

Introduction

Incontinence-associated dermatitis (IAD) describes skin damage associated with exposure to urine or faeces. It causes patients significant discomfort and can be difficult and time-consuming to treat¹. It is a significant health challenge and a well-documented risk factor for development of pressure injury².

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The current lack of standard terminology and definitions for IAD is hampering clinicians as they attempt to deliver evidence-based practice (Box 1). There are a number of definitions used to describe IAD, including, perineal dermatitis, perineal rash, nappy rash/dermatitis, irritant dermatitis, moisture ulcers, moisture lesions and moisture-associated skin damage. Establishing consistent terminology for IAD is crucial in facilitating research and improving education for healthcare professionals, and for standardising care.

OVERCOMING THE CHALLENGES

IAD presents a significant challenge to HCPs and patients. The exact size of the challenge is hard to define. This is due partly to the inconsistencies in terminology, and difficulties in recognising the condition and distinguishing it from Stage I/II pressure injury in diagnosis: all of which have subsequently resulted in less than robust data collection. This is compounded by the lack of an internationally recognised, validated and accepted methods for IAD data collection, which adds to the wide variation in prevalence and incidence figures.

Studies have estimated prevalence of IAD at 5.6% to 50%³⁻⁷ while reported incidence varies from 3.4% to 25%⁸⁻¹⁰.

Patients with IAD may experience discomfort, pain, burning, itching and tingling in affected areas, even when the epidermis is intact. In addition, patients may experience loss of independence, disruption to activities and/or sleep, and reduced quality of life that deteriorates as the frequency and quantity of soiling increases. They may also feel/believe they are a burden on family and friends.

Cost concerns and constraints

The cost of treating IAD

Accurate costs related to IAD are difficult to present, as there are little data that distinguish these from pressure injury costs. However, Bale et al¹¹ published economic considerations in terms of nursing time and consumables in relation to managing and treating IAD. Following the introduction of structured skin care regimens in two nursing homes, the presence of IAD and Stage I pressure damage after 3 months was reduced, with a reduction in time taken to deliver skin care, saving just over 34 minutes of staff time per patient per day.

Box 1. Classification

In the World Health Organization (WHO) International Classification of Diseases, which has been in use since 1994, there is no coding for IAD, although there is a code for nappy dermatitis.

The average saving per day per patient in staff costs was US \$13.75 for qualified staff and US \$5.33 for unqualified staff (based on 2004 costs). Guest et al¹² evaluated the economics of four different skin care regimens in over 900 nursing home residents, it showed no significant difference in IAD rates between the four regimens, however the total cost (including product, labour and other supplies) per incontinence episode was significantly lower when a barrier film was used.

Impact on outcomes and human cost of not managing IAD effectively

IAD is not just painful, it can also cause the individual affected to lose their dignity. A number of patients who suffer from IAD tend to be vulnerable and reliant on others to help manage their continence issues. Unfortunately, there is limited empirical evidence to support this. It can only be assumed from anecdotal evidence and working within clinical practice that the distress experienced by an individual has a negative impact on his/her life. This is usually demonstrated by the pain and discomfort patients express when they undergo treatment.

Psychosocial, wider healthcare organisation costs

Clinicians are aware that IAD causes pain and discomfort to patients; a stance supported by research from Fader et al¹³. This highlights that both urinary and faecal incontinence have a profound and devastating effect on a person's social, physical and financial, and psychological wellbeing. Yet patients still experience pain, discomfort and effects on their dignity because of the poor management of IAD.

Dorman et al¹⁴ reported that faecal incontinence in hospital patients is often overlooked with management of the problem being given low priority.

The cost of products is often calculated by reviewing price per unit and amount of products purchased. However, these costs can be unreliable due to insufficient monitoring of incidence and prevalence of IAD, which makes it difficult to understand fully the financial costs associated with this issue. Regular audit of practice, appropriate use of products and their effectiveness would allow for estimates of the true cost of managing IAD and the impact on health systems.

Box 2. Clinical characteristics of IAD

- Blanchable erythema
- Glistening appearance of the skin due to serous exudate
- Partial thickness skin loss (denudation, erosion, abrasion or superficial ulceration of the injured skin)
- Vesicles (bullae) containing clear exudate

Box 3. Pathology of IAD

The pathology of IAD is best described as a 'moisture/over-hydration + additional insult' phenomenon. Exposure to urine and/or faeces initially causes over-hydration of the skin, which does not usually cause breakdown in and of itself, but results in reduced tensile strength and elevated pH.

