

The prevalence of incontinence-associated dermatitis in a South African sample: The impact of a preventative protocol

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Abstract

Background: Incontinence-associated dermatitis (IAD) has been globally accepted as the new terminology to be used when incontinent patients' skin is exposed to urine and/or faeces – causing skin redness, with/without oedema or, in more severe cases, erosion (vesicles/bullae) and secondary skin infection. Currently we do not have data on the prevalence of IAD in a South African sample. It is necessary to establish the magnitude of the problem in South Africa, implement preventative strategies and measure the impact of education and preventative care on the prevalence of IAD.

Method: A point prevalence study was conducted in two hospitals in two different regions of South Africa before and after a simple skin care preventative protocol was implemented.

Results: The prevalence of IAD in Hospital 1 decreased from 36% in December 2015 to 0% in February 2016 and pressure injuries reduced from 5% to 0.5%. In Hospital 2 the prevalence of IAD decreased from 43% in May 2016 to 5% in August 2016 and no pressure injuries were found in August 2016 compared to 5% in May 2016.

Conclusions: Following best practice principles of (a) managing incontinence and (b) implementation of a simple protocol to prevent skin breakdown, can result in a 100% reduction of IAD in the hospital setting as well as improving quality patient care and reducing costs.

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Introduction

Moisture-associated skin damage (MASD) is an umbrella term for an extensive range of skin conditions related to skin integrity breakdown due to prolonged exposure to moisture.¹

MASD is not a new theory in research and has been defined by Defloor, Schoonhoven and Fletcher² as “inflammation and/or erosion of the skin caused by excessive exposure to moisture”. The source of moisture can include urine, liquid stool, perspiration, saliva, wound exudate and stoma effluent.¹

Gray et al.¹ explain that skin conditions resulting in MASD can include:

- Peri-wound skin damage (maceration and excoriation) due to exudate
- Intertriginous skin damage from perspiration (moisture) and friction
- Peri-stomal moisture-associated dermatitis from effluent and
- Incontinence-associated dermatitis (IAD) from exposure to bodily fluids (urine and stool)

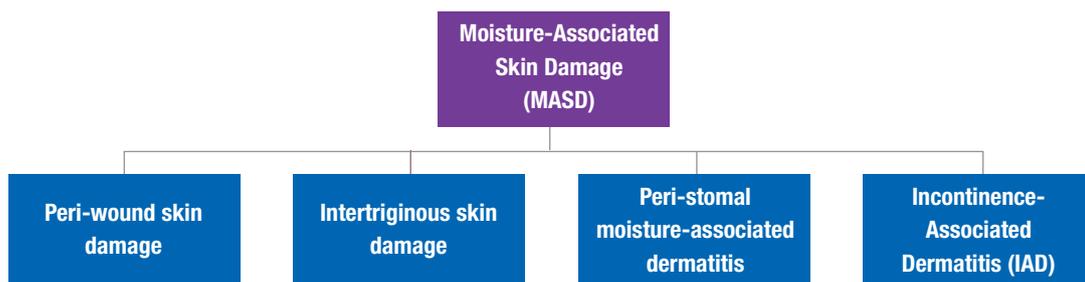


Figure 1. Visual representation for describing the umbrella term “MASD”



Figure 2. Incontinence-associated dermatitis (redness and skin breakdown)

Incontinence-associated dermatitis Introduction

In 2007 clinical experts coined the term “incontinence-associated dermatitis (IAD)”.³ IAD is characterised by “inflammation of the surface of the skin with redness, oedema, and in some cases, bullae vesicles containing clear exudate”³ and present as inflammation and redness with or without erosion or denudation. This condition can be uncomfortable and painful for patients.³⁻⁵

Skin integrity can be compromised when it is exposed to irritant substances like urine and/or stool. The terminology used to describe this skin irritation, or breakdown, was not standardised until 2007. Perineal skin breakdown was previously referred to as “perineal dermatitis”, “diaper dermatitis”, “maceration”, amongst other descriptions and Defloor and co-workers² defined this skin breakdown as “moisture lesions”.

Gray and co-workers³ define IAD as inflammation (erythema) or breakdown (partial-thickness erosion) of the skin, following continuous exposure to urine and/or faeces (incontinence). IAD may present as skin redness, with/without oedema or, in more severe cases, erosion (vesicles/bullae) and secondary skin infection, specifically *Candida albicans*⁶ may be noticed. Figure 2 shows a patient with IAD after a day of having diarrhoea.

The terminology, IAD, better describes the condition, opposed to perineal dermatitis, diaper dermatitis, nappy rash, or one of the eighteen other terms used in publications,^{3,7} as it reflects inflamed or eroded skin due to incontinence, extending beyond the perineal or diaper area.³ Borchert, Bliss, Savik and Radosevich⁸ listed the possible thirteen areas of skin which can be affected by IAD, including the upper thighs opposed to earlier assessment tools, specifically looking at the perianal/perigenital areas only.

