Evaluation of a film spray and barrier cream to treat incontinence-associated dermatitis

KEY WORDS
- Appropriate skin cleansing
- Clinical pathway
- Good patient outcomes
- Incontinence associated dermatitis
- Skin protection

Moisture lesions, specifically incontinence-associated dermatitis (IAD) also known as a moisture lesion, continue to present a significant health challenge and require a multidisciplinary approach to provide effective prevention and treatment care pathway. This evaluation reports on 20 patients in a community and rehabilitation unit following the local IAD care pathway with use of CD Medical's Clinifilm® spray or Clinifilm® barrier cream on incidents of incontinence. All patient had IAD at the start the evaluation. The number days it took patients' incontinence-associated dermatitis to resolve varied from 3–10 days (mean 5 days). The patient skin integrity was regained back to normal. The number of days the patients remained on the audit ranged from 7 to 30 days (mean 20 days). The author suggests that a larger evaluation of the products is necessary to gain statistical significance, but Clinifilm® spray and Clinifilm® barrier cream provide effective management of IAD and can be resolved with good patient outcomes in this vulnerable client group.

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Incontinence-associated dermatitis (IAD) may be described perineal dermatitis, perineal rash, nappy rash/dermatitis, irritant dermatitis, moisture ulcers and moisture lesions (Ousey and O'Connor, 2017). Gray et al's definition of IAD is erthyema and oedema of the skin, sometimes accompanied by bullae with serous exudate, erosion or secondary cutaneous infection. Skin exposed to moisture, such as faecal or urinary incontinence, is susceptible to development of IAD (Gray et al, 2012).

Incontinence can occur at any stage of life, prevalence increases with age, with 31% of older women, 23% of older men and 30–85% of nursing home residents recognised as being incontinent (Bale at al, 2004). The National Institute for Health and Care Excellence (NICE, 2007) recognised that 1–10% of adults suffer from chronic faecal incontinence. The prevalence of IAD estimated to at 5.7% up to 27% and the incidence is 3.4% to 50% (Gray et al, 2012)

The Your Skin Matters section of the High Impact Actions (NHS Institute for Innovation and Improvement, 2010) set a target to start recording IAD as a clinical incidence. NHS Improvement (2018) have further endorsed this and state that incontinence associated dermatitis should be counted and reported as clinical incidents. IAD can be equally as distressing and painful and may adversely affect patient's physical and psychological wellbeing, so minimising damage is vital part of a nurse role (Bianchi, 2012a).

Houwing et al (2007) state that IAD and pressure ulcers have very different histopathologies. Pressure ulcers are associated with an ischaemic pattern, whereas IAD have a chemical irritation with epidermal loss, oedema, dilated vessels and mononuclear phagocytic leukocyte infiltration.

The aetiology of IAD, also called moisture lesions, is complex and multifactorial and leads to associated skin damage from excess moisture for a prolonged period from urine, faeces, wound exudate, sweat and stoma output (Gray et al, 2007). The skin's permeability is thus increased which reduces the natural barrier function (Beeckman et al, 2015). The sources of moisture can also include perspiration, incontinence and wound leakage (Gibbon, 2009).

The normal pH of the skin is between 4.4 and 5.5, which provides a protective mechanism known as the acid mantle (Bianchi, 2012b). The acid mantle provides significant resistance against dehydration