The reduction in tensile strength makes the skin more vulnerable to mechanical damage from friction and shear, and the altered pH makes it more susceptible to invasion by microorganisms such as candida albicans. The altered pH can also activate faecal enzymes, which can cause direct damage to the epidermis. Thus, the over-hydration acts to 'set the skin up' and it is the secondary factors (friction, shear, enzymatic damage and invasion by microorganisms) that cause skin loss and infection.

Also relevant is that the nursing actions required to manage incontinence can actually contribute to IAD; frequent cleansing can contribute to epidermal stripping and can compromise the barrier function of the epidermis unless care is taken to assure gentle friction-free cleansing protocols are used, and to routinely replace epidermal lipids through use of moisturising agents.

DIAGNOSIS

Differentiating between IAD and pressure injury

IAD and pressure injury have a number of common risk factors; both are likely to occur in patients with underlying poor health and restricted mobility^{15,16}. However, there are distinct differences, see Table 1 (page 3) and Box 4.

IAD has different aetiologies from pressure injury but the two can co-exist. IAD is a 'top down' injury where damage is initiated on the surface of the skin; conversely, pressure injury develops when damage is initiated by changes in the soft tissue below and within the skin and it is, therefore, coined a 'bottom-up' injury (Figure 1)¹⁷. It is important that clinicians are aware of and recognise the differences that exist between IAD and pressure injury (Table 1)¹⁸.

Grading of IAD

In 2011, Bianchi and Johnstone¹⁹ found that there was no consistency in the language used to describe the degree of

Box 4. Risk factors for IAD

Type of continence

1. Faecal incontinence (diarrhoea/formed stool)
2. Double incontinence (faecal and urinary)
3. Urinary incontinence

What to look out for

- Frequent episodes of incontinence (especially faecal)
- Use of occlusive containment products
- Poor skin condition
- Compromised mobility
- Diminished cognitive awareness
- Poor personal hygiene
- Pain
- Pyrexia
- Medication (antibiotics, immunosuppressants)
- Poor nutrition
- Critical illness

IAD. To minimise inconsistency in accurately grading the degree of skin damage and to aid development of management strategies, the National Association of Tissue Viability Nurses Scotland (NATVNS) established an excoriation grading tool. It comprises clinical images, grades the level of excoriation and offers management solutions. It aims to encourage a consistent approach to IAD care²⁰ (Table 2, page 3).

ASSESSMENT TOOLS

What is available currently?

1. IAD Assessment Intervention Tool (IADIT)²¹
2. Incontinence-associated dermatitis and its severity (IADS)¹⁰
3. Skin Assessment Tool^{22,23}
4. IAD Severity Classification Tool (currently being validated)¹⁸
5. Perineal Assessment Tool²⁴
6. Perirectal Skin Assessment Tool^{25,26}.

Initial patient assessment should include a complete clinical history, physical examination including visual examination of perineal areas to exclude other pathologies (such as allergies or atrophic vaginitis), an assessment of mobility, dexterity and cognitive function, urinalysis, a frequency volume chart and a

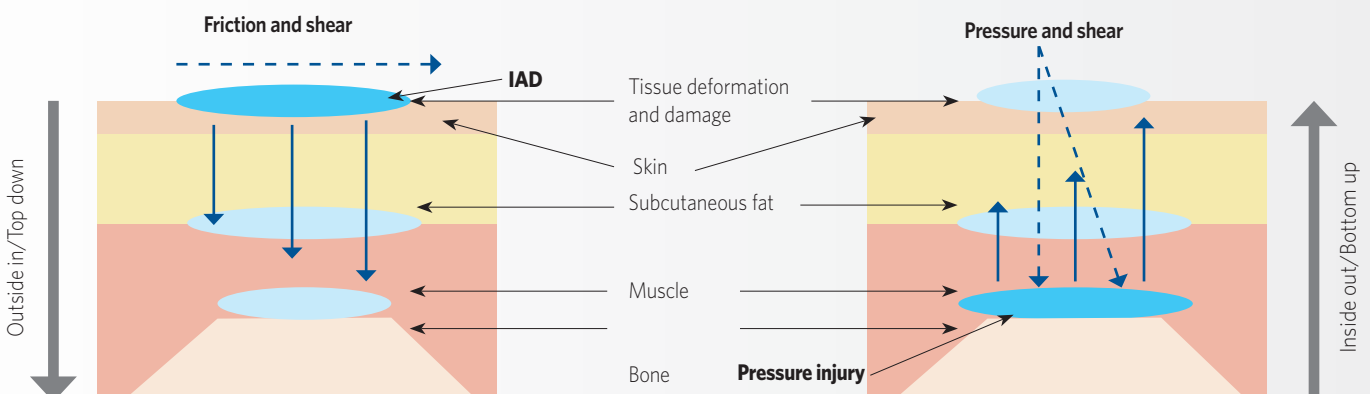


Figure 1. Possible mechanisms of action in IAD and pressure ulcer development (Wounds International, 2016)¹⁷