The importance of differentiating IAD from pressure injuries

To diagnose IAD correctly and to differentiate IAD from other types of perigenital/perianal/sacral skin breakdown like pressure injuries and intertrigo – is important.⁹ According to Gray et al.¹⁰ diagnosis relies on patient- and medical history, with visual inspection of the skin.

In contrast to IAD, pressure injuries are defined as a “localised injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear”.¹¹

This definition of a Stage II pressure ulcer, which could be ascribed to the presentation of IAD as well, may be the cause of misperception regarding the difference between pressure injuries and IAD. The pathophysiology is different between these two conditions and therefore also their prevention and treatment.

Unfortunately, MASD and more specifically IAD, is often misdiagnosed as a superficial sacral pressure ulcer.⁹ From personal and clinical experience, being involved in auditing and keeping statistics of skin breakdown, I can confirm the misdiagnosis between IAD and pressure injuries is often a reality in the South African hospital settings.

Healthcare providers often misunderstand the differences in aetiology of IAD and pressure injuries, resulting in incorrect diagnosis and inappropriate treatment of the patients.⁵ If a patient is thought to have a pressure injury, but actually has IAD, the hospital protocol may lead the nursing staff to place the patient on special air-mattresses and implement strict turning schedules for the patient. These measures would be unnecessary and costly (material and nursing time) and the condition of IAD will not be resolved, adding to the discomfort of the patient and worsening of the condition. Campbell et al.⁶ add to the importance of differentiation and concluded that dermatological conditions (herpetic lesions), fungal infections (*Candida albicans*) and intertriginous dermatitis resulting from moisture and friction in skin folds, should not be confused with IAD. IAD can only exist in a patient with urinary/faecal incontinence or both.

Even though IAD and pressure injuries are two separate entities with different preventative options, there exists a “direct link between IAD and the development of pressure injuries”.^{12,13}

Serious financial consequences may result from misdiagnosis of IAD as a pressure ulcer, as the development of pressure injuries in the hospitals is seen as a key performance indicator of quality care and many funders will not reimburse hospital-acquired pressure ulcer treatment.¹⁴⁻¹⁶

IAD prevalence rates collected over the past 15 years varied greatly^{3,12} and one of the reasons might be the absence of validated, reliable IAD assessment instruments for evaluating IAD.⁸

Prevalence and incidence of IAD globally

Previous research reported that IAD is a common problem in different care settings, ranging from acute care, long-term care and the critical care sector – however, the IAD prevalence and incidence reports vary greatly. Prevalence rates from 5.7% in nursing home residents were reported^{17,18} and up to 50–52.5% in critical care patients.^{19,20}

This variability in results may be attributed to the lack of recognition and differentiation of IAD vs. pressure injuries,¹² differences in study protocols with different inclusion criteria, different care areas and absence of a validated, reliable and standard way of collecting IAD data, which is again an emphasis on the need to conduct this research.

Prevalence of IAD in South Africa

IAD is a new concept in South Africa. After the publication of the “Best Practice Principles; Incontinence-Associated Dermatitis: Moving Prevention Forward”,²¹ many educational sessions and awareness campaigns have been conducted in South Africa – to increase medical professionals’ knowledge on this subject.



Figure 3. Best Practice Principles; Incontinence-Associated Dermatitis: Moving Prevention Forward

To date, we do not have data in South Africa on the prevalence of IAD, since it is not reported as an adverse event. Without data, we do not realise the magnitude of the problem and no preventative strategies are put in place to improve the quality of patient care.

If IAD is prevented, nursing time spent on treatment of IAD or care for pressure injury can be saved. It will further reduce the financial burden to the patient, funder and hospital – preventing having to

procure dressings (foam dressings, alginates etc.) for the treatment of skin breakdown or pressure injuries.

Methods

The IAD concept and the lack of data in South Africa was discussed with the Clinical Department of a large private hospital group. The Patient Safety Officer gave approval for a quasi-point prevalence study on IAD in an identified hospital.

The Nursing Manager of the identified hospital was contacted regarding approval for this study and on 2 December 2015 the study and data collection methods were discussed with all the unit managers in the hospital.

A quasi-point prevalence study was conducted in the 314 bed hospital, with an occupancy rate of 90–105%.

Phase 1: Hospital 1: 3–4 December 2015

Each ward in the hospital was visited. In each ward, all the nursing staff were taught about the new concept of IAD and how to differentiate between IAD and pressure injuries. They were also shown how to categorise IAD (using the IAD severity categorisation tool),²¹ and how to stage pressure injuries, using laminated A2 photos of both conditions as training tool. IAD preventative strategies were taught to the nurses (discussed later).

