

# Management of incontinence-associated dermatitis with a skin barrier protectant

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## ABSTRACT

The skin performs many important protective functions, one of which is to act as a barrier to moisture, irritants and bacteria. Good management of patients' skin is a fundamental part of nursing care to prevent development of complex and distressing problems, such as pressure ulceration and incontinence-associated dermatitis (IAD). IAD is skin breakdown related to faecal and/or urinary incontinence, which requires adoption of a structured skin care regimen, including regular skin inspection, cleansing and the use of skin barrier protectants, to proactively protect the skin from irritant bodily fluids. Six case studies using Medi Derma-S skin barrier protectants on patients with IAD highlighted the potential for improved clinical outcomes on skin either vulnerable or compromised due to the effects of incontinence. Positive observations were noted with regard to improvement in skin condition, pain and discomfort, promotion of independence and prevention of deterioration of concurrent pressure damage.

**Key words:** Incontinence ■ Dermatitis ■ Skin ■ Damage ■ Barrier ■ Protection

The skin is the body's largest organ and has multiple functions, including protection from external trauma, ultraviolet (UV) light, toxins and bacteria, and thermoregulation, sensation, excretory functions and non-verbal communication (Butcher and White, 2005; Timmons, 2006). Part of the protective mechanism of the skin is to provide a waterproofing effect to prevent the absorption of excess fluid, and to act as a barrier to the influx of environmental and chemical irritants and harmful bacteria, which can damage the skin and cause breakdown (Wickett and Visscher, 2006).

Maintenance of skin integrity and preservation of skin barrier function to enable the skin to perform its full protective role should be a fundamental part of nursing care. Without it, patients can develop complex problems, such as pressure ulceration, moisture-associated skin damage (MASD), skin tears and secondary infections from various sources. Such conditions can

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cause pain and distress for the patient and impact considerably on quality of life (Sibbald et al, 2003; Newman et al, 2007).

This article will discuss MASD, particularly focusing on incontinence-associated dermatitis (IAD) and its management using the fundamental principles of good skin care to maintain skin integrity. This will be followed by a series of case studies undertaken by a specialist community bowel and bladder service using silicone skin barrier protectants (Medi Derma-S) for the management of IAD.

## Skin structure and physiology

The skin is composed of various layers, which work together to provide strength and flexibility and to perform its multiple functions. The connective tissue within the dermis, composed of elastic fibres and collagen, provides the skin with its elasticity and tensile strength, helping to protect the skin and underlying structures from mechanical insults (Timmons, 2006). This is supported by the adipose tissue in the hypodermis, which also provides insulation. The epidermis is the main layer involved in the skin's ability to act as a barrier to environmental insults and excessive water loss (Wickett and Visscher, 2006).

The epidermis is composed of several layers in itself, from the basal layer (stratum basale) at the bottom, to the stratum corneum at the top. The cells of the stratum basale continually divide, pushing healthy, newly formed cells through the various layers of the epidermis where they develop and evolve. By the time they reach the stratum corneum, the cells are dead, flattened and fibrous, an evolution that contributes to the skin's barrier function. They are then regularly shed from the skin's surface. This continuous process of cell division, development and shedding allows steady regeneration of the skin and the capacity to repair itself following damage (Timmons, 2006).

Keratinocytes are the most prevalent cells in the epidermis, producing keratin, the main structural protein of the stratum corneum. Keratinocytes are formed in the stratum basale and progress through the epidermal layers, evolving into corneocytes that form the stratum corneum in the mid-epidermal region (Wickett and Visscher, 2006). Corneocytes have undergone structural changes, causing the cell membrane to form a resistant, proteinaceous cell envelope, and the cells to release their lipid content into the intercellular space. The stratum corneum is often referred to as having a 'bricks and mortar' structure, with the corneocytes acting as the bricks and the intercellular lipids, which provide the main barrier against trans-epidermal water loss, as the mortar. This tough structure supports the protective