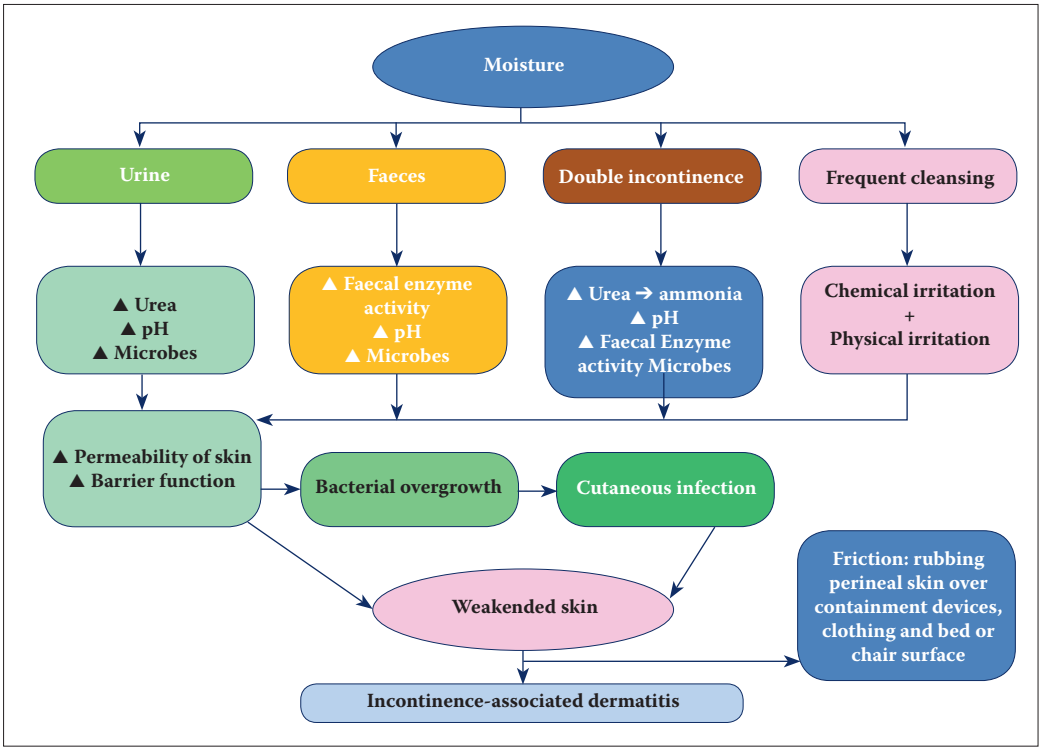


Figure 1. The mechanisms of IAD (adapted from Beeckman et al, 2009)

and bacterial invasion (Bianchi, 2012b). This protection is created by the presence of sebum, which acts as a barrier to chemical damage and protects against some types of *Candida albicans* and *Staphylococcus* (Bianchi, 2012b). The typical pH of stool is alkaline, at between 7.0 and 7.5, thus exposure to faeces contributes to an abnormally high skin pH (Beeckman, 2016). 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 to be more alkaline (Beeckman, 2016). The barrier function of the skin is compromised as pH increases encouraging bacterial colonisation, *Candida albicans* and *Staphylococcus* from the perineal skin and gastrointestinal tract. This also raises the pH levels and increases the risk of infection to the patient *(Figure 1)* (Beeckman et al, 2009).

In addition, friction increases significantly when perineal skins rubs over materials such as absorbent pads, clothing, and bed and chair surfaces (Beeckman et al, 2009). This, in combination with the chemical irritation and friction, results in weakened skin. Once the skin has been damaged the lesion that develops may cover a large area and begin as mild erythema, which, if left untreated, may deteriorate into blistering and in time erode the skin surface (Bianchi, 2012b). Skin damage to the perineal area and buttocks can cause significant pain and discomfort to the patient (Farage et al, 2007).

The National Pressure Ulcer Advisory Panel states that IAD are often misclassified as category II pressure ulcers (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance, 2014). This is especially due to the location of the IAD located in the perianal and natal cleft area. Differentiating between a pressure ulcer and a IAD is of clinical importance as the prevention and treatment management strategies vary and can affect patient outcomes (Defloor et al, 2005) *(Table 1)*. Fletcher (2008) also identified the importance of nursing staff being able to differentiate between IAD and pressure ulcers. Early recognition of IAD and its causes can mean faster and more effective treatment (Browning et al, 2018). It is essential for all care givers to have a fundamental understanding that incontinence can result in IAD, and to know the preventive steps for there to be any dramatic reduction in the incidence of IAD (Browning et al, 2018).

