The most important function of the skin is to provide a semi-permeable barrier to protect the body from the external environment. After episodes of incontinence, effective skin care is essential to maintain skin integrity; however it is often taken for granted that nursing staff know how to care for skin and the topic is not given enough attention in undergraduate and postgraduate education. There is a growing body of evidence to support skin-care regimens that are based on gentle cleansing, moisturisation and applying a skin protectant as part of a structured protocol (Woo et al, 2017a; Beeckman et al, 2015).

Prevention of skin damage

The prevention and management of incontinence-associated dermatitis (IAD) involves the following interventions:

- Continence assessment and management to minimise the risk of skin coming into contact with urine and/or faeces;
- Use of a structured skin-care regimen to protect vulnerable skin and help replenish the skin’s barrier function.

Both preventive and management interventions for IAD should focus on maintaining or restoring an optimal skin condition. In 2015, Beeckman et al – on behalf of a global IAD expert panel – recommended three integral components of a healthy skin-care regimen:

- Skin cleansing;
- Skin protection;
- Restoration of skin barrier function (Fig 1).

They emphasised that the presence of urinary and/or faecal incontinence, even without other risk factors, should immediately trigger the implementation of an IAD prevention protocol to protect the skin from exposure to irritants (Beeckman et al, 2015).

Continence promotion

Continence promotion is a fundamental part of an IAD preventive strategy; it starts with a detailed assessment of the patient to identify the likely cause and to establish an appropriate treatment plan. The correct use of continence devices, such as body-worn pads, urinary sheaths and stool-diversion systems, is also essential. Body-worn absorbent pads may be required as a short- or long-term measure.
to manage symptoms. In recent years, new technology has greatly improved the fluid-handling properties of these products and they can form part of a structured skin-care regimen; they help to avoid occlusion and overhydration of the stratum corneum by drawing fluid away from the skin surface. However, it is vital to apply according to manufacturers’ instructions and patients are not positioned on several large absorbent pads as these may:
- Wrinkle, causing localised pressure;
- Increase skin humidity and perspiration;
- Reduce the effectiveness of pressure-relieving support surfaces (Beeckman et al, 2014).

Some patients with IAD may benefit from temporary use of an indwelling urinary catheter to protect the skin on a short-term basis. This should be discussed with the multidisciplinary team as it places the patient at risk of catheter-associated urinary tract infection and should only be implemented when non-invasive interventions have failed. If a catheter is considered necessary, it should be reviewed daily and removed as soon as clinically appropriate.

Skin excoriation caused by lipase and protease is associated with diarrhoea, which can cause sudden and extensive skin breakdown (see part 1); within a short time, the epidermis can become erythematous and inflamed (Park and Kim, 2014). Factors that might exacerbate liquid stool should be reviewed; these include antibiotic therapy and constipation with overflow diarrhoea, which should be managed appropriately before reverting to the use of faecal-management systems or a faecal pouch as they can be uncomfortable for patients and difficult to apply (Beeckman et al, 2015; Morris, 2011).

If the patient’s incontinence is not contained or resolved, specialist advice should be obtained from continence advisers (Palese and Carniel, 2011).

Skin examination

It is essential to conduct a daily skin examination to identify signs of IAD in patients who are incontinent of urine and/or faeces. Patients at high risk of IAD, such as those with diarrhoea, should have their skin examined more frequently. Findings should be documented, with appropriate actions noted in the patient’s records and communicated to the multidisciplinary team (Woo et al, 2017b).

Some simple methods can help ensure members of the multidisciplinary team identify and describe skin problems in a consistent manner. For example, check for dry skin, signs of scratching (excoriation), rashes, skin tears and any signs of pressure damage. It is important to gain an idea of the shape, symmetry and distribution, extent and colour of any skin problem and the sites involved. Using touch can be helpful to gather information about the skin that may not always be obvious – for example, skin will feel warmer than the surrounding healthy tissue in the presence of early pressure damage (induration), inflammation (dermatitis) or localised infection (cellulitis) (Table 1).

**Identifying IAD**

It is important to accurately differentiate between varying types of moisture-associated skin damage to be able to make effective management decisions and implement appropriate interventions promptly (see part 1). Although specific IAD assessment tools exist, they do not adequately predict risk of IAD development (Beeckman et al, 2015); clinicians therefore need to develop a heightened awareness of risk factors contributing to this type of skin damage as it can occur rapidly in individuals ranging from neonates to older people who are incontinent.