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**Table 1. Differences between pressure ulcers and moisture lesions**

	Pressure ulcer	Moisture lesion
<b>Cause</b>	Identifiable cause of pressure or shear	Identifiable cause of excess moisture e.g. incontinence, wound exudate, perspiration
<b>Location</b>	Most likely over a bony prominence	Can occur over a bony prominence—pressure and shear must be excluded. A lesion limited to the anal cleft and with a linear (straight) shape is likely to be a moisture lesion. Peri-anal redness or skin irritation is most likely to be a moisture lesion due to faeces
<b>Shape/edges</b>	Regular shape with a more defined wound edge	Diffusely scattered, irregularly shaped. If a ‘kissing’ lesion is observed across two adjacent surfaces, at least one is likely due to moisture
<b>Colour</b>	If redness is non-blanching or discolouration is blue or purple, lesion is likely to have resulted from pressure damage. Presence of red granulation, soft or black necrotic or sloughy tissue in the wound bed indicates a pressure ulcer	If redness or discolouration is uneven, moisture damage is likely to be the cause. Pink or white surrounding skin indicates maceration
<b>Depth</b>	Can vary in depth from unbroken non-blanching erythema to full thickness tissue loss extending to tendon or bone	Superficial—partial thickness skin loss, but may enlarge when infection is present
<b>Necrosis</b>	Presence of necrosis (black scab or softening blue, brown, grey or yellow tissue) indicates a pressure ulcer	Moisture lesions do not contain necrotic tissue

Source: Adapted from Defloor et al, 2005

function of the skin, providing flexibility and waterproofing, and combatting changes in pH and temperature (Timmons, 2006; Wickett and Visscher, 2006). Fatty acids produced in the lower stratum corneum are also considered to play a role in the naturally acidic surface pH of the stratum corneum (approximately 4.5–5.5), which is often referred to as the ‘acid mantle’ (Wickett and Visscher, 2006). The acid mantle is thought to contribute to protecting the skin from bacterial colonisation.

While the structure of the epidermis, and in particular the stratum corneum, provides the skin with a natural barrier to moisture and waterproofing function, increased hydration does cause pooling of water in the intercellular space and within the corneocytes themselves (Wickett and Visscher, 2006). This can cause extensive disruption to the lipid ‘mortar’, particularly in the stratum corneum, affecting skin barrier function and contributing to maceration and excoriation. This is an important consideration for patients whose skin may have prolonged exposure to excessive moisture in the form of wound exudate, or following episodes of incontinence.

### Moisture-associated skin damage

MASD occurs when there is prolonged exposure of the skin

to excessive amounts of moisture (Gray et al, 2011; Dowsett and Allen, 2013). There are various sources of this moisture, including urine, faeces, wound exudate and perspiration. When the skin becomes overly wet, its protective barrier function is disrupted and it becomes much more susceptible to damage. MASD is an umbrella term that encompasses various aetiologies of skin damage usually described in terms of the source of the moisture, including IAD, intertrigo, peri-wound exudate damage and peristomal dermatitis (Dowsett and Allen, 2013).

### Incontinence-associated dermatitis

Wide variations exist in the figures reported on the occurrence of IAD, with prevalence suggested at between 5.7% and 27%, and incidence from 3.4% to 50% (Gray et al, 2012). Figures aside, it is generally acknowledged that IAD is a common problem, particularly in some long-term care settings.

IAD is defined as skin breakdown related to faecal and/or urinary incontinence (Beeckman et al, 2009). Gray et al (2012) defined IAD as erythema and oedema of the skin surface, which may be accompanied by bullae with serous exudate, erosion or secondary cutaneous infection.