Table 1. Differentiation between IAD and pressure injury [adapted from Back et al, 2011 and Beeckman et al, 2011; published by Wounds International, 2015]¹⁸

Parameter	IAD	Pressure injury
History	Urinary and/or faecal incontinence	Exposure to pressure/shear
Symptoms	Pain, burning, itching, tingling	Pain
Location	Affects perineum, perigenital, peristomal area; buttocks; gluteal fold; medial and posterior aspects of upper thighs; lower back; may extend over bony prominence	Usually over bony prominence or associated with location of a medical device
Shape/edges	Affected area is diffuse with poorly defined edges/ may be blotchy	Distinct edges or margins
Presentation/depth	Intact skin with erythema (blanchable/non-blanchable), with/without superficial/partial-thickness skin loss	<ol style="list-style-type: none"> 1. Presentation varies from intact skin with non-blanchable erythema to full-thickness skin loss 2. Base of wound may contain non-viable tissue
Other	Secondary superficial skin infection (e.g. candidiasis) may be present	Secondary soft tissue infection may be present






bowel diary, a post-void residual urine test and a review of the patient's medication history²⁷.

It is essential that clinicians assess accurately the cause of skin damage allowing for correct diagnosis of IAD or pressure injury. IAD is commonly misdiagnosed as pressure injury. It can also be confused with intertriginous dermatitis (ITD). ITD is caused by

trapped moisture between skin folds and friction, and the major risk factors are obesity and diaphoresis. ITD lesions are typically linear fissures found at the base of a skin fold, or superficial 'kissing lesions' on the opposite sides of a skin fold.

Assessment factors critical to accurate assessment and management of IAD versus ITD versus pressure injury include

Table 2. IAD Severity Categorisation Tool¹⁸

Clinical presentation	Severity of IAD	Signs**
	No redness and skin intact (at risk)	Skin is normal as compared to rest of body (no signs of IAD)
	Category 1 - Red* but skin intact (mild)	Erythema +/- oedema
	Category 2 - Red* with skin breakdown (moderate—severe)	As above for Category 1 +/- vesicles/bullae/skin erosion +/- denudation of skin +/- skin infection

*Or paler, darker, purple, dark red or yellow in patients with darker skin tones

** If the patient is not incontinent, the condition is not IAD

patient history, wound location, and wound characteristics. All patients with urinary and/or faecal incontinence should be assessed regularly to check, monitor and document signs of IAD.

Clinicians should check for signs at least once daily, increasing the number of checks based on the number of episodes of incontinence. During checks, special attention should be given to skin folds or areas where soilage or moisture may be trapped (Box 4, page 2)¹⁸. Regular assessment results in timely and appropriate skin cleansing and protection, which can prevent and heal IAD (Figure 2, page 5).

TREATMENT

The goal of a clinician treating a patient with IAD is to manage incontinence²⁸. However, while progress towards this is being made it is crucial to follow a structured cleansing and protection routine.

Managing incontinence

To assist clinicians in managing incontinence, the cause needs to be identified and a plan of care implemented. The European Association of Urology (EAU) Working Panel on Urinary Incontinence (UI) (2016)²⁹ said that a clear patient history should be taken when assessing a patient with incontinence.

This assessment should include details of type, timing and severity of UI, which will allow for the clinician to categorise between stress urinary incontinence, urgency urinary incontinence or mixed urinary incontinence. For the older person, the EAU advises that physiological changes with ageing lead to UI becoming more common and co-existent with other conditions, reduced mobility and impaired cognition.

Box 5. Skin assessment for incontinent patients at risk of IAD (adapted from Wounds International, 2015)¹⁸

1. Areas of skin that may be affected include:
 - Perineum
 - Perigenital and peristomal areas
 - Buttocks
 - Gluteal fold
 - Thighs
 - Lower back
 - Lower abdomen and skin folds (groin, under large abdominal pannus etc)
2. These areas should be checked for:
 - Maceration
 - Erythema
 - Presence of lesions (vesicles, papules, pustules, etc)
 - Erosion or denudation
 - Signs of fungal or bacterial skin infection

For reversible causes, non-invasive interventions including toileting techniques or nutritional and fluid management can be used alongside incontinence-management products that can manage fluids^{30,31}. Invasive interventions including indwelling catheters, faecal management systems and faecal pouches can also be used^{30,32}. A structured skin care protocol should be in place for every patient.

