

# Managing intertriginous dermatitis (intertrigo) with a Total Barrier Protection™ strategy

## KEY WORDS

- ▶ Intertriginous dermatitis
- ▶ Intertrigo
- ▶ MASD
- ▶ Total Barrier Protection™

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Moisture-associated skin damage (MASD) occurs when the skin is exposed to various types of moisture – namely urine and/or faeces, sweat and wound exudate, for a prolonged period of time (Gray et al, 2011; Voegeli, 2012). As a result, the skin's protective barrier function is compromised, is susceptible to breakdown and is typically characterised by localised inflammation and erosion of the epidermis (Woo et al, 2017). The extent of skin damage can vary from mild to severe (Jones and Winterbottom, 2019) and the sufferer will experience persistent burning and pain (Woo et al, 2017).

Intertriginous dermatitis (or intertrigo) is a common condition, which falls under the umbrella of MASD. However, the condition has had less of a spotlight in terms of MASD research (Voegeli, 2020) in comparison to the three other forms of MASD: incontinence-associated dermatitis (IAD), peri-wound skin damage, and peri-stomal moisture-associated dermatitis. Within tissue viability, there appears to be very little robust evidence to guide clinical practice. With the inclusion of a clinical case example, this article offers an overview of intertriginous dermatitis and outlines the essential elements to be considered for effective prevention and management. Implementing a structured skin care and skin fold management regimen may ultimately lead to improvements in the patient experience and improved clinical outcomes.

## MOISTURE-ASSOCIATED SKIN DAMAGE (MASD)

Moisture associated skin damage (MASD) is a collective definition used to describe the different manifestations of damage caused as a result of overexposure to moisture (Young, 2017); for example: urine, faeces, wound exudate and perspiration (Dowsett and Allen, 2013). Prolonged exposure of the skin to these irritants damages its natural barrier function and, if not managed effectively, can lead to tissue damage and subsequent breakdown (Dykes and Bradbury, 2016).

MASD arises when excessive moisture and associated chemical irritants disrupt the lipid matrix

surrounding cells of the stratum corneum (i.e. the outermost layer of the epidermis). The stratum corneum provides the main barrier function of the skin, and continuous exposure to moisture and irritants effectively reduces this function (Voegeli, 2016).

Continuous or prolonged exposure to moisture can result in pronounced inflammation or erosion, which may include epidermal loss, creating a partial thickness wound (Sibbald et al, 2013). The skin then becomes more vulnerable to the effects of external mechanical forces (i.e. friction and shear), which may exacerbate the risk of pressure ulceration (Beeckman et al, 2015). Overhydration also causes the pH of the skin to increase. The ideal pH of the skin is around 5.5 (slightly acidic); this acidic environment supports the resident, commensal bacteria on the surface of the skin, and helps lower the risk of opportunistic infection while also minimising the possibility of bacterial colonisation (Flanagan, 2013). This shift from acid to alkaline creates an environment more conducive to bacterial proliferation and increases the risk of cutaneous infection (Young, 2017).

Simply put, MASD is an irritant contact dermatitis commonly caused by incontinence, chronic wound exudate, sweat and peristomal effluent (Figures 1–4).

## INTERTRIGINOUS DERMATITIS

Intertriginous dermatitis, also referred to as intertrigo, is one of the four clinical manifestations that come under the MASD umbrella. It is a common inflammatory skin condition that can occur

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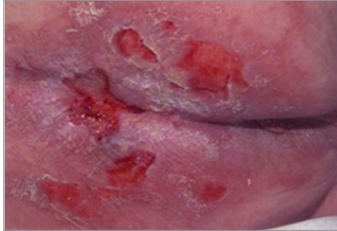


Figure 1. Incontinence-associated dermatitis (IAD)



Figure 2. Periwound skin damage



Figure 3. Intertrigo



Figure 4. Peristomal skin damage

when moisture (i.e. sweat) is trapped in skin folds with minimal air circulation. When the sweat cannot evaporate, the stratum corneum becomes over-hydrated and macerated. This may happen in areas of the body where two skin surfaces are in close contact with each other: under the breasts, the groin/inner thighs, abdominal creases, and the armpits (Figure 5).

If left unmanaged, the skin surfaces become subject to skin-on-skin friction (Sibbald, 2013), which in turn leads to painful, localised inflammation and erosion of the skin, thus, making the area more prone to secondary infection (bacterial/fungal).

Intertrigo may affect individuals of all ages and is commonly seen in the neck creases of infants and babies (Janniger et al, 2005), due to their short neck, flexed posture and drooling. Obesity also carries an increased risk due to excessive skin folds, increased perspiration to regulate body temperature, and a higher skin surface pH due to a decrease in sebum production (Man et al, 2009), thinning of the dermal layer and decreased collagen content (Tobin, 2017).

Intertrigo, like other forms of MASD, may present clinically in a range from mild erythema to extensive skin breakdown, (Young, 2017). The damage often observed is typically mirrored on both sides of the skin fold (Dowsett and Allen, 2013); as seen in Figure 6. It causes pain and discomfort (Southgate and Bradbury, 2017), impacts on quality of life and disrupts daily activities (Bartlett et al, 2009). Individuals are also exposed to the risk of secondary wound infection (Beeckman et al, 2015), which may be bacterial or fungal.