During episodes of incontinence, fluid from urine and/or faeces is drawn into the stratum corneum, causing its cells to swell as they become overhydrated and subsequently disrupting its structure. This can manifest visibly as maceration. The disruption in structure increases the permeability of the stratum corneum to irritants, exacerbating inflammation, and also heightens susceptibility of the skin to trauma from friction forces. When the skin is exposed to urine for more prolonged periods, bacteria convert the urea found in urine into ammonia—an alkaline substance, which increases skin pH, rendering the skin more vulnerable to colonisation with bacteria and secondary infection. In addition to this, the digestive enzymes contained in faeces are reactivated in an alkaline environment, damaging the natural protection of the acid mantle and exacerbating any existing damage to an overhydrated stratum corneum. When the skin is exposed to a combination of urine and faeces, the effects of all these processes combine to significantly increase the risk of developing IAD compared with exposure to either urine or faeces in isolation (Beeckman et al, 2015).

It is now well recognised that the risk of developing pressure ulcers is increased in the presence of IAD (Beeckman et al, 2014). It is, however, important that IAD is not confused with pressure damage to ensure that the correct prevention and management strategies are instigated. Moisture from incontinence must be present for IAD to be the primary cause of any skin damage, and exposure to pressure and shear forces must be excluded (Table 1). Combined lesions can occur in some cases, so treatment may be required to both manage skin integrity and reduce exposure to pressure.

There are several tools available to assess IAD, such as the Perineal Assessment Tool (PAT) (Nix, 2002) and the IAD and its Severity Instrument (Borchert et al, 2010), but they primarily originate in the USA and their regular use has not been adopted in the UK. A recent consensus document developed by an expert IAD panel recommended that the development of a specific risk-assessment tool is not required, but that knowledge

of key risk factors is needed and should be incorporated into general skin assessment performed as part of a pressure ulcer prevention/continence care programme (Beeckman et al, 2015). The National Association of Tissue Viability Nurses Scotland developed a useful excoriation grading tool to help clinicians adopt a consistent and accurate approach to the assessment and management of patients with IAD (Healthcare Improvement Scotland, 2014). Skin should also be assessed for the presence of any cutaneous infection, such as candidiasis, and appropriate treatment commenced for eradication (Gray et al, 2012).

Early identification of risk, through a thorough risk assessment and skin inspection of any patient who is incontinent or has the potential to become so, is vital for prevention strategies to be put into place. A full patient assessment, including assessment of continence status, mobility, nutrition and current bathing/cleansing/skin care regimen should be performed initially, followed by detailed skin assessment including inspection of the skin and assessment of skin colour, temperature and moisture levels (Dowsett and Allen, 2013). The presence of any lesions should be fully documented, including cause, location and type to ensure correct differentiation between moisture and pressure damage as the primary aetiology. IAD can in some cases be extremely painful and debilitating for the patient, and prevention needs to be the ultimate aim.

## Management of IAD

The primary goals of care for management of IAD are adoption of a structured skin care regimen to proactively protect the skin from irritant bodily fluids, maceration and breakdown, alongside regular skin inspection and cleansing that does not deplete the skin of moisture (Ousey, 2012). Soap and water should be avoided for skin cleansing in patients with, or at risk of, IAD as soap tends to be alkaline in nature. This can potentially raise the skin's naturally acidic pH, damaging the acid mantle and causing dryness (Bianchi, 2012a). Specially designed non-rinse skin cleansers are now available that are pH-friendly, gentle and moisturising, but with the ability to remove debris and irritants, and are ideal for patients with at-risk or compromised skin. Excessive friction on the skin through rubbing also needs to be avoided—the use of soft wipes in conjunction with a non-rinse cleanser and 'air-drying' of the skin is recommended (Cooper et al, 2008).