A structured skin care regimen

Skin cleansing

As part of the prevention and management of IAD, it is important that skin cleansing takes place. Gentle cleansing of the skin

Table 3. Characteristics of the main types of skin protectant ingredients (taken from Wounds International Best Practice Principles: Incontinence-associated dermatitis — moving prevention forward, 2015)¹⁸

Principal skin protectant ingredient	Description	Notes
Petrolatum (petroleum jelly)	<ul style="list-style-type: none"> ■ Derived from petroleum processing ■ Common base for ointments 	<ul style="list-style-type: none"> ■ Forms an occlusive layer, increasing skin hydration ■ May affect fluid uptake of absorbent incontinence products ■ Transparent when applied thinly
Zinc oxide	<ul style="list-style-type: none"> ■ White powder mixed with a carrier to form an opaque cream, ointment or paste 	<ul style="list-style-type: none"> ■ Can be difficult and uncomfortable to remove (e.g. thick, viscous pastes) ■ Opaque, needs to be removed for skin inspection
Dimethicone	<ul style="list-style-type: none"> ■ Silicone-based; also known as siloxane 	<ul style="list-style-type: none"> ■ Non-occlusive, does not affect absorbency of incontinence products when sparingly used ■ Becomes transparent after application ■ Available products include Remedy Moisturising Barrier Cream
Acrylate terpolymer	<ul style="list-style-type: none"> ■ Polymer forms a transparent film on the skin 	<ul style="list-style-type: none"> ■ Does not require removal ■ Transparent, allows skin inspection ■ Available products include Sureprep Barrier Film
Cyanoacrylate skin bonding polymer	<ul style="list-style-type: none"> ■ Monomer liquid chemically bonds to stratum corneum, forming <i>in situ</i> polymer film 	<ul style="list-style-type: none"> ■ Does not require removal ■ Transparent, allows skin inspection ■ Available products include Marathon