Table 1. The differences in pressure ulcers and incontinence-associated dermatitis (adapted from Defloor et al, 2005)

	Pressure ulcer	IAD
Causes	Pressure and/or shear must be present	IAD moisture must be present
Location	A wound not over a bony prominence is unlikely to be a pressure ulcer	May be over bony prominence, skin folds, anal cleft, perianal redness/skin irritation
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 (category 2 to 4)	IAD 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

MANAGEMENT OF URINE AND FAECES DEVICES

There is a range of containment products available for the management of bladder or bowel problems. In severe cases, a urinary catheter may be inserted to rest the skin and give it time to recover and heal. A faecal management system may also be employed to contain and divert faecal matter and reduce the further breakdown of skin and spread of infection (Morris, 2011).

MANAGEMENT AND TREATMENT OF IAD

To prevent and manage IAD, carers need to adopt a consistent and structured approach to skin care, which starts with regular skin inspections with management of incontinence using the appropriate continence aids (Beecham et al, 2015). Soap and water should not be used for skin cleansing as this exacerbates skin damage, especially in patients with vulnerable or fragile skin (Beecham et al, 2015). Soaps are an alkaline substance that upsets the skin's protective acidic pH and can remove lipids from the skin, affecting its barrier function and increasing dryness (Beecham et al, 2009). Additionally, using harsh washcloths should also be avoided to prevent damage to the skin from increased friction and abrasion (Beecham et al, 2011). Skin should therefore be cleansed with foam that contains ingredients that deliver additional protection and moisturising properties, and are designed not to be rinsed, thus reducing the need to rub or dry the skin which could expose the skin to additional friction forces (Bradbury et al, 2017).

NICE (2014) recommend that skin barrier products be considered for adults and children who have been assessed as being incontinent or at high risk of developing moisture lesions. Modern skin barrier products contain silicone to form a protective film on the skin. These are usually in the form of a film, spray or wipe. The skin protectant contains a bioadhesive, which gives the ointments a tacky consistency, allowing it to adhere even to very moist or damaged skin (Bradbury et al, 2017). The film should always be allowed to dry for 30-60 seconds before applying the incontinence products (All Wales Tissue Viability Nurse Forum, 2014). Ointments are oil-based and have an occlusive effect on the skin (Nix, 2000), thus offering more protection than creams.

CLINIFILM SPRAY AND WIPES

These two options are comprised of siloxane copolymers and a non-sting silicone-derived solvent. The skin should be cleansed and then allowed to dry for 30 to 60 seconds before applying a thin film using the wipes or spray over the area to be protected.

CLINIFILM AND BARRIER CREAM

This cream consists of emulsifying waxes, calendula oil, isopropyl myristate, glycerine and water. As with the spray and wipes, the skin should be cleansed and then allowed to dry for 30 to 60 seconds before applying a thin film of the cream over the area to be protected.

AIM

To provide evidence in the form of 20 case studies to demonstrate the benefits of employing CD Medical Clinifilm spray and ointment in community and rehabilitation care settings in the treatment and management of IAD.

OBJECTIVES

- To explore patient outcomes in the treatment of IAD and measure how long is required to regain patient skin integrity
- To explore the nurses' perceptions of the performance of CD Medical Clinifilm products in the treatment of IAD in patients in their care setting
- To monitor the incidence and classification of IAD using the Skin Excoriation Tool for incontinent patients (NATVNS, 2009).

METHOD

The first part of the evaluation was to educate all nurses and carers about moisture lesions to ensure as many staff as possible are trained. The 30-minute presentation provided details on the physiology of the skin, causes of incontinence in patients, the Skin Excoriation Tool for incontinence patients (NATVNS, 2009) and how to treat moisture lesions. All nurses and carers were shown the correct application of the CD Medical Clinifilm spray and ointment demonstrated to them. The skin care regimen for soiled skin was using a skin cleanser and to avoid excessive rubbing of the skin. Nurses applied the cleansing foam to a soft wipe and then gently cleansed the urine and faeces away. This was followed by the application of a barrier cream, and then alternating with film spray at each change of incontinence products. Any patient who developed a sensitivity was removed from the audit and an alternative care pathway was given and data collected.