The use of skin protectants is also accepted as a regular part of a structured skin care regimen for IAD prevention and management, providing a barrier on the stratum corneum to the damaging effects of prolonged exposure to urine and faeces. Many can be used to protect at-risk skin from exposure to prevent IAD, and also to manage IAD once it has occurred by providing a barrier to further moisture and irritation that will allow the skin barrier function to recover. They are available in various formats, such as creams, films, ointments and pastes and usually contain one of three ingredients to provide skin barrier protection: petrolatum, zinc oxide or silicone. While they may provide a barrier to moisture, current evidence and opinion suggests caution is required with petrolatum and zinc oxide products as they can interfere with the absorption capacity of incontinence pads and thus leave the skin vulnerable to moisture exposure. They can also be difficult to use and remove,

potentially leaving a build-up of greasy ointment on the skin which requires rubbing to remove, increasing the risk of damage to the skin from friction (Hart, 2002; Woo et al, 2009; Flynn and Williams, 2011). Depending on the formulation, some can also form an occlusive layer on the skin that decreases trans-epidermal water loss, thus increasing hydration in already overhydrated skin. There can be large variances in formulations (with some containing potential irritants), and also in application amount, technique and frequency, which can affect efficacy (Hart, 2002; Woo et al, 2009; Flynn and Williams, 2011). The products also tend to be opaque so clinicians often cannot visualise the underlying skin for assessment purposes (Beeckman et al, 2015). Silicone-based skin protectants are transparent once applied and are non-occlusive, so they do not affect pad absorbency or exacerbate maceration (Beeckman et al, 2015).

Correction of the underlying problem, in this case incontinence, is also always a goal for any clinician dealing with patients. In some cases, incontinence is not a correctable problem, and measures need to be taken to contain the urine and faeces to promote skin integrity and patient comfort. In the majority of cases, especially for faecal incontinence, the use of disposable pads is the most common method for managing incontinence. While the fluid is absorbed and locked away by the pad material, it is still essential to regularly change soiled products. In some patients, urinary incontinence is managed with the use of an indwelling catheter, but this is always as the final expedient dictated by the failure of other methods and/or patient condition, due to the increased risk of infection. Faecal management systems are also available for management of faecal incontinence. These are, however, usually only indicated in cases of severe diarrhoea where IAD and widespread skin breakdown can occur rapidly (Bianchi, 2012b). Their successful use is also dependent on a degree of anal sphincter tone to maintain their placement.

Education and training of patients and care providers on the consistent implementation of a structured skin care programme, alongside how to appropriately use any products or devices, is also important for the successful prevention and treatment of IAD.

## Medi Derma-S skin barrier protectants

Medi Derma-S (Medicareplus International) is a range of healthcare-grade skin barrier protectants that form a transparent, waterproof layer on skin to protect it from exposure to moisture and irritants (Dykes et al, 2012). The skin protectants have a silicone base and can be used on damaged as well as intact skin, including the cream format, so can be used to manage IAD by providing a barrier to urine and faeces while the skin recovers its integrity and function (Bianchi et al, 2013).

Medi Derma-S is also alcohol, fragrance, latex and phthalate-free, therefore the products do not sting on application and are unlikely to cause allergy or skin sensitivity. This makes them ideal for use on conditions such as IAD, to protect the skin without causing discomfort to the patient or exacerbating skin damage. Both the cream and film formats are fast-drying and rapidly absorbed, minimising the potential for product transfer affecting the absorbency of incontinence products, and do not affect the subsequent adhesion of dressings or devices, such as stoma pouches (Bianchi et al, 2013).



Figure 1. An example of IAD with a red, painful rash



Figure 2. Example of IAD with erythema and lesions

### Case studies

The following case studies describe the use of Medi Derma-S skin barrier protectants by a specialist bowel and bladder team in the rehabilitation unit of a local community hospital. Medi Derma-S was evaluated over a duration of 1-2 weeks on a series of 6 patients suffering with varying degrees of IAD. Patients were chosen where the current skin protectants in use were not managing their IAD appropriately. There was no structured skin care protocol in place at the community hospital when the evaluations commenced, with choice of skin protectant product being guided by ward nursing staff on an individual patient basis, with a number of varying products available to choose from. In each case, Medi Derma-S replaced the existing skin barrier protectant, with the overall nursing input otherwise remaining unchanged. Patients were reassessed at regular intervals over the evaluation duration for visual improvements in skin condition and for individual reports on changes in pain or discomfort and ease of use.

