can all be put in place as preventive measures (NPRAPEPUAP/PPPIA, 2014).

Repositioning
Regular repositioning is necessary to reduce the duration and magnitude of pressure over vulnerable areas of the body. Thus, patients should be made aware of this and encouraged to change position (Glasper et al, 2009; NPRAPEPUAP/PPPIA, 2014). The more movement a patient makes, the more they can relieve pressure from areas on their skin. When thinking about how a patient can change position to redistribute pressure, consider if a patient who is confined to bed can lie on their side? For wheelchair users, suggest returning to bed for an hour or two in the afternoon (Payne, 2016).

Wound care
Thorough wound assessment should be undertaken for any pressure ulcers where the skin is broken (Coleman et al, 2017). This should include size, depth, description of tissue present, slough, necrosis or exudate. Photographs and/or wound tracings should be taken and documented. It is important to be aware of patient confidentiality and where possible gain written consent (Royal College of Nursing [RCN], 2005). All pressure ulcers should have appropriate dressings applied as soon as possible (Gray and Hampton, 2015).

Pressure ulcers often occur over the sacrum and heels, making them difficult to dress. Adhesive dressings are also easy to apply for both healthcare professionals and carers (Black et al, 2013; Hampton, 2016; Mahoney, 2016; Bajjada, 2017). Silicone dressings are also easy to apply and are conformable for patients (Bateman, 2015; Stephen-Haynes et al, 2015). The volume of exudate produced in stages 3 or 4 pressure ulcers can be a challenge, particularly if the fluid is sloughy and viscous, and, as said, wounds in the sacral or heel areas can be difficult to dress (Kalowes et al, 2016; Mahoney, 2016; Stephen-Haynes et al, 2015). An example of one silicone foam dressing, which has been recently redesigned and is suitable for treating pressure ulcers, is Cutimed® Siltec® (BSN medical, an Essity company).

CUTIMED® SILETCE®
Cutimed Siltec consists of a perforated silicone wound contact layer with an option of tack (from gentle to tacky) to help secure adherence, while also allowing the dressing to be removed and reapplied easily andatraumatically when needed (Figure 1). The different strengths of adherence, include:
- Low tack — Cutimed Siltec,
- Low tack — Cutimed Siltec L
- Soft tack — Cutimed Siltec Plus
- Soft tack in a border dressing — Cutimed Siltec B.

These tack options help to balance the need to protect frail and
delicate skin, while also securing the dressings in place, particularly in difficult-to-dress anatomical areas, such as the sacrum or heels. The perforations in the silicone, combined with the large pores of the soft, polyurethane foam core, ensure even the most viscous exudate is managed well, by wicking fluid vertically away from the wound and thereby protecting the periwound skin. Fluid is then absorbed into the superabsorbent adhesive strips on the top of the foam layer for additional absorption and retention capacity and to help prevent maceration. This smooth, polyurethane top film is breathable, adapting and supporting moisture vapour transmission to saturation level. The transparency of the top film also allows visible inspection to help determine the ideal time for dressing change without unnecessarily disturbing the wound (Figure 1).

Cutimed Siltec comes in a variety of shapes (oval, sacrum, heel), with rounded corners to ensure perfect fit wherever applied. The products are designed for atraumatic dressing change to promote patient comfort. Furthermore, the bordered versions are water-resistant, so patients can shower between dressing changes.

**CONCLUSION**

There are few areas of health care where patients will not be at risk of developing pressure ulcers. It should be remembered that pressure ulcers are not bound to happen, even if the patient is considered to be at high risk, and so their prevention should be a priority for healthcare professionals (National Patient Safety Agency [NPSA], 2010). It is essential to undertake great care in assessment and management by using the multidisciplinary team and applying an appropriate care plan that colleagues can follow.

Skin inspection and good skin care is an integral part of pressure ulcer care, and should be undertaken to identify any existing skin or pressure damage, assess the patient’s overall skin condition, and to inform a plan of care (Lloyd-Jones, 2014). With many national and local guidelines available, healthcare professionals need to ensure that both their knowledge and practice is competent and up to date, and that they are familiar with products available, such as the versatile Cutimed Siltec range, to provide their patients with the most suitable treatment options that promote optimal outcomes and patient-centred care.

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