Any new staff was also be shown this regimen by the Tissue Viability Nurse Consultant. Whilst the evaluation was being conducted, staff from CD Medical were not permitted in the evaluation areas.

RECRUITMENT

The evaluation took place in a community and rehabilitation environment and consisted of 20 patients. We had recruited more than 30 patients to achieve 20 completed cases as 10 patients were discharged to other organisations or passed away. Patients recruited for the evaluation were identified by the community and rehabilitation staff as having IAD lesion and were referred to the Tissue Viability Nurse Consultant. The staff gave out a leaflet explaining the evaluation to the patients and discussing what their involvement would entail. Patients and relatives were asked if they wanted to participate in the evaluation. A written consent form was obtained from the patients or relatives or untaken in the best interests of the patient by gaining permission from the manager of the unit this is an important point and needs further discussion. The consent or permissions were gained for the nurses to deliver the IAD care pathway in the best interests of the patient and to take photographs for clinical purposes, which was part of routine practice. All patients' IAD was assessed using the Skin Excoriation Tool for incontinence patients (NATVNS, 2009) by the Tissue Viability Nurse Consultant.

To be included in the evaluation, patients had to be 18 years or older, consent to participate (written, informed consent/witnessed verbal consent/consultee agreement) and were expected to comply with the follow-up schedule. Patients were excluded if they expressed that they were unwilling to participate or if a patient's condition changed so that normal treatment was compromised.

IAD SKIN ASSESSMENT

Every patient's skin was assessed using the SSKIN (NHS Improvement, 2012) and PULSE (Rafter, 2012) guidelines as per local pressure ulcer prevention policy. If an IAD was present, the severity of the IAD was classified using the Skin Excoriation Tool for incontinence patients (NATVNS, 2009) by the Tissue Viability Nurse Consultant. All patients were photographed on a weekly basis and monitored to assess the skin integrity on their sacrum over the three-week period (to allow the skin to repair completely). The photographs provided evidence of IAD and healing when the patient's condition allowed. The same assessor performed the evaluation on all patients. Patient demographics, age, sex, nutritional status, medical conditions, Waterlow score and Must score were recorded. The duration

Table 2. Audit data from the 20 recruited patients

Case No.	Sex	Age	Waterlow Score	MUST	PEG Feed
1	Male	34	18	9	yes
2	Female	71	25	0	No
3	Female	71	18	0	No
4	Female	69	10	2	No
5	Female	96	36	4	No
6	Male	88	21	4	No
7	Male	59	14	0	No
8	Male	66	20	2	yes
9	Male	20	20	0	Yes
10	Male	48	23	0	Yes
11	Female	70	26	0	No
12	Male	60	18	0	No
13	Female	75	20	0	No
14	Female	93	43	2	Yes
15	Male	88	26	4	Yes
16	Female	87	20	0	No
17	Female	53	20	0	Yes
18	Male	74	24	0	Yes
19	Female	51	20	0	Yes
20	Male	41	21	0	Yes
Mean		65	22	1.2	

of the of the IAD was recorded and classified using the Skin Excoriation Tool for incontinent patients.

Data were collected on the frequency of use of the two products being evaluated for the treatment of IAD and the effect on the patient's skin condition noted at every application. Every patient had their skin monitored by the Tissue Viability Nurse Consultant on days 0, 7, 14 and 21 or until healed. The skin of the IAD was assessed and evaluated for the amount of peri-wound skin, maceration, dermatitis, inflammation, irritation and dryness. The TIME framework (Tissue management, Inflammation and infection control, Moisture balance, Epithelial (edge) advancement) was performed at every assessment (Dowsett, 2008). If a patient withdrew from the evaluation for any reason this was noted.