#### Case study 1

Patient 1 was an 88-year-old woman who had been admitted to the community hospital 3 months previously for rehabilitation due to leg ulceration. The patient suffered with urinary

incontinence, which required the constant use of high-absorbency incontinence pads. The patient had developed a red, painful rash covering the entire buttock area (an example of which is shown in *Figure 1*) where the incontinence pads had been sitting constantly against the skin. She had tried a zinc oxide cream and another dimethicone-based (a type of silicone) product previously but the IAD persisted. Owing to the lack of improvement, the patient was given Medi Derma-S for skin barrier protection.

Medi Derma-S was applied twice daily, with the patient's carers initially noting a significant improvement in skin quality, texture and colour. After one week of this regime, the rash had resolved and the skin was healthy in appearance.

#### Case study 2

Patient 2 was a 99-year-old woman who had been admitted to the community hospital for rehabilitation following a fall 10 weeks previously. The fall had resulted in reduced mobility, and the patient had developed urinary and faecal urgency and incontinence alongside this. A urinary catheter was inserted to manage the urinary incontinence, but the faecal incontinence required management with the constant use of incontinence pads.

As a result of the faecal incontinence, the patient developed IAD, presenting as very red and painful skin with lesions to both buttocks (an example of which is shown in *Figure 2*). This had been treated with a zinc oxide cream, but the patient had reported pain and discomfort during application and the condition of the skin had deteriorated, resulting in a trial of Medi Derma-S.

Medi Derma-S was applied twice daily for 2 weeks. The skin condition of the buttocks markedly improved, with restoration of skin integrity to the damaged areas. While slight redness remained after 2 weeks, the patient was no longer reporting pain or discomfort during application of skin protection products. Medi Derma-S was continued owing to the positive results and to continue treating the erythema that remained.

#### Case study 3

Patient 3 was an 88-year-old woman who had been admitted to the rehabilitation ward 4 months prior following a bout of shingles and a urinary tract infection (UTI). Due to the UTI, the patient developed acute urinary retention, which required insertion of an indwelling urinary catheter for management. Further deterioration in general health occurred during admission, leading to the catheter remaining in situ and also development of faecal urgency and incontinence. The patient relied on the assistance of carers to mobilise to the toilet, and as a result of the urgency and incontinence had to start wearing an incontinence pad constantly.

The patient was also obese, and had developed very red areas to her buttocks and thighs, which were very painful to touch (an example of which is shown in *Figure 3*). Grade 1 pressure damage to her left buttock also developed during admission. The development of pressure damage may have been exacerbated by exposure to pressure or shear forces in the presence of continued exposure to moisture.

A zinc oxide cream had been used previously to manage the skin damage, but no improvement was noted to the thighs, with increasing redness observed on the buttocks. The decision

was made to apply Medi Derma-S Cream to all areas twice daily for 1 week.

Following commencement of Medi Derma-S, improvements were noted to the skin on the buttocks and thighs. The buttocks were less red and there was no evidence of broken skin, a positive outcome suggesting no further deterioration of the grade 1 pressure ulcer area. The patient was uncomplaining of pain during application of Medi Derma-S, and independence was promoted as the patient was able to easily apply the cream to her thighs herself as required.

#### Case study 4

Patient 4 was a 91-year-old man who had been admitted following a fall 10 weeks previously. He also suffered with neuropathic pain in his legs, and had been left with very limited mobility following his fall, and reduced confidence in his ability to mobilise.

The patient developed acute urinary and faecal incontinence during the admission, for which he was catheterised and required constant use of incontinence pads. He developed combined lesions relating to IAD and from exposure to pressure owing to his limited mobility, resulting in injured areas of skin categorised as grade 2 pressure damage. An emollient was used initially for skin care in combination with pressure-relieving equipment, followed by a dimethicone-based skin protectant with copolymer bioadhesives, but his skin condition remained poor. Medi Derma-S was applied for 2 weeks to help improve the condition of the patient's skin.