After the in-service training, the total number of patients currently in the ward was counted and all patients with immobility/incontinence were identified for skin assessment. With verbal consent from the identified patients, skin inspection was done to assess for skin redness, skin breakdown and/or pressure injuries. The opportunity was used to do bedside teaching with the accompanying nurses. If pressure injuries were identified, wound assessment and treatment options were discussed. The number of incontinent patients with IAD was counted and the number of patients with pressure injuries was counted and written down. This method of data collection and education was repeated in all the wards, excluding neonatology and the trauma unit.

Clinical presentation	Severity of IAD	Signs**
 <small>Image © 3M, 2014</small>	No redness and skin intact (at risk)	Skin is normal as compared to rest of body (no signs of IAD)
 <small>Image courtesy: Jorma Järvenpää</small>	Category 1 – Red* but skin intact (mild)	Erythema +/-oedema
 <small>Image © 3M, 2014</small> moderate	Category 2 – Red* with skin breakdown (moderate-severe)	As above for Category 1 +/-vesicles/bullae/skin erosion +/- denudation of skin +/- skin infection
 <small>Image courtesy: Jorma Järvenpää</small> severe		

* 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

Figure 4. The IAD Severity Categorisation Tool, figure reproduced from Beeckman et al²¹

The data collected was captured in Microsoft® Excel® and analysed using the calculation:

$$\% \text{ IAD} = \frac{\text{Patients with IAD}}{\text{Total number of patients with incontinence}}$$

And

$$\% \text{ pressure injuries} = \frac{\text{Patients with pressure injuries}}{\text{Total number of patients}}$$

A report was written and was submitted to both the hospital management and the Clinical Department at the hospital group head office. In the report, suggestions were made to focus on preventative care, according to the published document “Best practice principles. Incontinence-Associated Dermatitis: Moving prevention forward”.²¹

The Clinical Facilitator compiled a simple IAD preventative protocol. The Learning and Development Manager and all the Unit Managers assisted in implementing this protocol. The aim was to implement an easy-to-use, yet evidence-based protocol. This protocol formed part of the already established pressure injury prevention protocol, using the Waterlow scale to assess the patients’ risk of developing pressure injuries.

Protocol:

- Acrylate terpolymer based, Durable Barrier Cream for all incontinent patients, skin intact – after gentle cleansing.
- Acrylate terpolymer based, No Sting Barrier Film for all patients with diarrhoea/with or without broken skin – after gentle cleansing.

After Phase 1 data collection, further education was conducted classroom style during three, three-hour sessions, to ensure that all nursing staff received the IAD and protocol training.

The skin care preventative protocol was rolled-out after Phase 1 until the next phase in February, where the prevalence study was repeated to measure the impact of the preventative protocol and the education/awareness done on IAD.

Phase 2: Hospital 1: 22–23 February 2016

Data was collated over two days, from all wards, as in Phase 1. Data was analysed and findings were reported to the hospital and head office management.

The same methodology and data collection procedures were replicated at another hospital in a different region in South Africa. This is a 305 bed hospital, but with a lower occupancy rate of 64–68%. Phase 1 was conducted 16–17 May 2016, the same preventative skin breakdown protocol was implemented and data collected in Phase 2, 15 August 2016.

Results

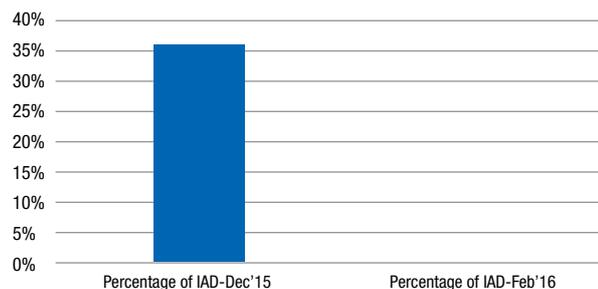


Figure 5. Results Hospital 1: Percentage IAD – comparison pre/post new skin care protocol

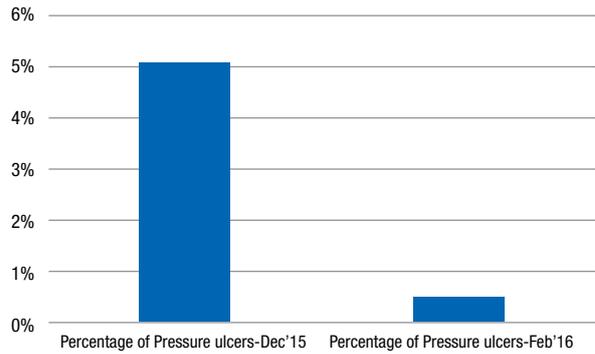


Figure 6. Results Hospital 1: Percentage pressure injuries – comparison pre/post new skin care protocol

