

Using TENA Bed Plus and TENA Bed Super pads to prevent moisture lesions in an ICU

KEY WORDS

- ▶ Bed pads
- ▶ Incontinence
- ▶ Moisture lesions

Patients in intensive care units (ICU) are often exposed to prolonged periods of moisture from incontinence and perspiration, which can lead to the development of moisture lesions. An audit of the author's ICU found 80 patients with moisture lesions over a 12-month period. This evaluation aimed to provide evidence in the form of 20 case studies to demonstrate the benefits of using TENA Bed Plus or Super pads for the prevention and management of moisture lesions in an ICU when compared to the unit's normal practice of not using pads.

Patients nursed in intensive care units (ICU) are often exposed to prolonged periods of moisture from incontinence and perspiration in difficult-to-treat areas such as the buttocks, perineum, groin and sacrum, which can lead to the development of moisture lesions (McIlroy, 2012). McDonagh (2008) states that the number of times the areas are cleansed is a factor in the development of moisture lesions and skin damage, both of which the ICU nurse should consider in addition to carefully choosing the right product or skin care programme for incontinence-associated dermatitis (IAD).

This article presents an evaluation of 20 patients who were evaluated using either TENA Bed Super pads (SCA Hygiene Products) and 10 patients using TENA Bed Plus pads (SCA Hygiene Products), which are less absorbent. The evaluation was in an ICU and was set up to assess moisture lesions when compared to the unit's normal practice of not using absorbent pads. This small sample of patients in one ICU has delivered positive patient outcomes in the prevention and treatment of moisture lesions.

Protecting patients from skin damage is essential, and having the knowledge and skills to be able to differentiate between pressure ulcers and moisture lesions has become increasingly important, particularly in terms of reporting accurate data for Commissioning for Quality and Innovation and NHS Safety Thermometer (NHS, 2013).

The European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel (2009) pressure ulcer classification system states

that moisture lesions are often misclassified as grade 2–3 pressure ulcers. This is especially true when the location of the moisture lesion is in the perianal and natal cleft area (Table 1). Differentiating between a pressure ulcer and a moisture lesion is of clinical importance because the prevention and treatment strategies vary and can affect patient outcomes. Defloor et al (2005) identified a series of characteristics to assist in this differentiation (Table 1).

These assertions are supported by histopathology research. For example, Houwing et al (2007) state “moisture lesions and pressure ulcers have very different histopathologies. Pressure ulcers are associated with an ischaemic pattern whereas moisture lesions have a chemical irritation with epidermal loss, oedema, dilated vessels and mononuclear phagocytic leukocytes infiltration.” Nursing staff need to be able to differentiate between moisture lesions and pressure ulcers and there are now educational tools to assist with this (Fletcher, 2008).

MOISTURE LESIONS

The aetiology of moisture lesions and IAD is complex and multifactorial. Skin damage occurs from exposure to excess moisture (from urine, faeces, sweat or wound exudate) over a prolonged period and frequent cleansing. The normal pH of the skin is between 4.4 and 5.5, which provides a protective mechanism known as the acid mantle. The acid mantle provides significant resistance against skin breakdown. This protection is created

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by the presence of sebum, which acts as a barrier to chemical damage and protects against some types of bacteria (Bianchi, 2012). When the skin barrier function is impaired by a reduction in the fatty acids from sebaceous lipids and epidermal phospholipids this results in skin dehydration and bacterial invasion (Rippke et al, 2004). Urine and faeces are alkaline – the typical pH of stool is between 7.0 and 7.5 – thus exposure to faeces contributes to an abnormally high skin pH. When an individual is incontinent there is an immediate chemical reaction on the skin. Ammonia is produced when microorganisms release urea from the urine, which increases the pH, causing a further chemical reaction which damages the barrier function of the skin. An increase in the pH encourages bacterial and fungal colonisation, most often *Candida albicans* and *Staphylococcus* from the perineal skin and gastrointestinal tract (Figure 1; Beeckman et al, 2009).

Once the skin has been damaged, the lesion that develops may cover a large area. What begins as mild erythema may, if left untreated, deteriorate into blistering and erosion of the skin surface (Bianchi, 2012). Skin damage to the perineal area and buttocks can cause significant pain and discomfort to the patient (Farage et al, 2007).

MICROCLIMATE

Increasingly, it has been recognised that the microclimate has an influence on the humidity of the skin. Regulation of the microclimate, which includes controlling the temperature and moisture of the skin, is pivotal in protecting the skin from external damage (Langoen, 2010).