Observing the distribution and location of dermatitis on the body will help clinicians differentiate IAD from other types of skin damage such as pressure injury and intertrigo (inflamed skin folds caused by exposure to perspiration, friction and bacteria and fungi). Attention should be paid to skin folds or areas where moisture resulting from incontinence may be in contact with the skin for prolonged periods, such as the perineum, buttocks, gluteal fold, groin, thighs, lower back, lower abdomen and underneath containment devices. The skin should be inspected for signs of:
- Erythema;
- Maceration;
- Erosion;
- Oedema;

### Table 1. Assessing skin changes

<table>
<thead>
<tr>
<th>Area of change</th>
<th>Points to consider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texture</td>
<td>Is the skin rough, scaly, dry, cracked? Is there induration? Think about possible causes of damage</td>
</tr>
<tr>
<td>Maceration</td>
<td>Are there signs of perspiration, incontinence, wound exudate?</td>
</tr>
<tr>
<td>Pain</td>
<td>How does the patient describe the pain – for example, burning, stinging, sore?</td>
</tr>
<tr>
<td>Oedema</td>
<td>Is the oedema pitting, non-pitting, dependent (gravity-related)?</td>
</tr>
<tr>
<td>Warmth</td>
<td>Are there signs of inflammation, infection, non-blanchable erythema (early pressure damage)?</td>
</tr>
<tr>
<td>Coolness</td>
<td>Are there clinical signs of ischaemia/necrosis and deep-tissue pressure damage?</td>
</tr>
<tr>
<td>Skin sensitivity</td>
<td>Does the patient have a rash? Does the patient have prickling, tingling, itching?</td>
</tr>
</tbody>
</table>
Distinguishing between IAD and pressure ulcers
A systematic review confirmed that individuals with IAD are five times more likely to develop pressure ulcers than those who are continent; this is due to the combined effects of incontinence and high humidity, which affect the microclimate of the skin and increase vulnerability of the soft tissues to pressure, friction and shear (Beeckman et al, 2014).

NHS England and NHS Improvement’s (2020) patient safety Commissioning for Quality and Innovation indicator, which addresses the assessment and documentation of pressure-ulcer risk in community hospitals and NHS-funded residents in care homes, highlights why staff must be able to distinguish between IAD and pressure-ulcer damage as part of a routine skin assessment and provide an appropriate individualised plan of care. Differentiating between the two can be difficult; a study of 100 wound care nurses found they could not consistently agree on the cause of skin damage in the gluteal cleft/buttocks when presented with a series of photographs (Mahoney et al, 2011). These differences can be subtle in clinical practice and a differential diagnosis may not be possible until a management protocol has been in place for several days and the response to treatment has been monitored.

If the aetiology of a patient’s skin damage is not clear, a standard bundle of skin-care interventions to manage both IAD and pressure-ulcer prevention should be implemented and regularly monitored. The use of a structured skin-care protocol for IAD can be very effective, resulting in a visible improvement in patient discomfort and skin condition within several days. Pressure ulcer and IAD reporting will be discussed in more detail in part 3 of this series.

Structured skin-care protocol
Skin cleansing
There is no evidence to confirm the optimum frequency of skin cleansing for patients who are incontinent but Beeckman et al (2015) recommended that the skin of patients who are incontinent should be cleansed at least once daily and after each episode of faecal incontinence. However, frequent and repeated skin cleansing can disrupt the skin’s barrier function so a balance needs to be maintained between removing skin irritants and stripping the skin surface of its protective barrier.

Soap and water. Soap and water should be avoided for skin cleansing after an episode of incontinence as soap contains a mixture of alkalis and fatty acids that cause skin damage in several ways. The alkalis in soap are known to increase skin pH, which damages the acid mantel on the skin’s surface and increases the likelihood of skin breakdown. Both soaps and detergents are known as surfactants (short for surface-active agents) and contain lipophilic (fat-loving) molecules that strip dirt and lipids from the skin, thereby disrupting the delicate skin barrier function and allowing the skin to dry out and become itchy. These cumulative effects cause pruritus and discomfort, and initiate the itch-scratch cycle (Fig 2), which causes further excoriation. The mainstay of treatment for IAD is the restoration and maintenance of barrier function, avoidance of irritants and treatment of inflammation. The most effective way of achieving this is to apply bland (colour- and fragrance-free) emollients. The terms ‘emollient’ and ‘moisturiser’ are often used synonymously to describe topical substances applied to the skin to maintain or repair barrier function; although
both are lipids, emollients primarily work by occluding the epidermis and preventing water loss, while moisturisers add humectants (substances that bond with water molecules to increase water content) to the skin surface to improve hydration. Glycerin, sugars and collagen are effective water-binding agents that typically draw water from a humid environment; they enhance water absorption from the outer layer of skin (Voegeli, 2012) (Fig 3).