IAD CARE PATHWAY

The IAD care pathway started with the Clinisan skin cleanser being sprayed onto a Conti wipe. First, the groin and pubic area and then buttocks area were cleansed. The authors advised applying the Clinifilm spray and alternating it with the Clinifilm barrier cream on every incidence of incontinence. This was then recorded on the IAD chart so the authors knew what product was applied and when. All of the patients were using Tena products to manage their incontinence.

NURSING STAFF FEEDBACK

After the audit was completed, all of the community and rehabilitation staff who participated in the care of the patients were given a questionnaire to gain their opinions of the CD Medical Clinifilm spray and ointment in comparison to their normal regimen for moisture lesions. The questionnaire was given to 20 nurses to gain their opinions on the CD Medical Clinifilm products and how effective and easy to use they feel the products were.

RESULTS

Thirty patients were recruited, 10 of whom did not complete the audit as they passed away or were discharged to other organisations. The evaluation therefore reported on 20 patients in the community and rehabilitation unit using the IAD care pathway. There were 9 patients with brain injuries, 4 with tetraplegia, 4 with cancer, 1 with dementia, 1 with Parkinson's and 1 with Huntington's disease.

All patients were recruited with IAD varying from mild to severe based on the Skin Excoriation Tool for incontinent patients (NATVNS 2009). The audit consisted of 10 males and 10 females with an age range of 20 years to 96 years (mean age 65 years) *(Table 2)*. The patients' mean Waterlow score was 22 and ranged from 14 to 43. The Malnutrition Universal Screening Tool scores ranged from 0 to 9 (mean 1.2). This sample of patients had 11 with percutaneous endoscopic gastrostomy (PEG) feeding.

There were 13 patients who were doubly incontinent and 5 patients with urinary catheter. All but one of the patients used Tena incontinence products. The majority of patients were nursed