Clinicians must be aware of areas of the body where excessive moisture can occur, for example skin folds and the sacrum which can become moist from sweating, particularly in ICUs where temperatures are usually warm. McIlroy (2012) notes that in ICUs the buttocks, perineum, groin and sacrum are frequently exposed to prolonged periods of both skin-to-surface and skin-to-skin contact, allowing moisture from incontinence and perspiration to collect, making these areas liable to develop moisture lesions. Beldon (2008) states that excessively moist skin is more susceptible to friction and shearing forces. Therefore preventing moisture build up may help to reduce pressure ulcer incidence. A holistic

Table 1. The differences in pressure ulcers and moisture lesions (Defloor et al, 2005).

| | Pressure ulcer | Moisture lesion |
|-----------------|---|---|
| Causes | Pressure and/or shear must be present. | Moisture must be present. |
| Location | Usually over a bony prominence. | A wound not over a bony prominence is unlikely to be a pressure ulcer. A combination of moisture and friction causes moisture lesions in skin folds. A lesion limited to the anal area with a linear shape is a moisture lesion. Perianal redness/skin irritation is most likely to be a moisture lesion due to faeces. |
| Shape | Circular or regular shape, limited to one spot, excludes possible friction. | Diffuse superficial spots or irregular shape, linear shape in anal cleft and skin folds. |
| Depth | Partial to full thickness, from grade 2 to 4. | Moisture lesions are superficial (partial thickness skin loss). |
| Necrosis | Present in full thickness pressure damage. | No necrosis or eschar present. |
| Edges | Distinct edges, clear demarcation, raised edges usually chronic. | Diffuse irregular edges. |
| Colour | Red, yellow, green, black. | Redness that is not uniformly distributed. Pink or white maceration. |

assessment considering the intrinsic and extrinsic factors that affect skin condition will provide sufficient information to affect patient outcomes.

Providing effective skin care is essential to reduce the risk of moisture-associated skin damage and the subsequent risk of pressure damage (McDonagh, 2008). Gray et al (2007) recommend using a structured skin care programme with active treatment for patients with mild to moderate IAD:

- ▶▶ Routinely cleanse and moisturise the skin. Avoid the use of soap and water and use perineal skin cleansers, which combine detergents and surfactants to loosen and remove dirt and irritants. Many are pH balanced and contain a moisturising agent.
- ▶▶ Routinely apply skin protectants. These include acrylate polymer-based liquids, petroleum ointment, zinc oxide in 1% dimethicone, and petroleum ointment.
- ▶▶ Treat cutaneous candidiasis if present. This presents as a bright red rash with outlying satellite papules or pustules. The skin will be itchy and sore.
- ▶▶ Apply moisturiser after each episode of incontinence. If candidiasis is present, apply a moisture barrier containing an anti-fungal agent.

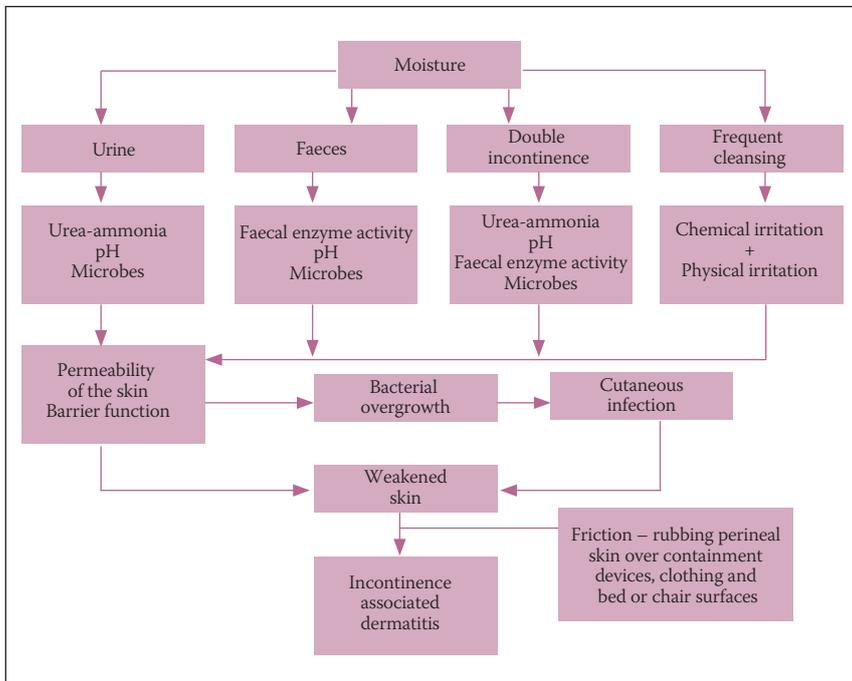


Figure 1. Moisture lesion cascade (adapted from Beekman et al, 2009).