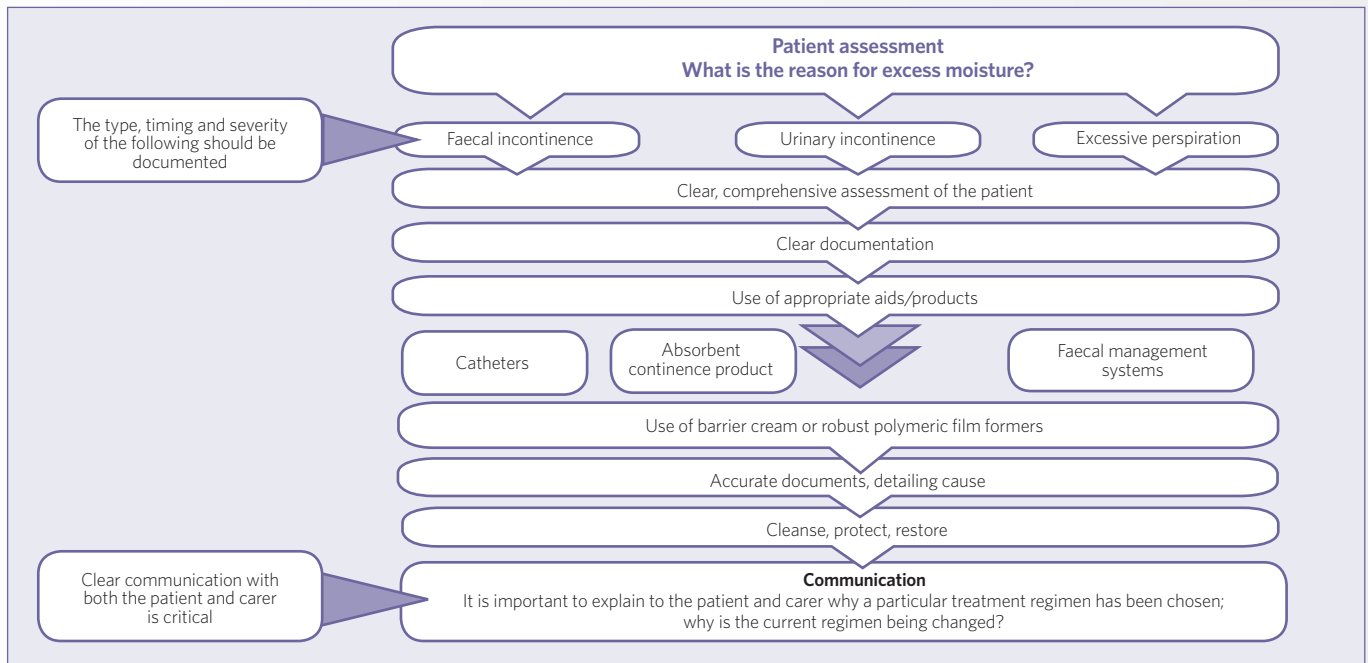


Figure 2. Treatment pathway algorithm

should occur following every episode of incontinence to ensure that the natural function of the skin is maintained. This is supported by a Wounds UK (2012) Best Practice Statement³³, which states that when the skin is exposed to urine and faeces the pH of the skin changes, increasing lipase and protease activity, causing an increase in skin permeability and reducing the skin's natural barrier function.

The use of soaps to cleanse the skin should be avoided as these can dehydrate the skin and cause irritation¹¹. The use of cleansing/moisturising products is preferable (Table 3, page 4). The products can be foam cleansers, wipes or emollients that will cleanse the skin and moisturise at the same time thus reducing skin irritation and dehydration. Manufacturers' instructions should be followed at all times when using products to ensure effective use.

Following cleansing of the skin to avoid further irritation and skin damage, it is advisable to pat the skin dry rather than rub the skin, which can cause breakdown, pain and discomfort.

Skin protection

Skin barrier products are applied to minimise tissue breakdown from external factors. There are a number of products on the market that can be used. These help to maintain the natural barrier function of the skin and should be applied according to manufacturers' instructions.

Products are available in creams and wipes, spray and foam-based films. Cream products tend to be needed after every episode of incontinence; other preparations can provide up to

72 hours' protection. Creams should be applied thinly to ensure they are absorbed into the skin, providing effective protection and preventing continence aids, such as pads, from clogging.

A new class of robust film formers that are solvent-free, and bond directly to skin, is also available; these are cyanoacrylates, and are differentiated from more common acrylate films.

When considering an appropriate barrier product, clinicians need to be aware of functions of the product. Products tend to form either protective or moisturising barriers: protective barriers with silicone polymers contain dimethicone, which creates a dry, water-repellent, flexible, barrier, protecting against excess moisture; moisture barrier products lock in moisture to hydrate and protect the skin²⁷.

Examples of silicone and cyanoacrylate-based products include:

- Remedy™: a silicone-blend barrier that moisturises the skin, allows it to breathe and provides skin protection^{34,35}
- Marathon®: a cyanoacrylate-based liquid skin protectant that sets up a robust barrier on skin in small, focused areas of high-risk skin³⁶⁻⁴⁰.

MOVING FORWARD

Reducing knowledge gaps

There have been a range of campaigns to raise awareness of pressure injury prevention over the past decade, including Stop the Pressure Day, React to Red, Your Turn, zero pressure campaigns and the introduction of a range of care bundles,

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including SSKIN. These have resulted in a heightened awareness and understanding of prevention, management and treatment of pressure damage that has successfully reduced incidence. There now needs to be similar campaigns to raise awareness and understanding of IAD in healthcare, with updates for pressure injury prevention including IAD.

Product selection remains a challenge for clinicians when preventing and managing IAD due to a lack of knowledge and clinical evidence⁴¹. Production of standard statements to promote best practice and agreed terminology for skin damage caused by excessive moisture would also allow for practice to be measured and improved against national guidance.

Beeckman et al⁴¹ highlighted the importance of agreeing and recognising consistent terminology for IAD, arguing that the World Health Organization's International Classification of diseases does not contain separate coding for IAD. Currently, only diaper dermatitis is recognised.

Beeckham et al² suggest that IAD should be clearly differentiated, defined and included in the International Classification of Diseases, which would facilitate research and improve education of healthcare providers. Consistent terminology relating to pressure injury has enabled organisations to benchmark internally, locally and nationally.

It is essential that healthcare organisations work together to provide clear assessment, treatment and evaluation strategies to recognise and manage IAD. This will allow for continuity of care by healthcare providers, and education for clinicians and patients. It should also be noted that there is a great deal of co-relation between the incidences of IAD and pressure injury. In particular, skin care regimens that are known to reduce pressure injury are likely to have done so, at least in part, by the control of IAD.

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