Figure 2. Site of IAD

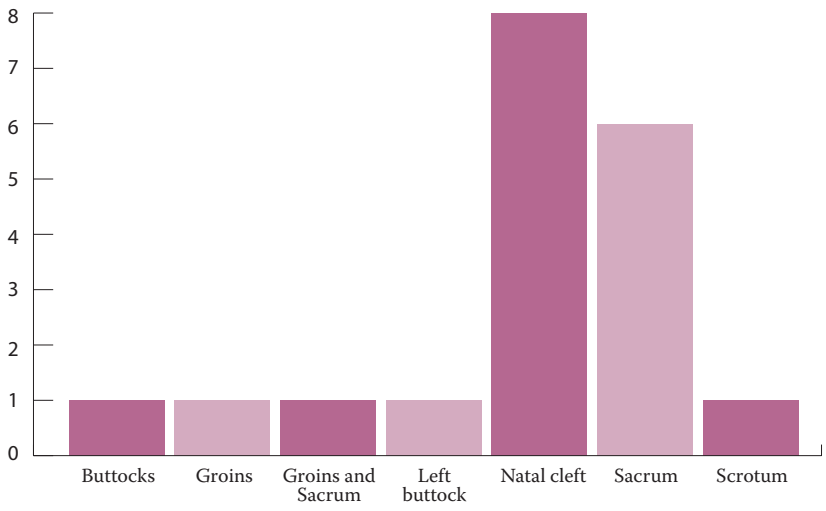


Figure 3. Number of days IAD was resolved

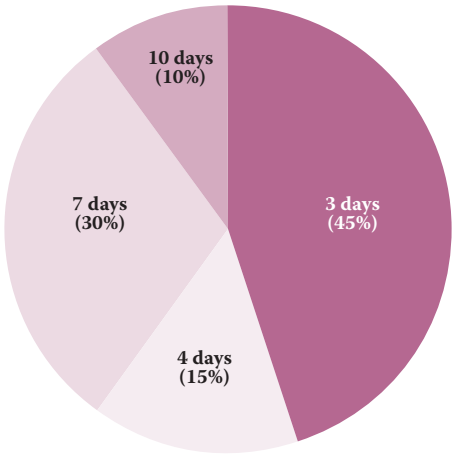


Figure 4. Number of days patients were on the evaluation

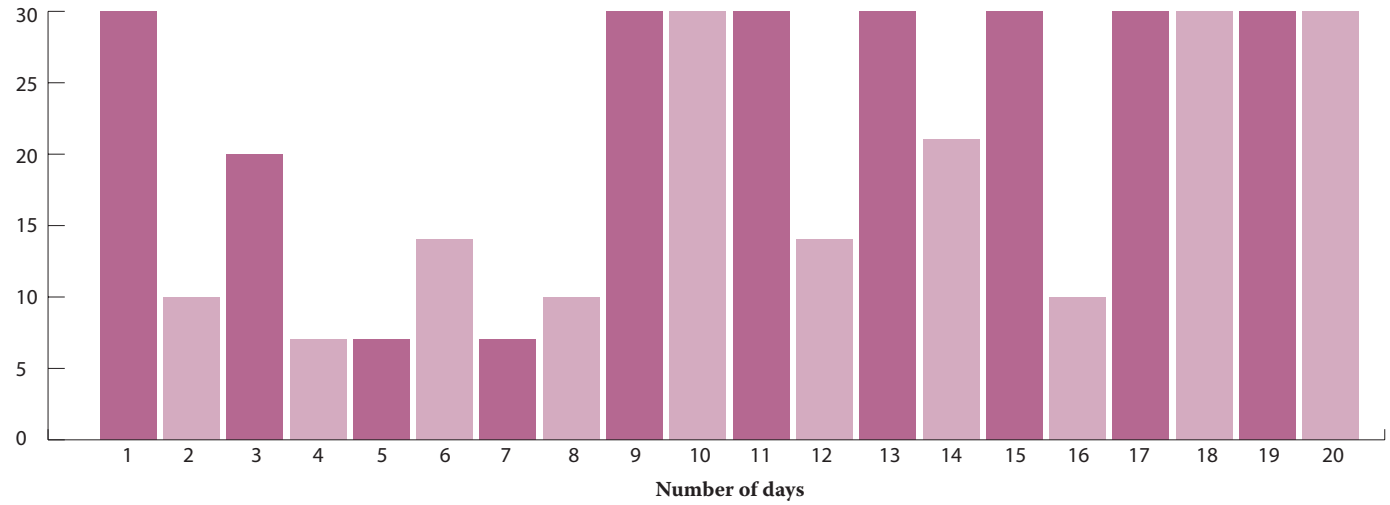


Figure 5. Number of days patients were free from IAD

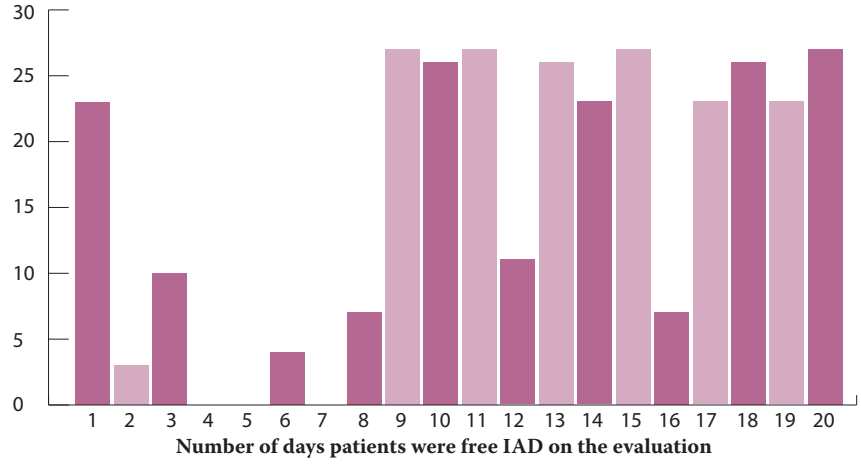
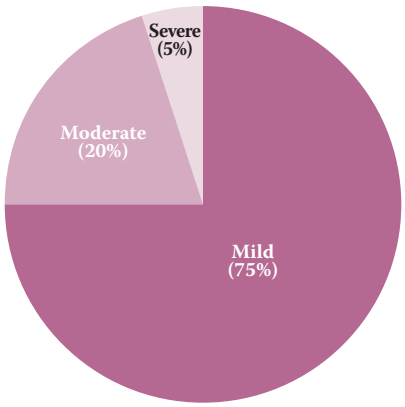