- ▶▶ Educate carers to use a structured regimen, assessing skin frequently for resolution or progression of IAD, especially after each episode of incontinence.
- ▶▶ Evaluate or begin a management programme for underlying incontinence.

QUALITY CARE

The NHS Institute for Innovation and Improvement (2010) set a target to start recording the clinical incidence of moisture lesions. In the author’s ICU over a period of 12 months there were 80 patients with moisture lesions out of 528 patients (15.2%). Additionally, there had been an intensive education programme across the Trust to highlight the difference between pressure ulcers and moisture lesions. The Trust’s normal incontinence pads had been removed from all wards as they could contribute to the development of moisture lesions because they did not have an absorbent layer and kept the moisture next to the skin. The author set up this bed pad evaluation in response to the problem of moisture lesions in the ICU.

BED PADS

Beguín et al (2010) demonstrated that absorbent incontinence pads can reduce the over-hydration

of the skin caused by incontinence, and therefore stop a moisture lesion developing.

Bed pads are disposable and come in a variety of sizes depending on the fluid volume expected. They are made of absorbent material that turns to a gel when it comes into contact with fluid. The fluid is locked away into the core of the pad, keeping the fluid away from the skin. It is essential to change soiled products on a regular basis, generally every 2–4 hours (Bianchi, 2012).

TENA Bed underpads

The TENA Bed absorbent underpad is soft and flexible and features a new secure-zone back sheet to enable easier product identification – green for the TENA Bed Super and blue for the TENA Bed Plus pad, which is less absorbent. The core of the pad is 100% virgin fluff pulp, is latex free and has absorbent properties to deliver enhanced product performance compared to the previous range. There are a number of sizes available in each type. The TENA Bed Super costs 23 pence per pad and the TENA Bed Plus pad costs 17 pence per pad.

AIM

This evaluation aimed to provide evidence in the form of 20 case studies to demonstrate the benefits of using TENA Bed Plus or Super pads for the prevention, treatment and management of moisture lesions in an ICU when compared to the ward’s normal practice of not using pads. The objectives were:

- ▶▶ To monitor the effect of TENA Bed Super or Plus pads to help prevent moisture lesions.
- ▶▶ To monitor the incidence and classification of moisture lesions using the Skin Excoriation Tool for Incontinent Patients (NATVN Scotland, 2009).
- ▶▶ To explore nurses’ perceptions of using TENA Bed Super or Plus pads in an ICU.

METHOD

This evaluation discusses a series of 20 case studies involving ICU patients with existing moisture lesions or at risk of developing moisture lesions from being very hot and sweaty.

The first 10 patients were allocated to TENA Bed Super pads (60x90cm). Then all these pads were removed from the unit, and the next 10 patients

were allocated to TENA Bed Plus pads (60×90cm). On admission to the ICU, patients were assessed using the SSKIN and PULSE (*Box 1*) tools and the Waterlow risk assessment tool (Waterlow, 2005). The patients' MUST score, demographics, mental state and other medical conditions were also collected. All patients on the ICU are considered to be at high risk of moisture lesions and pressure ulcer development due to their compromised conditions.

Inclusion criteria were if the patient had a moisture lesion or if the patient was very hot and at high risk of developing a moisture lesion. The patient completed the evaluation when they were discharged from the ICU. Patients were excluded if they were readmitted to the ICU after having already been included in the evaluation.

ICU staff assessed skin at every pad change or episode of incontinence for any changes or development of pressure ulcers or moisture lesions. Any pressure ulcer or moisture lesion was verified by the tissue viability nurse specialist who co-ordinated the audit. An evaluation form from previous studies was employed for this skin assessment (Russell et al, 2000).

All patients had their pads changed every 4 hours, or sooner if the patient had faecal incontinence. All patients in this evaluation were catheterised while on the ICU, as is normal practice. All patients were nursed on a Duo low air loss mattress (Hill-Rom) and were turned every 2 hours as per Trust policy.

All ICU staff were trained to use the two types of pads in the 2 weeks prior to the start of the evaluation. They were trained in how to assess



Figure 2. Patient with moderate excoriation.

“All patients had their pads changed every 4 hours, or sooner if the patient had faecal incontinence.”

skin using the SSKIN (NHS Midlands and East, 2012b) and adapted SSKIN bundle and PULSE skin assessment tool (Rafter, 2012), as per the Trust's pressure ulcer prevention policy. If a moisture lesion was present, the severity of the moisture lesion was classified using the Skin Excoriation Tool for Incontinent Patients (NATVN Scotland, 2009).

