WOUNDS UK

Best Practice Statement

Understanding types of moisture-associated skin damage (MASD): prevention, identification and management

2025

Overview and key issues in MASD

Incontinence-associated dermatitis

Peristomal complications

Intertriginous dermatitis

Periwound moisture-associated skin damage

BEST PRACTICE STATEMENT: UNDERSTANDING TYPES OF MOISTURE-ASSOCIATED SKIN DAMAGE (MASD): PREVENTION, IDENTIFICATION AND MANAGEMENT

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GLOSSARY

Irritant Contact Dermatitis: A type of eczema triggered by contact with a particular substance

Intertriginous Dermatitis: An inflammatory condition that affects opposing skin surfaces and can occur anywhere on the body where two surfaces are in contact

Maceration: Occurs when skin is in contact with moisture for too long. Macerated skin looks lighter in colour and wrinkly. It may feel soft, wet or soggy to the touch

Excoriation: Superficial skin damage due to chemical constituents of fluid on the skin

Corneocytes: Differentiated dead keratinocytes, without organelles, composed of a cornified envelope and a keratin-filled interior, and connected by corneodesmosomes

Foreword

In the United Kingdom, there remains a significant unmet need for accessible, practical guidance to support healthcare professionals in the assessment and classification of moisture-associated skin damage.

This document recognises the complexity of moisture-associated skin damage. Moisture-associated skin damage is an umbrella term encompassing four key areas:

- Incontinence-associated dermatitis
- Peristomal complications
- Intertriginous dermatitis
- Periwound moisture-associated skin damage.

In April 2025, a multidisciplinary group of experts convened in person to review current evidence, share clinical experience and develop recommendations tailored to the United Kingdom healthcare context. This collaborative process builds on the foundational framework established by Fletcher et al (2020) in "Prevention and Management of Moisture-Associated Skin Damage (MASD)", published in Wounds International.

This updated Best Practice Statement document adapts these principles and latest evidence to the specific needs of United Kingdom healthcare professionals. It aims to provide clear, practical guidance to support best practice in the prevention and management of moisture-associated skin damage, with the goal of improving patient outcomes and reducing the incidence and impact of these and related skin conditions through proactive, skin-focussed care plans.

Jacqui Fletcher, Chair

GUIDE TO USING THIS DOCUMENT

This document is designed to help you prevent, identify and manage different types of MASD. Each section provides practical guidance, Best Practice Statements, prevention, identification and management, and considerations for paediatric care.

OVERVIEW AND KEY ISSUES IN MASD

Moisture-associated skin damage (MASD; also known as moisture lesions) is classified as irritant contact dermatitis. It develops from prolonged exposure of the skin to various sources of moisture and irritants, such as urine, faeces, intestinal fluids, digestive secretions, mucus, saliva, perspiration and wound exudate, and in more severe cases can lead to superficial skin loss.

As such, MASD is an umbrella term subdivided into four categories:

- **Incontinence-associated dermatitis (IAD)**; see pages 8–14
- **Peristomal complications** – associated with colostomy, gastrostomy (PEG tube), ileostomy/ileal conduit, urostomy, suprapubic catheter or tracheostomy; see pages 15–19
- **Intertriginous dermatitis (intertrigo)** – where two skin areas touch or rub together; see pages 20–23
- **Periwound moisture-associated dermatitis;** see pages 24–25.

Note: Some fluids, such as saliva and perspiration, may also cause skin damage but do not fit neatly into these categories.

The development of MASD involves more than bodily fluids alone. Rather, skin damage is influenced by multiple factors, including chemical irritants within the moisture source (e.g. proteases and lipases in faeces, drug metabolites), pH, associated microorganisms on the skin surface (e.g. commensal flora) and mechanical factors such as friction (Gray et al, 2011).

Global recognition of MASD in ICD-11

In recent years, MASD has gained recognition as a distinct and significant cause of skin damage. Reflecting this, in 2022 the World Health Organization (WHO) updated its International Classification of Diseases (ICD) codes (11th edition, ICD-11). These codes are used globally to help healthcare professionals (HCPs), researchers and policymakers record, report and compare data on illness and mortality.

For the first time, MASD was recognised under the umbrella of "irritant contact dermatitis due to friction, sweating or contact with body fluids" (code EK02.2). Compared with the older ICD-10 system, ICD-11 expands on this classification to better reflect real-world clinical presentations.

Two newly added categories include:

- **Irritant contact dermatitis** due to saliva
- **Irritant contact dermatitis** related to skin contact with prostheses or surgical appliances.

Note: Despite this global update, the UK continues to use ICD-10. While ICD-11 demonstrates international recognition of MASD, its direct relevance to United Kingdom (UK) coding and reporting is currently limited.