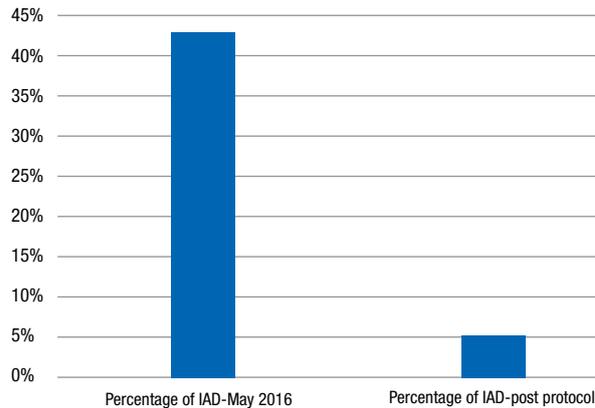


Figure 7. Results Hospital 2: Percentage IAD comparison pre/post new skin care protocol

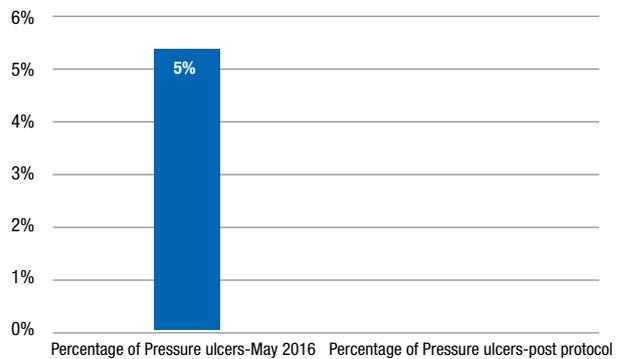


Figure 8. Results Hospital 2: Percentage pressure injuries – comparison pre/post new skin care protocol

Results after two months of implementation of the new skin care preventative protocol:

Hospital 1: Prevalence of IAD decreased from 36% in December 2015 to 0% in February 2016 and pressure injuries reduced from 5% to 0.5%.

Hospital 2: Prevalence of IAD decreased from 43% in May 2016 to 5% in August 2016 and no pressure injuries were found in August 2016 compared to 5% in May 2016 (percentages rounded off).

Discussion

Interestingly the results of Phase 1 in both hospitals compare similarly to published international prevalence studies – alerting us to the fact

that IAD is a problem in the hospital setting. The good news is that it can be prevented.

The results from both hospitals showed a significant decrease (up to 100%) of IAD after following best practice guidelines and a simple, structured skin care regimen.

The primary contribution of this study can be summarised as:

- Having the first insights into the prevalence of IAD in a South African sample
- With knowledge/data, nurses can initiate preventative strategies for IAD and continuously improve the quality of patient care

Having seen the great results and reduction of IAD, by following a simple skin care regimen and managing incontinence – it would be a recommendation to hospital groups in both private and public sectors in South Africa to review the best practice principles on IAD reduction and implement such a simple skin care protocol as adjunct to their already existing pressure injury prevention strategies. Assessment for IAD should be incorporated into general daily skin assessment and form part of pressure/incontinence care.

Skin care and prevention of skin breakdown lies within the nursing domain. With education in IAD management and the correct preventative strategies, nurses of all categories are empowered to promote patient quality care and minimise harm and risk to their patients.

Summary of definitions

Acrylate terpolymer: Polymer (dissolved in a solvent) that forms a transparent protective coating (film) onto the skin. It does not require removal and is transparent to enable skin assessment.²¹

IAD (Incontinence-Associated Dermatitis): Inflammation (erythema) or breakdown (partial-thickness erosion) of the skin, following continuous exposure to urine and/or faeces (incontinence). IAD may present as skin redness, with/without oedema or, in more severe cases, erosion (vesicles/bullae) and secondary skin infection, specifically *Candida albicans*, maybe noticed.

Intertrigo: A superficial skin disorder involving any area of the body where opposing skin surfaces may touch and rub, such as the creases of the neck, the skin folds of the groin, axilla (armpit) and breasts (especially if large and pendulous) and between the toes.

MASD (Moisture Associated Skin Damage): “Inflammation and/or erosion of the skin caused by excessive exposure to moisture”.² The source of moisture can include urine, liquid stool, perspiration, saliva, wound exudate and stoma effluent.

Pressure injury/Pressure ulcer: Localised injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear resulting in ulceration

Prevalence: Refers to the total number of individuals in a population who have a medical condition at a specific point in time.

Skin protectants (moisture barriers): Moisturisers or film forming products which form a barrier between the stratum corneum and

any moisture or irritant. They provide variable protection according to their ingredients (type of polymers) and formulations.

Declaration

No financial support received. No ethical approval was needed for this study. Clinical department approval received.

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