Figure 6. Type of IAD



on alternating mattresses, with one patient each on a low air loss, a visco-elastic and a standard pressure-relieving mattress. All of the patients were to turned two-hourly during the day and four-hourly at night. The patients used pressure-relieving cushions as follows: 12 static air cushion; 3 alternating; 2 REA Azalea wheelchair; 1 Jay cushion; and 2 unknown.

The location of the moisture lesions varied *(Figure 2)*. There was no significant difference between the sites of the IAD data. The number of days that patients' IAD healed varied from 3 to 10 days (mean 5 days) *(Figure 3)*. The majority of patients' skin integrity had returned to normal and no redness or IAD was present at 3 days. The number of days on the evaluation ranged from 7 to 30 days (mean 20 days) *(Figure 4)*.

The number of days patients were free from IAD *(Figure 5)*. The type of IAD was classified using the Skin Excoriation Tool for incontinence (NATVNS, 2009) and the number of patients *(Figure 6)*.

STAFF FEEDBACK

All of the nurses and carers reported that they liked the Clinifilm spray and Clinifilm barrier cream and were impressed by the improvement in the IAD. They reported that the Clinifilm barrier cream was easy to apply and less sticky than their usual barrier cream. As none of the patients on the evaluation developed an IAD the staff felt it enhanced the quality of care they were able to deliver for their patients. All of the nurses and carers stated that they would like to continue to use the Clinifilm spray and Clinifilm barrier cream to help treat IAD and maintain skin integrity.

DISCUSSION

This evaluation looked at a small group of with very similar comorbidities not reported, ages and Waterlow scores. These patients had IAD at the start of the evaluation.

The staff and carers followed the IAD care pathway which did involve application of a protective barrier at each episode of incontinence. In the authors clinical experience protective barrier products on the market are not applied as frequently as required or only one product is used. Beeckman et al (2009) state that IAD can be prevented and healed with timely and appropriate skin cleansing and skin protection. Prevention and treatment should also focus on the proper use of incontinence containment materials. Beeckman et al (2015) suggest that the acronym CPR, referring to cleanse, protect and restore, could be used as an aide-memoire to achieve best practice in the management of IAD.

The majority of the patients in this evaluation had regained normal skin integrity at 3 days and therefore a trend was noticed *(Figure 4 and 5)*. The patient whom had IAD were followed up for 30 days remained healed; therefore, the IAD care pathway should be maintained for patients who are doubly incontinent to maintain their skin integrity on an ongoing basis.

LIMITATIONS IT IS UNUSUAL TO DISCUSS LIMITATIONS OF AN EVALUATION

Due to the client population it was not possible to gain the patients' perceptions of the Clinifilm spray and Clinifilm barrier cream as most had brain injuries or dementia.

RECOMMENDATIONS

A large evaluation of the Clinifilm spray and Clinifilm barrier is required to demonstrate statistical significance of what of IAD healing the patient skin within 7 days.

CONCLUSIONS

The effectiveness of IAD care pathway using Clinifilm spray and Clinifilm barrier cream must be considered in the context of the nursing care provided, alongside the pressure-relieving mattress, seating cushions and incontinence products. The results of this evaluation endorse best practice in IAD management, which provides a consistent approach to managing and maintaining the skin integrity. Promoting interventions to treat and manage incontinence associated dermatitis ultimately results in patients not being put at risk of infections (Beeckman et al, 2009). The Clinifilm spray and Clinifilm barrier cream therefore provides an effective management and good patient outcomes of IAD in this vulnerable client group. WUK

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