Medi Derma-S cream was initially used, but owing to balance and mobility difficulties the patient struggled to apply the cream to his buttocks himself, as may have been the case with the previous product used. In order to promote independence, Medi Derma-S Barrier Film Aerosol Spray was used, with success. Skin condition improved over the 2 weeks, resulting in intact and healthy skin.

#### Case study 5

Patient 5 was an 86-year-old man admitted to the community hospital 8 weeks previously for rehabilitation following a series of falls. Catheterisation occurred early in the admission, but the patient developed loose stools, which required him to wear an incontinence pad constantly. Skin integrity to the buttocks became compromised, appearing very red, thin and fragile and painful to the touch.

A dimethicone-based spray and a zinc oxide cream had previously been used for skin barrier protection, but the skin condition continued to deteriorate and the patient was at high risk of skin breakdown. Medi Derma-S cream was initiated, with daily application for 2 weeks.

The patient quickly became more active and able to self-care during the rehabilitation period, and he became proactive in applying his own cream. While loose stools persisted with no identifiable cause, after 2 weeks the skin to both buttocks had improved and all redness had resolved. The patient also no longer reported any pain or discomfort.

#### Case study 6

Patient 6 was a 74-year-old woman admitted following a fall resulting in a right fractured neck of femur 3 months previously.



Figure 3. An example of IAD extending to lower abdomen and thighs

The fracture had left the patient experiencing hip pain and unable to cope at home. There was a history of long-standing urinary urgency and incontinence for which the patient had never sought help, resorting to making her own containment pads. High-absorbency incontinence pads were supplied during hospitalisation, and worn constantly during the day and at night.

The patient developed IAD owing to the prolonged exposure to moisture from the urinary incontinence, with both buttocks and perineum red and excoriated with very thin and fragile skin. Zinc oxide cream and a dimethicone-based product had been applied previously for skin protection with no improvement in skin condition. Owing to the need to avoid further skin breakdown and restore skin integrity, Medi Derma-S cream was commenced. It was applied daily by nursing staff each morning for 2.5 weeks, resulting in the skin appearing less red and fragile. No sore or tender areas were reported by the patient during application.

#### Conclusion

Maintenance of skin integrity is an essential part of good patient care, with the complex structure and multiple functions of the skin contributing so much protection to often vulnerable individuals. Breaches in the skin can leave patients susceptible to infection and damage to underlying structures, which can impact on overall function and general health. MASD in all its presentations can leave patients in pain and discomfort and, in the case of IAD, compounding the often distressing and embarrassing problem of incontinence, which can profoundly impact on social and psychological wellbeing (Fader et al, 2008).

Management of IAD requires the education of all clinicians on the need for a structured skin care regimen to support the protection and repair of at-risk and compromised skin. The use of modern skin barrier protectants has a significant role to play as part of this regime. Medi Derma-S skin barrier protectants offer a gentle and effective alternative to the traditional products incorporating zinc oxide or petrolatum as the primary barrier ingredient, which may no longer be the best option for skin care. This is demonstrated in five of the six case studies where these treatments had proved ineffective for management of the patient's IAD, with deterioration in skin condition often observed and

## KEY POINTS

- Good management of a patient's skin and maintenance of skin integrity is a fundamental part of nursing care
- Moisture-associated skin damage (MASD) occurs when there is prolonged exposure of the skin to excessive amounts of moisture and can increase the risk of developing pressure ulceration
- Incontinence-associated dermatitis (IAD) is skin breakdown related to faecal and/or urinary incontinence, including erythema, oedema and erosion of the skin surface
- Early identification of risk through a thorough risk assessment and skin inspection is vital for effective prevention
- Primary goals of care for management of IAD are adoption of a structured skin care regimen, including regular skin inspection and cleansing, to protect the skin from irritant bodily fluids, maceration and breakdown
- The use of skin protectants is also a regular element of prevention and management, providing a barrier against the damaging effects of prolonged exposure to urine and faeces

