

THE USE OF A SKIN BARRIER CREAM IN PATIENTS WITH INCONTINENCE

The skin plays a vital role in a person's holistic health, providing a vital barrier against microbial invasion, minor trauma, chemical assault and dehydration. The skin can be damaged in many ways and one common cause of skin damage is incontinence. This article uses patient case studies to investigate the efficacy of a barrier cream in preventing skin breakdown.

KEY WORDS

Skin
Incontinence
Barrier creams
Skin integrity

‘The skin can be damaged in many ways and one common cause is incontinence’

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The skin is the largest organ of the body and primarily composed of three layers, the outer layer, the epidermis, the dermis and the supporting layer the hypodermis or subcutis (*Figure 1*).

The skin serves many functions, perhaps the most important of which is to protect the body from a range of threats, including microbial invasion, minor trauma, chemical assault and dehydration. It also serves an important role in the regulation of body temperature, is responsible for the formation of vitamin D, has a limited capacity to absorb (for instance when using drugs in

transdermal patches, such as hormone replacement therapy) and contains an array of sensory receptors, meaning superficial damage to the skin can be very painful.

The skin is maintained in its optimal state by the production of sebum, which keeps the skin well hydrated, and maintenance of an optimum pH of 5.5, which helps prevent microbial invasion. The skin can be damaged in many ways and one common cause is incontinence.

INCONTINENCE

Incontinence is a common and embarrassing problem which has

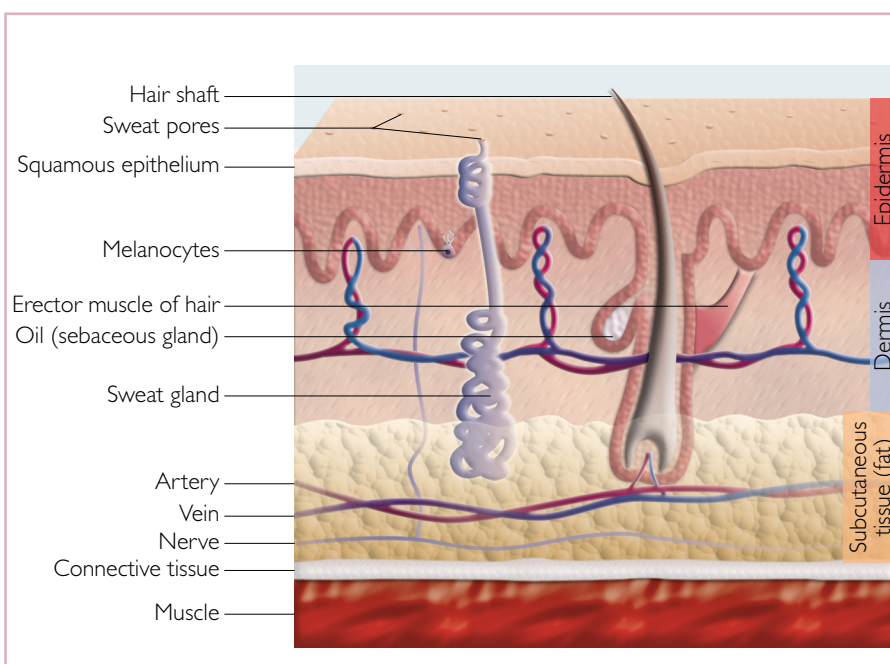


Figure 1: The structure of the skin.