Current Trust practice for the management of moisture lesions care is to use Senset Foam® (Vernacare) to cleanse the skin and protect the skin from drying out, followed by Sorbaderm® barrier cream (Aspen Medical) three to four times daily for mild excoriation and Sorbaderm® spray (Aspen Medical) twice daily for moderate excoriation in conjunction with barrier cream.

Photographs were taken for evidence of moisture lesions and healing when the patient's condition allowed. The frequency of changes and the number of pads were monitored to evaluate cost. After the 4-week trial, the ICU staff were given a questionnaire to gain their opinions of the two types of pads.

The evaluation was registered with the clinical audit department in the general hospital where the audit was completed.

RESULTS
TENA Bed Super pad

All 10 patients were ventilated at the start of recruitment and ended the evaluation when they were no longer in the ICU. Patient characteristics are shown in *Table 2*. The length of time the patients were evaluated ranged from 7–45 days.

Two patients were managed with the moisture lesion care pathway and had a Flexi-Seal tube, but still developed moisture lesions. Both of these

Box 1. Skin assessment tools used.

SSKIN care bundles (adapted SSKIN bundle from NHS Midlands and East):

- ▶ Skin inspection.
- ▶ Support surface.
- ▶ Keep moving.
- ▶ Incontinence.
- ▶ Nutrition.

PULSE skin assessment tool (Rafter, 2012):

- ▶ Press reddened skin to check for blanching.
- ▶ Uncover the skin and remove TEDS and socks.
- ▶ Lift and check heels with a mirror.
- ▶ Search for redness on the sacrum.
- ▶ Evaluate elbows for redness.

Table 2. Patients assigned to TENA Bed Super pads.

| Case number | Sex | Age | Waterlow score | MUST score | BMI | Moisture lesion category | Days on evaluation | Pad only |
|-------------|-----|-----|----------------|------------|-----|--------------------------|--------------------|----------|
| 1 | F | 59 | 37 | 0 | 20 | 2 | 14 | |
| 2 | F | 73 | 40 | 0 | 44 | 2 | 45 | |
| 3 | F | 89 | 22 | 2 | 26 | 0 | 22 | Yes |
| 4 | F | 62 | 13 | 0 | 41 | 0 | 19 | |
| 5 | M | 63 | 18 | 0 | 28 | 0 | 22 | Yes |
| 6 | M | 75 | 23 | 2 | 20 | 0 | 7 | Yes |
| 7 | M | 78 | 31 | 0 | 23 | 1 | 9 | |
| 8 | F | 78 | 31 | 0 | 37 | 0 | 17 | Yes |
| 9 | M | 76 | 41 | 0 | 33 | 1 | 21 | |
| 10 | M | 71 | 20 | 0 | 27 | 0 | 8 | Yes |
| Mean | | 72 | 27 | | 29 | | 18 | |

Table 3. Patients assigned to TENA Bed Plus pads.

| Case number | Sex | Age | Waterlow score | MUST score | BMI | Moisture lesion category | Days on evaluation | Pad only |
|-------------|-----|-----|----------------|------------|-----|--------------------------|--------------------|----------|
| 11 | F | 69 | 23 | 0 | 30 | 0 | 19 | Yes |
| 12 | F | 75 | 21 | 0 | 23 | 0 | 8 | Yes |
| 13 | M | 72 | 28 | 0 | 21 | 0 | 7 | Yes |
| 14 | F | 64 | 21 | 0 | 18 | 0 | 21 | Yes |
| 15 | M | 76 | 26 | 0 | 31 | 0 | 20 | Yes |
| 16 | F | 35 | 36 | 0 | 15 | 0 | 7 | Yes |
| 17 | F | 72 | 15 | 0 | 22 | 0 | 9 | Yes |
| 18 | F | 69 | 36 | 0 | 33 | 0 | 10 | Yes |
| 19 | M | 83 | 16 | 2 | 29 | 1 | 5 | |
| 20 | M | 84 | 16 | 0 | 23 | 1 | 5 | |
| Mean | | 68 | 24 | | 24 | | 11 days | |

patients had Streptococcus A infection and were extremely unwell. Two patients with loose stools did not develop a moisture lesion. Four patients developed moisture lesions: two had category 1 mild excoriation, and two had category 2 moderate excoriation (Figures 2 and 3). Five of the patients were managed just on the TENA Bed Super pads.

All patients who developed moisture lesions were treated following the Trust’s moisture lesion care pathway.