pain and discomfort reported on application. The impression of the bowel and bladder team was that this deterioration in skin condition when using more traditional skin barrier products could be attributed to blocking of the absorbency of the incontinence pads, exposing the skin to higher levels of moisture and irritants, which has been highlighted in previous research (Hart, 2002). This is, however, accepted as being opinion rather than fact in this case series. The multiple formulations of Medi Derma-S available for treatment of damaged and at-risk skin were also found to be useful, promoting independence and self-care in several cases owing to ease of application over the previous treatment, allowing clinicians choice when choosing a product depending on the individual needs of the patient.

While strong conclusions cannot be drawn from an evaluation such as this regarding the efficacy of a product or its superiority over alternative treatments, this series of case studies using Medi Derma-S for the management of IAD highlights the potential for improved clinical outcomes with its use on patients whose skin is either vulnerable or compromised owing to the effects of incontinence. Positive observations with regards to improvement in skin condition and pain and discomfort for the patients were reported in each case following the change to Medi Derma-S, with promotion of independence also seen. Long et al (2012) suggested there should be reduction in pain and visible improvement in skin condition in 1–2 days, with resolution within 1–2 weeks if an appropriate skin care plan is followed—the outcomes of these case studies meet those criteria and have since prompted the community bowel and bladder team to instigate a more structured skin care regimen in the community hospital using Medi Derma-S products. Structured skin care regimens incorporating gentle cleansing and the use of skin barrier protectants have been found to reduce the incidence of IAD and are also associated with decreased manifestation of grade 1 pressure ulcers (Bale et al, 2004; Beekman et al, 2009). In the case studies where there was also exposure to pressure damage alongside prolonged moisture, prevention of deterioration in skin damage and condition with

restoration of skin function and integrity was achieved using a skin care regimen incorporating Medi Derma-S—again demonstrating the potential effectiveness of the barrier protection and also an important outcome considering the direct and indirect costs associated with management of pressure ulceration for patients, clinicians and the health service. **BJN**

*Declaration of interest: the product was provided free of charge by Medicareplus International, and one author is an employee of Medicareplus International.*