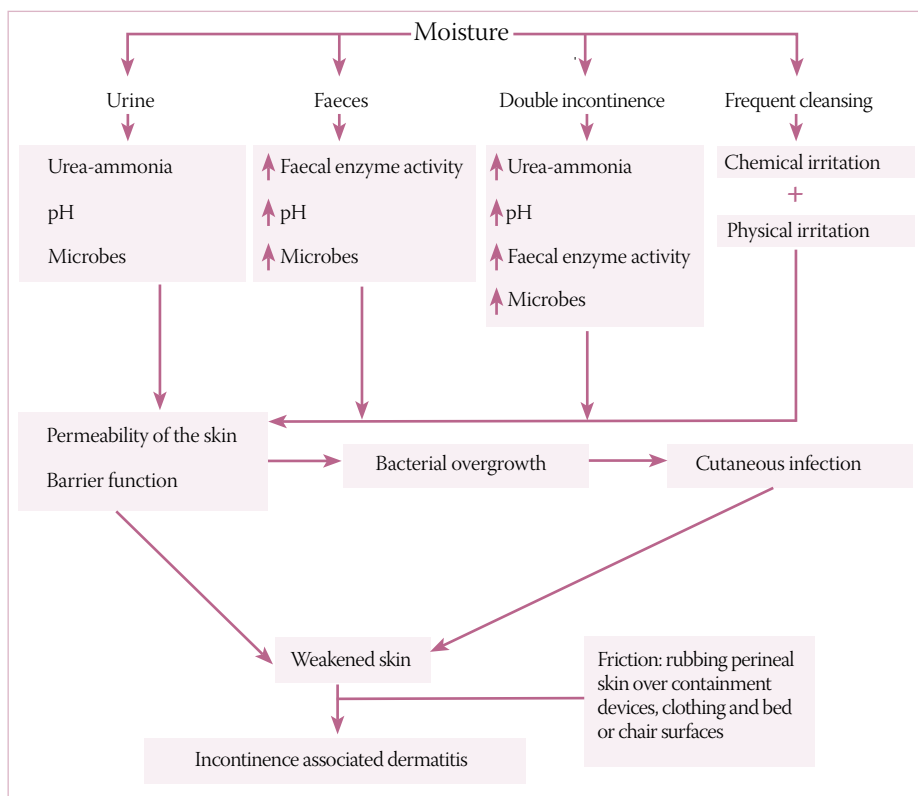


Figure 2: The pathophysiology of incontinence-associated dermatitis (Adapted from Beekman et al, 2009).

a profound effect on social and psychological well-being (Fader et al, 2008). Urinary incontinence is defined as 'the complaint of any involuntary leakage of urine' (National Institute for Health and Clinical Excellence [NICE], 2006) and is known to be more common in females than males, occurring in between 25–51% of women (Buckley et al, 2010).

In addition to those experiencing urinary incontinence, NICE (2007) suggest that it is likely that 0.5–1% of adults experience regular faecal incontinence, which has a major impact on their quality of life. Data regarding either type of incontinence are believed to be underestimated, as many individuals are too embarrassed to report their condition or seek assistance from clinicians (Howard and Steggall, 2010).

Incontinence of urine, faeces or both can have a significant impact on the skin, most commonly resulting in incontinence associated dermatitis (IAD). Gray et al (2007) describe IAD as an inflammation of the skin that occurs when urine or stool come into contact with the perineal or perigenital skin. The lesions are characterised by erosion of the epidermis and a macerated appearance of the skin (Beekman et al, 2009).

The frequency of IAD has been widely described but there appears to be considerable variation in the figures, with data on prevalence suggesting rates between 5.7–27 % and incidence of 3.4–50% (Gray et al, 2012). This wide variation may relate in part to how the data is reported/collected, but also the lack of a standardised tool for assessing IAD.

Research suggests that urine and faeces may cause damage to the skin individually, but the most significant damage occurs when urine and faeces are mixed on the skin. Although urinary incontinence alone is not a primary irritant, when urine and faeces mix there is an increase in the pH in the perineal area, exacerbating the faecal irritant effect (Cooper and Gray, 2001). Healthy skin has a protective acid mantle with a mean pH of 5.5. Both urine and faeces are alkaline. Therefore, if the individual is incontinent there is an immediate chemical reaction. Ammonia is produced when microorganisms release urea from the urine, which increases the pH, causing further chemical irritation. This increases the permeability of the skin and, therefore, decreases its barrier function (Figure 2). This can also cause painful erosion of the skin and may potentially result in infection as the area is repeatedly

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recontaminated by urine/faeces (Figure 3). This erosion can occur in multiple places and be superficial as in Figure 3 or become quite severe (Figure 4). Frequent contact with any liquid, including urine, may initially result in maceration or over-hydration of the skin, which results in a white soggy appearance. This makes the skin more susceptible to damage from physical forces such as friction when the patient moves around in the bed or chair or when the skin is towel dried. Furthermore, the swollen epidermis may allow easier entry for bacteria, thus increasing the risk of infection.