Moisturisers and emollients come in various formulations: creams, ointments, gels, sprays, foams and lotions. Many people are sensitive to fragrances and preservatives in topical skin products; lanolin is frequently associated with skin sensitivities and should be avoided (Draelos, 2010). Generally, the more ‘greasy’ the topical product, the more effective it is at trapping moisture in the epidermis, thereby providing a better emollient effect. However, some moisturisers contain a mixture of emollients and humectants, and not all are able to restore the skin barrier function. In particular, humectants should not be used on wet, macerated skin as they will attract further moisture to the area. Box 1 (page 44) lists the principles of emollient and moisturiser use.

Complete emollient therapy is a skin-care regimen that uses emollient soap substitutes, leave-on emollients and moisturisers such as creams, lotions and ointments to moisturise the skin and maintain its barrier function. It is beneficial for any individual at high risk of skin breakdown.

Skin protectants aim to prevent skin breakdown after cleansing by isolating exposed skin from irritants and excess moisture. Liquid barrier films and moisture barrier creams or ointments are often used. The introduction of synthetic barrier products – which leave a thin, conformable, protective polymer layer on the skin that is water repellent for several days – has proven cost effective at protecting skin from high levels of moisture (Woo et al, 2017a; Guest et al, 2011). Barrier films are convenient as they:
- Can be applied to skin that is damaged or intact;
- Reduce maceration;
- Do not sting as they are alcohol-free.

In the past, traditional skin barrier creams were applied in thick layers and not removed effectively, which could increase skin humidity and maceration, and reduce the absorbency of continence pads. Modern formulations of topical skin barrier creams minimise this problem and should be used in accordance with the manufacturer’s instructions.

![Fig 3. How emollients/moisturisers affect the barrier function of the epidermis](image)

3a. Intact and healthy barrier function
Keratinocytes formed in the skin’s basal epidermal layer migrate to the epidermis and mature before they degenerate and die. The dead cells (corneocytes) are surrounded by natural lipids, which maintain the skin’s barrier function and help minimise water loss.

3b. Failed barrier function
Failed barrier function due to incontinence-associated dermatitis disrupts sebum and intracellular lipids at the surface of the epidermis, allowing irritants to enter between the corneocytes and stimulate an inflammatory response in the dermis. Skin barrier dysfunction increases the risk of colonisation by micro-organisms and may lead to secondary infection.

3c. Restored barrier function
Barrier function of the epidermis has been restored due to treatment with emollients and moisturisers. The intracellular lipid layer has been temporarily substituted by moisturisers, which contain humectants, allowing the skin to recover its protective function to resist damage caused by contact with urea and ammonia.

Adapted from Flanagan M (2013)
Once the barrier function of the skin is damaged, micro-organisms may penetrate to increase the risk of secondary skin infection. Topical antibacterial products should only be used in patients with IAD if there are clinical signs of secondary infection. Signs of infection include more pain and discomfort than previously, while the skin will be red, feel hot and be prone to breakdown. Anti-fungal creams or powders should only be used if candidiasis has been identified; this usually presents as a sore, red rash (Fig 4).

Managing skin loss
In severe IAD, superficial skin loss may be present; this can be extremely painful but will improve if a semi-occlusive dressing is applied. Dressings that absorb wound fluid but promote moist wound healing should be used. Many modern dressings are formulated with advanced adhesives to minimise skin trauma; among the most effective are silicone dressings, which have been proven to reduce skin stripping to preserve the barrier function (Woo et al, 2017a).

Some modern dressings are specifically designed to better conform to the anatomical profile of the sacrum, but successful dressing application in the perineal area is made more problematic by the presence of skin folds, creases, continuous moisture and soiling. Wound dressings that are soiled or saturated with exudate should be changed to avoid increasing skin humidity and keeping moisture in direct contact with the skin.

Conclusion
There is a growing body of evidence to support the use of structured skin-care protocols that focus on cleansing, the application of emollients and the use of skin protectants. This approach should be routinely adopted for individuals at risk of IAD to reduce the likelihood of skin damage. Nurses need to work closely with members of the multidisciplinary team who have the relevant expertise – such as dermatology and continence specialists – to raise awareness of the importance of skin health. Further research is urgently needed to establish the effectiveness of specific skin-care interventions and to validate best practice so carers can effectively support and maintain skin integrity. NT

References
Morris L (2011) Flexi-Seal® faecal management system for preventing and managing moisture-associated skin damage. Wounds UK; 7; 2, 88-93.