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- Bale S, Tebble N, Jones V, Price P (2004) The benefits of implementing a new skin care protocol in nursing homes. *J Tissue Viability* **14**(2): 44–50
- Beekman D, Schoonhoven L, Verhaeghe S, Heyneman A, Defloor T (2009) Prevention and treatment of incontinence-associated dermatitis: literature review. *J Adv Nurs* **65**(6): 1141–54. doi: 10.1111/j.1365-2648.2009.04986.x
- Beekman D, Van Lancker A, Van Hecke A, Verhaeghe S (2014) A systematic review and meta-analysis of incontinence-associated dermatitis, incontinence, and moisture as risk factors for pressure ulcer development. *Res Nurs Health* **37**(3): 204–18. doi: 10.1002/nur.21593
- Beekman D, Campbell J, Campbell K et al (2015) *Proceedings of the Global IAD Expert Panel. Incontinence Associated Dermatitis: Moving Prevention Forward.* Wounds International, London
- Bianchi J (2012a) Top Tips on avoidance of incontinence-associated dermatitis. *The Identification and Management of Moisture Lesions. Wounds UK Supplement* **8**(2): S6–8
- Bianchi J (2012b) The use of faecal management systems to combat skin Damage. *The Identification and Management of Moisture Lesions. Wounds UK Supplement* **8**(2): S11–15
- Bianchi J, Beldon P, Callaghan R, Stephen-Haynes J (2013) Barrier products: Effective use of a barrier cream and film. *Wounds UK* **9**(1): 82–8
- Borchert K, Bliss DZ, Savik K, Radosevich DM (2010) The incontinence-associated dermatitis and its severity instrument: development and validation. *J Wound Ostomy Continence Nurs* **37**(5): 527–35. doi: 10.1097/WON.0b013e3181edac3e
- Butcher M, White R (2005) The structure and functions of the skin In: White R, ed. *Skin Care in Wound Management: Assessment, Prevention and Treatment.* Wounds UK, Aberdeen
- Cooper P, Gray D, Russell F (2008) Comparing Tena Wash Mousse with Clinisan Foam Cleanser: The Results of a Comparative Study. *Wounds UK* **4**(3): 12–21
- Defloor T, Schoonhoven L, Fletcher J et al (2005) *Pressure Ulcer Classification: Differentiation between Pressure Ulcers and Moisture Lesions. EPUAP Statement.* <http://tinyurl.com/jqh38g4> (accessed 28 April 2016)
- Dowsett C, Allen L (2013) Moisture-associated skin damage made easy *Wounds UK* **9**(4): 1–4. <http://tinyurl.com/jg9rojb> (accessed 27 April 2016)
- Dykes P, Goodwin R, Rosslee V (2012) Pilot study into the efficacy of film barrier skin care products *Wounds UK* **8**(4): 144–7. <http://tinyurl.com/zfq5egv> (accessed 27 April 2016)
- Fader M, Cottenden AM, Getliffe K (2008) Absorbent products for moderate-heavy urinary and/or faecal incontinence in women and men. *Cochrane Database Syst Rev* (4): CD007408. doi: 10.1002/14651858.CD007408
- Flynn D, Williams S (2011) Barrier creams for skin breakdown. *Nursing and Residential Care* **13**(11): 553–8
- Gray M, Beekman D, Bliss DZ et al (2012) Incontinence-associated dermatitis: a comprehensive review and update. *J Wound Ostomy Continence Nurs* **39**(1): 61–74. doi: 10.1097/WON.0b013e31823fe246
- Gray M, Black JM, Baharestani MM et al (2011) Moisture-associated skin damage: overview and pathophysiology. *J Wound Ostomy Continence Nurs* **38**(3): 233–41. doi: 10.1097/WON.0b013e318215f798
- Hart J (2002) Assessment of the incontinence pad blocking potential of 3M Cavilon Durable Barrier Cream compared with Sudocrem and zinc and castor oil. *Nursing Scotland*: 15. <http://tinyurl.com/zufqje3> (accessed 28 April 2016)
- Long MA, Reed LA, Dunning K, Ying J (2012) Incontinence-associated dermatitis in a long-term acute care facility. *J Wound Ostomy Continence Nurs* **39**(3): 318–27. doi: 10.1097/WON.0b013e3182486fd7
- Healthcare Improvement Scotland (2014) Excoriation Tool. <http://tinyurl.com/>

jw8be84 (accessed 27 April 2016)

Newman D, Preston A, Salazar S (2007) Moisture control, urinary and faecal incontinence, and perineal skin management. In: Krasner D, Rodeheaver GT, Sibbald RG, eds *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals*. 4th edn. HMP Communications, Malvern: 609–27

Nix DH (2002) Validity and reliability of the Perineal Assessment Tool. *Ostomy Wound Manage* **48**(2): 43–9

Ousey K (2012) Introduction *The Identification and Management of Moisture Lesions*. *Wounds UK Supplement* **8**(2): S3

Sibbald R, Campbell K, Coutts P, Queen D (2003) Intact skin—an integrity not to be lost. *Ostomy Wound Manage* **49**(6): 27–33

Timmons J (2006) Skin function and wound healing physiology. *Wound Essentials* **1**: 8–17

Wickett RR, Visscher MO (2006) Structure and function of the epidermal barrier. *Am J Infect Control* **34**(10 suppl): S98–S110. doi:10.1016/j.ajic.2006.05.295

Woo KY, Ayello EA, Sibbald RG (2009) The skin and periwound skin disorders and management. *Wound Healing Southern Africa* **2**(2): 43–8

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