It is important that clinicians are able to differentiate between sacral pressure damage and IAD as management differs (although there may be some elements in common). Whilst IAD may increase the risk of pressure damage (because it weakens the skin and increases the susceptibility to friction and shear), patients who have IAD but are mobile/active in the bed may not always require a high-specification pressure-reducing mattress — what they do require is good skin care.

Therefore it is crucial that staff are able to differentiate between the two types of damage and plan care accordingly (Table 1) (Beeckman et al, 2011).

It must also be noted that many patients with IAD are also very vulnerable to pressure damage and may have mixed damage, i.e. pressure damage and IAD combined. In these cases, the provision of appropriate pressure-redistributing equipment is an essential element of the planned care.

SKIN CARE

Preventing IAD should be a priority when caring for any patient with incontinence. Priority should be given to identifying the cause of the incontinence and where possible addressing it. If appropriate, the use of catheters or faecal collection devices may be considered, particularly if the skin is very damaged and painful.

Consideration must be given to careful cleansing of the skin. The use of soap



Figure 3: Patient with inflamed skin due to contact with urine/faeces.



Figure 4: Severe skin damage.

Table 1

Synthesis of the European Pressure Ulcer Advisory Panel (EPUAP) position statement on pressure ulcer classification and IAD differentiation (EPUAP, 2005)

	<i>Pressure ulcer</i>	<i>Incontinence-associated dermatitis (IAD)</i>
<i>Cause</i>	<i>Pressure and/or shear must be present</i>	<i>Moisture must be present (e.g. shining wet skin caused by urinary incontinence or diarrhoea)</i>
<i>Location</i>	<i>A wound over a bony prominence is likely to be a pressure ulcer</i>	<i>IAD may occur over a bony prominence. However, pressure and shear should be excluded as causes, and moisture should be present</i>
<i>Shape</i>	<i>If the lesion is limited to one spot, it is likely to be a pressure ulcer</i>	<i>Diffuse, different superficial spots are more likely to be IAD</i>
<i>Depth</i>	<i>Partial thickness skin loss and full thickness skin loss</i>	<i>Superficial (partial thickness skin loss)</i>
<i>Necrosis</i>	<i>A black necrotic scab on a bony prominence is a pressure ulcer grade 3 or 4. If there is no or limited muscular mass underlying the necrosis, the lesion is a pressure ulcer grade 4</i>	<i>No necrosis</i>
<i>Edges</i>	<i>Distinct edges</i>	<i>Diffuse or irregular edge</i>
<i>Colour</i>	<i>If redness is non-blanchable, this is most likely a pressure ulcer grade 1</i>	<i>Blanchable or non-blanchable erythema. Pink or white surrounding skin due to maceration</i>

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Figure 5: Case study 1 — the patient's skin was initially very red and dry.



Figure 6: Case study 1 — after seven days the redness was significantly reduced.

and water with towel drying should be avoided if possible as this changes the pH of the skin (unless using a neutral pH balanced soap), strips the natural lipid coating (because of the surfactants used in the soap) and may cause physical damage when rubbing the skin dry. Patting the skin dry with a towel may be equally detrimental as it does not sufficiently dry the skin, therefore, maceration may occur (Voegeli, 2008).

There is a wide range of skin cleansing products available including foams and impregnated cleansing cloths, which are more gentle and maintain the hydration of the skin. In some cases these are left on the skin, so avoiding the wiping motion that may cause physical damage. A wide range of products exist that can protect and rehydrate the skin. These include a range of barrier creams, skin protectors and emollients. Barrier creams often contain water and act as a repellent, protecting the skin from becoming macerated (overhydrated) and susceptible to chemical damage from noxious substances such as ammonia.

Whereas skin barriers act as a waterproof physical barrier between the skin and other substances, emollients soothe, smooth and rehydrate the skin.

CLINIMED LBF® BARRIER FILM

CliniMed LBF barrier film is an alcohol-free, quick-drying, no-sting liquid barrier preparation that protects the skin from urine and faeces and, therefore, from the risk of maceration and excoriation (Journal of Wound Care, 2011). LBF uses silicone technology to provide an alcohol and sting-free barrier that softens and soothes as it protects. Once applied, LBF dries in seconds, creating a breathable and transparent film on the skin (CliniMed, 2012).