Despite it being a relatively common skin condition, intertrigo can often be difficult to differentiate from incontinence-associated dermatitis (IAD) – the most frequently seen form of MASD – if the same skin folds are exposed to urine and faeces (Young, 2017). Therefore, prevention and treatment should start with a thorough skin assessment of all skin folds. Bianchi et al (2013) suggested that early identification of skin damage is essential to avoid further deterioration and poor outcomes. Clinicians must have a good understanding of intertrigo as a form of MASD and be familiar with the most appropriate treatment options.

**PREVENTING AND MANAGING INTERTRIGO**

Early recognition of patients ‘at risk’ of MASD

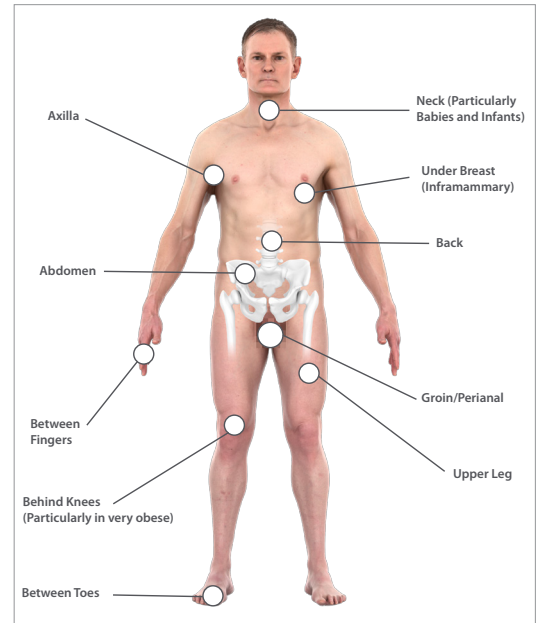


Figure 5. Intertrigo body map



Figure 6. Mild intertrigo to the anal creft

is an essential component of prevention, along with good skin hygiene. Beeckman et al (2015) suggested that the fundamental aspects of MASD management should be based on skin cleansing to remove contaminants and microorganisms, with the application of a skin moisturiser and an impermeable barrier that provides total skin protection.

Individuals ‘at risk’ of intertrigo should be educated on what to look for and how to effectively take care of their skin folds. Advice should also be given in relation to the wearing of suitable clothing, i.e. avoid synthetic materials and wear loose, light-fitting clothing made from absorbent natural fabrics (cotton) that will wick sweat away from the skin and prevent moisture build-up (Voegeli, 2020). They should also be given advice on how to make sure their skin folds are kept clean and dry and, if necessary, adopt a structured skin care management

plan, as would be the plan for any other form of MASD (Rees and Pagnamenta, 2018; Voegeli, 2020).

### SKIN CLEANSING

Skin cleansing is an integral component of maintaining skin integrity (Wounds UK, 2018) and ideally should follow every episode of profuse sweating (Dowsett and Allen, 2013). It is well known that soap and water on the skin creates a more alkaline environment and reduces the natural sebum, resulting in drier skin (Beldon, 2008). This in turn can affect its natural protective barrier function. Furthermore, washing and drying skin with cloths or towels can be abrasive, and overzealous rubbing to dry the skin may induce unnecessary friction and shear forces (Beeckman et al, 2011; Bianchi et al, 2013).

Skin emollients are often used as soap substitutes and are useful alternatives to gently cleanse the skin and skin folds (Metin et al, 2018). Also, 'no-rinse' skin cleansers are frequently advocated to remove skin contaminants; these are very effective pH-balanced soap substitutes (Beldon, 2012). They not only maintain the skin's protective acidic mantle, but reduce the harsh astringent effect that soaps have on the skin (Payne, 2017); they also omit the need to dry the skin, consequentially reducing both the risk of shear and pain (Cooper et al, 2008).

### BARRIER PROTECTION

In 2014 the National Institute for Clinical Excellence (NICE) recommended that skin barrier products are considered for neonates, children and adults who have been assessed as 'at risk' from all forms of MASD, or have dry or inflamed skin. Silicone-based barrier products have become very popular and include creams, films and ointments. The silicone component acts as a water repellent and, when used, leaves a transparent protective film across the surface of the skin (Voegeli, 2016), reducing skin-on-skin friction. These products should be considered as an option to manage intertrigo, as well as the other types of MASD, when barrier protection is required. However, as clinicians, we need to be mindful that they may be difficult for an individual to effectively apply/remove themselves.

For mild to moderate (uncomplicated) cases of intertrigo, it may be more practical to use a protective barrier film in the form of an applicator, spray or wipe

formulation. These products have the advantage of drying quickly on the skin surface, in comparison to barrier creams. However, the film should be allowed to completely dry when it is applied to skin folds to treat intertrigo, thus preventing the folds adhering to each other.