These updates support more accurate diagnosis, documentation and management of MASD in clinical practice. They also enable improved tracking of prevalence and outcomes across healthcare systems. While these new categories are not yet formally included within the MASD umbrella, their inclusion in ICD-11 reflects growing recognition of moisture-related and frictional skin damage across a broader range of clinical contexts. This is an evolving area and further research may inform whether MASD should be expanded beyond the current four subtypes to reflect real-world presentations.

See **Table 1** for a summary of the current ICD-11 codes relevant to irritant contact dermatitis.

Table 1. Types of irritant contact dermatitis according to WHO ICD-11 coding (WHO, 2022).

Code	Description
EH40.10 Primary irritant napkin dermatitis	A type of irritant dermatitis seen most frequently in infants, localised to the area in contact with a napkin (diaper) and occurring most often as a reaction to prolonged contact with urine, faeces or retained soap or detergent.
EK02.0 Irritant contact dermatitis from specified external agents	Irritant contact dermatitis from specified external agents (e.g. wet work, solvents, acids, alkalis, cosmetics, emollients, topical medicaments, antimicrobials, plants, foods).
EK02.2 Irritant contact dermatitis due to friction, sweating or contact with body fluids	Irritant contact dermatitis due to friction, sweating and contact with body fluids. Irritation from body fluids may be due to high or low pH, proteolytic enzymes or both; the irritant effect may be aggravated or caused solely by sweating and repetitive friction of apposed skin surfaces.
EK02.20 Intertriginous dermatitis due to friction, sweating or contact with body fluids	Intertriginous dermatitis (intertrigo) is a form of irritant contact dermatitis of the skin folds (axillary, submammary, genitocrural, abdominal apron) caused by repetitive shearing forces of skin on skin. Sweat, other body fluids, occlusion and obesity all contribute to its development.
EK02.21 Irritant contact dermatitis due to saliva	Perioral irritant contact dermatitis caused by repetitive or prolonged contact with saliva.
EK02.22 Irritant contact dermatitis due to incontinence	Irritant contact dermatitis from prolonged contact with urine or faeces as a result of incontinence.
EK02.23 Irritant contact dermatitis related to stoma or fistula	Irritant contact dermatitis of the skin surrounding stomas or fistulas caused by prolonged or repeated contact with gastrointestinal secretions, faeces, urine, pus, mucus or cleansing materials.
EK02.24 Irritant contact dermatitis related to skin contact with prostheses or surgical appliances	Irritant contact dermatitis resulting from friction and sweating between the skin surface and a prosthesis or appliance in contact with the skin, especially limb prostheses.

Note: Some terminology used in ICD-11 may be misleading in clinical practice. For example, "primary irritant napkin dermatitis" (EH40.10) is often interpreted as specific to infants, whereas in practice similar patterns may occur in adults. Using terms like "napkin dermatitis" exclusively can unintentionally suggest that the condition is only relevant in paediatrics, so clinicians should interpret coding within the broader context of MASD.

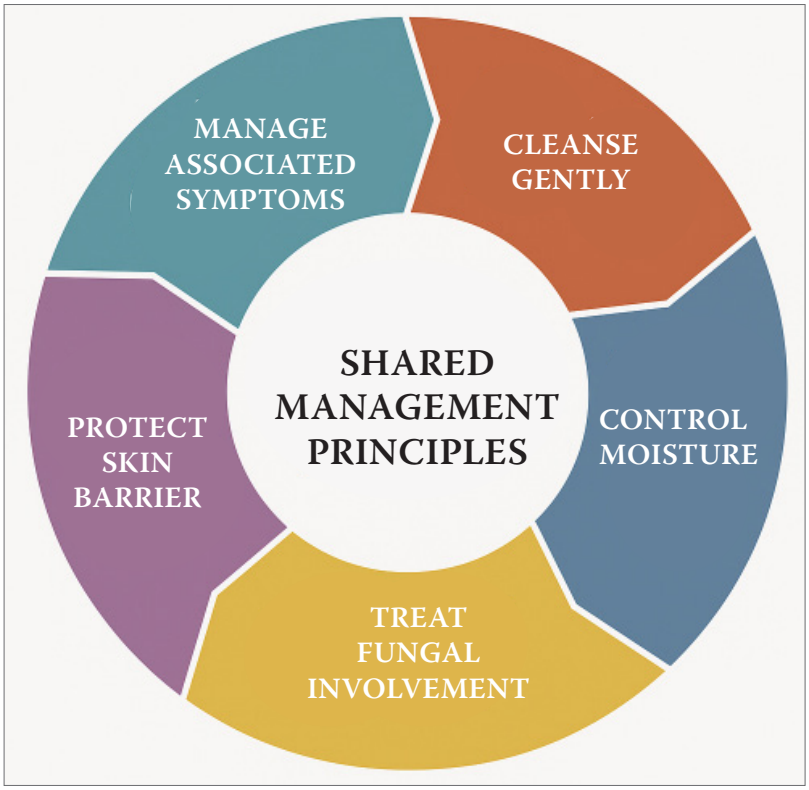


Figure 1. Five core principles of MASD prevention and treatment.