TENA Bed Plus pad

All 10 patients were ventilated at the start of recruitment and some ended the trial when

they were discharged from the ICU. Patient characteristics are shown in Table 3. The Waterlow score ranged from 15 to 36 (mean 24), which was much lower than the TENA Bed Super group. Two patients were recruited with category 1 (mild excoriation) moisture lesions and were treated using the Trust’s moisture lesion care pathway. The length of time the patients were evaluated was shorter than the TENA Bed Super group, ranging from 5–21 days (mean 11 days). The majority (n=8) did not develop moisture lesions (Figure 3).

Nurses’ questionnaire

Seventeen out of 30 nurses responded to the questionnaire. Overall, the nurses felt that the TENA Bed Super pad managed some of the moisture (n=3), completely managed the moisture (n=3), or managed the moisture most of the time (n=11), while the TENA Bed Plus pads, managed some of the moisture (n=4), completely managed the moisture (n=5), or managed the moisture most of the time (n=8).

The majority (n=15) stated that they felt patients were comfortable on TENA Bed Super pads and on the TENA Bed Plus pads (n=13).

The TENA Bed Super pad was rated against the nurses’ normal practice as excellent (n=1), significantly better (n=6), somewhat better (n=9) and the same (n=1). The TENA Bed Plus pad was rated against normal practice as excellent (n=2), significantly better (n=14), and the same (n=1).

All the nurses stated they would not wish to return to their normal practice of using no bed pads. The nurses’ overall preference (15 out of 17) was for TENA Bed Plus pads.

DISCUSSION

The majority (6 of 10) of patients on the more absorbent TENA Bed Super pads did not develop a moisture lesion. Two patients on TENA Bed Plus pads developed a moisture lesion (category 1 mild excoriation). The moisture lesions began to improve and heal during the evaluation.

The ICU staff were pleased with the results and a survey found that they thought TENA Bed Plus pads delivered enhanced care in the prevention and management of moisture lesions when compared to TENA Bed Super.

This was a small evaluation of only 20 patients,

but these bed pads were demonstrated to be successful because 14 patients did not develop a moisture lesion. Due to the small number of patients no statistical significance can be obtained. In the previous year, the ICU had 80 patients (15.2%) with moisture lesions; and employing the TENA bed pads will help prevent skin damage for these vulnerable patients.

RECOMMENDATIONS

TENA Bed Plus pads would be a valuable addition to care pathways to aid patient comfort and prevent skin damage.

CONCLUSION

While this is only a small sample of 20 patients in one ICU, this evaluation has delivered positive patient outcomes. Early recognition of moisture lesions followed by the correct care pathway is essential to decrease the pain and discomfort from moisture lesions. Poor management of moisture lesions can lead to pain, suffering and increased risk of infection in these vulnerable patients. Following this evaluation, the ICU plans to continue to use TENA Bed Plus pads for patients considered to be at risk of moisture lesions to deliver enhanced quality of care. **WUK**

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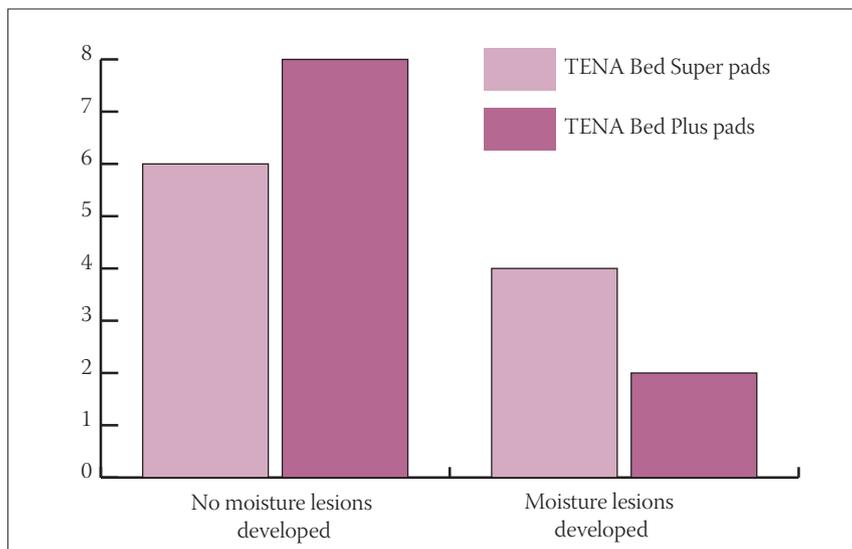


Figure 2. Number of patients who developed moisture lesions.

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