For more severe cases of intertrigo, there is a risk of further complications caused by secondary infection. If this is the situation, the problem will not resolve until the underlying infection has been effectively treated. Management in these instances should always be in line with local antimicrobial guidance. Once the infection has resolved, then the most suitable barrier option can be considered.

### A TOTAL BARRIER PROTECTION™ MANAGEMENT STRATEGY

Total Barrier Protection™ is a fully integrated MASD management strategy, (Hughes, 2016), developed by Medicareplus International (Figure 7). The concept focuses on prevention, protection, repairing and restoring the integrity of compromised or damaged skin (Bradbury et al, 2017). The range consists of: Medi Derma-S Total Barrier Cream and Medi Derma-S Total Barrier Film, Medi Derma-Pro Incontinence Skin Cleanser, Medi Derma-Pro Skin Protectant Ointment, and Lifteez medical adhesive remover. It provides the clinician with a specific product range that provides a simple and structured approach to managing MASD. This approach offers a clear and cost-effective rationale, ensuring that patients receive the most appropriate product at the right time. Utilising this strategy may reduce product misuse, reduce associated costs and simplify treatment choices (Hughes, 2016).

The essential aspects of successful MASD prevention and management are based on a thorough patient assessment, management of the underlying cause and implementation of a structured skin care regimen (Voegeli, 2016). With specific reference to intertrigo, the main aim is to optimise the skin's barrier function by ensuring skin folds are kept clean, dry and protected from skin-on-skin friction, and employing the correct infection prevention and control measures (Sibbald et al, 2013). A Total Barrier Protection™ approach provides a cost-effective opportunity to step-up or step-down skin care regimens according to individual patient needs.

Figure 7. Total Barrier Protection™ MASD management strategy



**CASE EXAMPLE**

The patient, a 47-year-old male, presented with a 3-year history of intertrigo to his natal cleft. Sweat was an issue due to intensive manual labour and multiple layers of safety workwear; perspiration then pooled into his natal cleft. It was identified that the skin was not always dried properly after showering and drying was vigorous. Previous treatments included antibiotics, steroid creams and antifungals, all of which did not resolve the problem.

**Initial assessment**

A macerated linear wound, measuring 20mm x 4mm x 2mm was observed in the natal cleft, just above the anus (Figure 8). Blanching erythema was also noted to the surrounding skin, extending approximately 55mm (at its widest). The patient described it as being ‘tender

to touch’ and ‘itchy/stingy,’ which worsened when he moved or sat down. There was no odour and no visible signs of infection. Following this assessment, the patient agreed to commence a structured skin treatment strategy.

**Treatment plan**

The skin care strategy consisted of twice-daily showering and patting the area dry. He was advised to reduce multiple layers of clothing and wear 100% cotton underwear to wick moisture away. Hair surrounding the area was clipped short to ensure that it did not lie on the wound bed or act as a source of irritation. He was initially advised to apply Medi Derma-Pro Protectant Ointment to the affected area daily. This was because the skin was broken and painful, exposing a partial-thickness wound, assessed





Figure 8. Initial presentation - Skin care regimen commenced

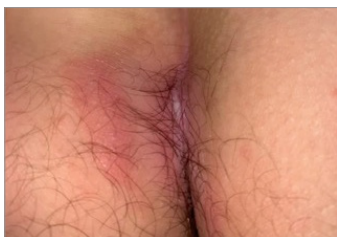


Figure 9. Day 1 - Erythema, local irritation and pain reduced



Figure 10. Day 5 - Wound dimensions significantly decreased



Figure 11. Day 28 - wound healed, surrounding skin healthy and intact

as severe moisture-associated skin damage, which was constantly exposed to perspiration. Due to improvement with the skin, this was changed a week later to Medi Derma-S Total Barrier Film spray. His progress was monitored over a 4-week period and photographs were taken intermittently throughout.

### Results

The wound had healed by Day 28 (Figures 9–11). The skin care strategy has since been maintained, as part of the patient's normal hygiene regime. The application of a barrier film remained in use as a preventative measure against further occurrence; however, application has now reduced to every 48 hours.

### CONCLUSION

Intertrigo is a common type of MASD that can affect individuals of all ages. Moisture, usually from sweat, builds up in skin folds with no means of evaporating. This causes overhydration; and, as the skin surfaces rub together, this leads to localised damage, causes pain, increases the risk of cutaneous infection, and impairs quality of life by impacting on activities of daily living.

There is clearly a need for specific research in this area; however, the increasing amount of evidence relating to MASD as a complete subject matter is plentiful. Therefore, the majority of clinicians are in agreement that the general principles for the prevention and management of MASD can be used to steer current clinical practice, until clear skin and skin fold management guidelines are developed.

Following the Total Barrier Protection principles promotes a structured, patient-centred approach to care. This is a dynamic process that offers a range of specific products to combat the unwanted effects of MASD. It also reduces costs, as part of an individualised management plan. Patient concerns must be considered and incorporated into the plan to increase successful outcomes.

The clinical case study also demonstrated how a structured, Total Barrier Protection-based skincare strategy can positively affect a patient suffering with long-standing, non-infected intertrigo. WUK

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