CLINIMED LBF® BARRIER CREAM

In addition to the wipes, LBF is now available as a barrier cream, which is useful for larger areas such as the buttocks. It is simple to use, being applied directly to intact skin once the area has been cleaned and dried. The tubes are reusable for individual patients.

The cream contains zinc oxide and dimethicone, a silicone water repellent barrier (see Table 2 for full ingredients). LBF Barrier Cream is specifically formulated to provide an effective barrier for intact skin from bodily fluids such as faeces and urine. It moisturises the skin whilst helping to maintain skin integrity, making it ideal for everyday use. CliniMed company literature states that LBF Barrier Cream has the following benefits:

- ▶ 12-hour waterproof formulation — resists wash-off, providing long-lasting protection and reduces the amount of applications needed
- ▶ Skin-friendly formulation — latex-free, fragrance-free, non-greasy and pH balanced, making it popular for people with sensitive skin, prone to allergic reactions or those just wanting a more comfortable feel on their skin
- ▶ Non-blocking formulation — it will not block incontinence pads; ensuring pad absorbency is not reduced and it does not affect the adhesion of dressings or medical devices such as stoma pouches
- ▶ Highly concentrated — small amounts of the highly concentrated cream cover a large area of skin, so a little of this moisturising cream goes a long way, which increases cost effectiveness
- ▶ Balanced consistency — the cream consistency is not too thick or too thin, making it easy to apply and spread effortlessly across the skin forming a breathable layer on application. This reduces the time taken to apply the cream and maximises coverage. After the cream has absorbed into the skin, no thick or sticky residue is left.

CASE STUDIES

The author has evaluated LBF Barrier Cream on a series of patients with spinal cord injuries. Criteria for inclusion in the evaluation was identification of skin at risk of breakdown (defined as patients being incontinent of urine/faeces at least once or twice a day, reduced mobility and risk of pressure ulcers based on a Waterlow score).

Case study 1

Patient 1, a 72-year-old man was admitted with L1 and L3 fractures in the lumbar region of his spine. He was

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doubly incontinent during the day and overnight and his Waterlow score was 20. The fractures in the lumbar region of the spine had resulted in paralysis below the waist and a loss of normal bowel and bladder control (which may manifest as constipation, leakage, and bladder spasms).

At home he maintained a regular bowel action by using laxatives, however, he had recently become very constipated due to a reduced fluid intake and altered diet (his wife and primary carer had been unwell and admitted to hospital) and was now experiencing overflow diarrhoea. This watery diarrhoea was only part of the problem as his anus was very distended due to the large quantity of retained faeces.

It was important to maintain skin integrity as he was undergoing increased bowel management strategies, including stool softeners and gentle laxatives to relieve the ongoing constipation. His fluid levels had been increased but urinary incontinence was managed by an indwelling catheter. Faecal management systems were inappropriate for this patient as, despite the leaked stool being loose and watery, the primary problem was impaction, therefore, a management system could not be used.

The patient was nursed on a high density foam mattress as per hospital guidelines. This was based on his Waterlow score,

level of immobility, consciousness level and Body Mass Index (BMI). He also had an incontinence pad in situ. On admission he had been slightly confused due to his constipation and slight dehydration, but as he was rehydrated this resolved.

As can be seen in *Figure 5* at the start of the evaluation, his skin was very red and dry. LBF Barrier Cream was used after each episode of incontinence and by day seven the redness was significantly reduced and his skin appeared well hydrated (*Figure 6*).

Case study 2

Patient 2, a 77-year-old female with fractured spine (C2) and forearm (left distal radius), also had a very high risk Waterlow score of 20. She was faecally incontinent and being nursed on a dynamic alternating mattress following hospital guidelines.

This patient had sustained her fractures when reduced mobility resulted in a fall following a cerebrovascular accident (CVA) at the age of 74. She had been managing well at home with the support of her family. These kind of injuries are not uncommon in older people with spines weakened from osteoporosis.

As with all patients who have sustained this high level of injury she had no bladder or bowel control and had a urinary catheter in situ. Patients with cervical spine injury have complete paralysis below the neck and therefore require total care. A faecal management system had been considered but her sphincter tone was poor and she was unable to retain it.

Prior to commencement of the LBF Barrier Cream her skin was dehydrated and the area around the anus was red and very flaky (*Figure 7*). After seven days of the cream the area was well hydrated and the red area had disappeared (*Figure 8*).

Case study 3

The third patient, an 81-year-old woman had a compression spinal fracture (L1) and a Waterlow score of 22. She had been catheterised to control her urinary incontinence but remained at risk of skin damage as she was also incontinent of faeces. The faeces was solid but soft as she had a regular bowel



Figure 7: Case study 2 — before treatment the skin is red and flaky.



Figure 8: Case study 2 — after seven days the area was well hydrated and the red area had disappeared.



The new LBF Barrier Cream comes in a 2g sample and a 100g tube.

Table 2
Ingredients of LBF® Barrier Cream

Purified water
Disodium EDTA
Methyl parabens
Zinc oxide
Sodium chloride
Propylene glycol
Petrolatum
Dimethicone
Cetyl dimethicone
Cetyl PEG/PEG-10/1 dimethicone
Isopropyl palmitate
Propyl parabens
Beeswax
Hydrogenated castor oil

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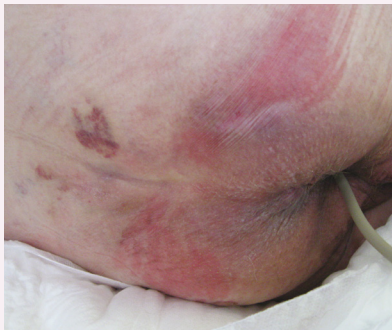


Figure 9: Case study 3 — prior to treatment the skin was bruised and painful.



Figure 10: Case study 3 — after a week, the skin was better hydrated and less susceptible to friction.

management plan, in common with most patients with spinal cord injury. She was being nursed on a dynamic alternating mattress as per hospital guidelines and was being turned every two hours as her skin was very fragile and continued to mark.

An L1 fracture results in paralysis below the waist and despite having reasonable movement in the rest of her body, she was frail and weak following a chest infection (hence the elevated Waterlow score).

She had lived with the spinal cord fracture for over 30 years following a road traffic accident but had recently developed a urinary tract infection (the main reason for her hospital admission).

It was evident that the care package she had been receiving at home required review and likely that she would be discharged to a specialist care home.

Prior to use of the LBF Barrier Cream, ward staff described her skin as 'sore and bruised' (Figure 9). On commencement of the LBF Barrier Cream the skin was very red with fragile, paper thin skin across the buttocks and sacral area.

The cream was used for seven days with good effect and no further deterioration was noted (Figure 10). The skin appeared to be much better hydrated and, therefore, more resistant to friction damage.

This is important in patients with lower level fractures as they are able to reposition themselves a little as they retain movement in the upper body, however, this can result in 'dragging' of the lower (paralysed) section.

CONCLUSION

As can be seen from the three patient case studies, good care of the skin can make a significant difference to outcomes.

Following use of LBF Barrier Cream, all three patients underwent an improvement in both skin colour and condition despite their ongoing high-risk status. For patients with spinal cord injury, bladder and bowel management is a significant part of their care.

It is rarely suitable to use a faecal management system as good bowel management focuses on maintaining normal stool, which is too hard for passage through the faecal catheters.

However, this passive incontinence (passive incontinence is the involuntary discharge of faeces without awareness [Walker, 2011]) still puts the skin at risk from damage, as illustrated in Figure 3 and, therefore, appropriate skin care needs to be put in place to prevent complications from occurring.

These patients have no resolution to their condition — the injury is permanent and irreversible — therefore, there is a strong focus on providing education for them

and their family around prevention of skin damage, which includes prevention of pressure ulcers and of IAD.

Irrespective of the cause, incontinence has a significant effect on patients' quality of life and can be distressing for both the patient and their carers. It also has a significant impact on nursing time.

Poor management of this condition can lead to additional problems such as IAD, which causes further pain and suffering for patients and may also increase their risk of developing pressure ulcers

and infections, both of which should be regarded as avoidable.

Maintaining good skin hygiene and using a barrier product can improve the condition of the skin and prevent these unnecessary complications occurring, therefore, saving physical, emotional and financial costs. **WUK**



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