Box 1. Full clinical history for MASD assessment.

All patients at risk of, or presenting with, MASD should undergo a full baseline skin assessment. This includes:

1. Demographics and background
- ☐ Age, sex, mobility, self-care ability
- ☐ Ethnicity/skin tone

2. Presenting complaint
- ☐ Onset, duration, progression of skin changes
- ☐ Location(s) and triggers (e.g. appliance, skin folds, perianal)
- ☐ Symptoms: Itching, burning, pain, odour, leakage, exudate

3. Past medical history/comorbidities
- ☐ Diabetes, obesity, malnutrition, inflammatory skin conditions
- ☐ Continence issues (urinary/faecal incontinence, stoma, catheter, diarrhoea)

4. Surgical/device history
- ☐ Surgeries or stoma formation
- ☐ Current/previous devices or dressings affecting skin

5. Medication history
- ☐ Drugs affecting skin integrity (steroids, chemotherapy, antibiotics, diuretics)
- ☐ Recent medication changes (e.g. antibiotics)

6. Allergies and sensitivities
- ☐ Adhesives, cleansers, barrier products, topical agents, latex

7. Nutrition and hydration
- ☐ Dietary intake, weight loss, hydration status

8. Social/functional factors and sensitivities
- ☐ Dexterity, cognition, continence self-management, caregiver support, hygiene practices

Ideally, carry out the skin examination in a warm, private room, although it is recognised that this may not always be possible.

Table 2. Shared management principles across MASD types.

Principle	Key considerations	Guidance
CLEANSE GENTLY	■ First step in prevention and management ■ Maintains hygiene and enables skin assessment	■ Use gentle, pH-balanced cleansers (see Box 2 for general principles of cleansing) ■ After cleansing, dry the skin gently by patting; avoid rubbing to reduce friction and irritation ■ Inspect skin regularly (visual, tactile, patient-reported symptoms) ■ If infection risk is high (e.g. comorbidities, wound site, pathology) or erythema persists, consider short-term antiseptic cleansing per local policy
CONTROL MOISTURE	■ Excess moisture causes maceration ■ Lack of moisture causes dry, cracked skin	■ Use absorbent dressings or moisture-wicking fabrics ■ Balance hydration with barrier protection ■ Adjust care plan according to individual moisture levels
TREAT FUNGAL INVOLVEMENT	■ Fungal overgrowth (*Candida* spp.) commonly coexists with MASD in warm, moist areas (e.g. skin folds, under dressings or stoma appliances; NICE, 2018) ■ May present with satellite pustules, shiny erythema with clear edges or poor response to standard skin care	■ Apply topical antifungals once or twice daily; continue several days after symptoms resolve ■ Consider adjuncts (e.g. antimicrobial cleansers for local breakdown or enzyme alginogels when infection and inflammation coexist) ■ Reassess regularly and escalate if no improvement
PROTECT SKIN BARRIER	■ Effluent (urine, faeces, saliva, mucus) and mechanical trauma (adhesives, friction) can cause skin irritation and breakdown ■ Barrier products form a protective film that limits direct contact with effluent, irritation and transepidermal water loss	■ Apply barrier films, gels or creams after cleansing and drying the skin ■ If infection is suspected or the area is considered high risk, use appropriate antimicrobial protection. Consider antifungal or corticosteroid agents or products with antimicrobial protection (e.g. an enzyme alginogel)
MANAGE ASSOCIATED SYMPTOMS	■ Pruritus is a frequent but under-recognised MASD symptom ■ The itch–scratch cycle perpetuates inflammation, disrupts the barrier and worsens quality of life (e.g. sleep disturbance, psychological distress) ■ Excoriation increases risk of secondary infection, especially in moist areas	■ Reduce exposure to irritants (e.g. moisture and residue from urine, faeces or wound exudate) ■ Use emollients and barrier products ■ For severe symptoms: consider short-term topical corticosteroids under clinical supervision ■ Offer comfort measures (cool compresses, breathable clothing) ■ Treat fungal involvement first if suspected or confirmed, as unresolved candidiasis can worsen itching

Did You Know?

Enzyme alginogels absorb excess exudate, promote autolytic debridement and provide antimicrobial protection against a broad spectrum of microbes (e.g. *Candida* spp.; De Smet, 2009).

Did You Know?

When used appropriately, barrier products do not interfere with the performance of adhesives and may even enhance the adhesion of appliances, including on moist or compromised skin (Burch et al, 2021).

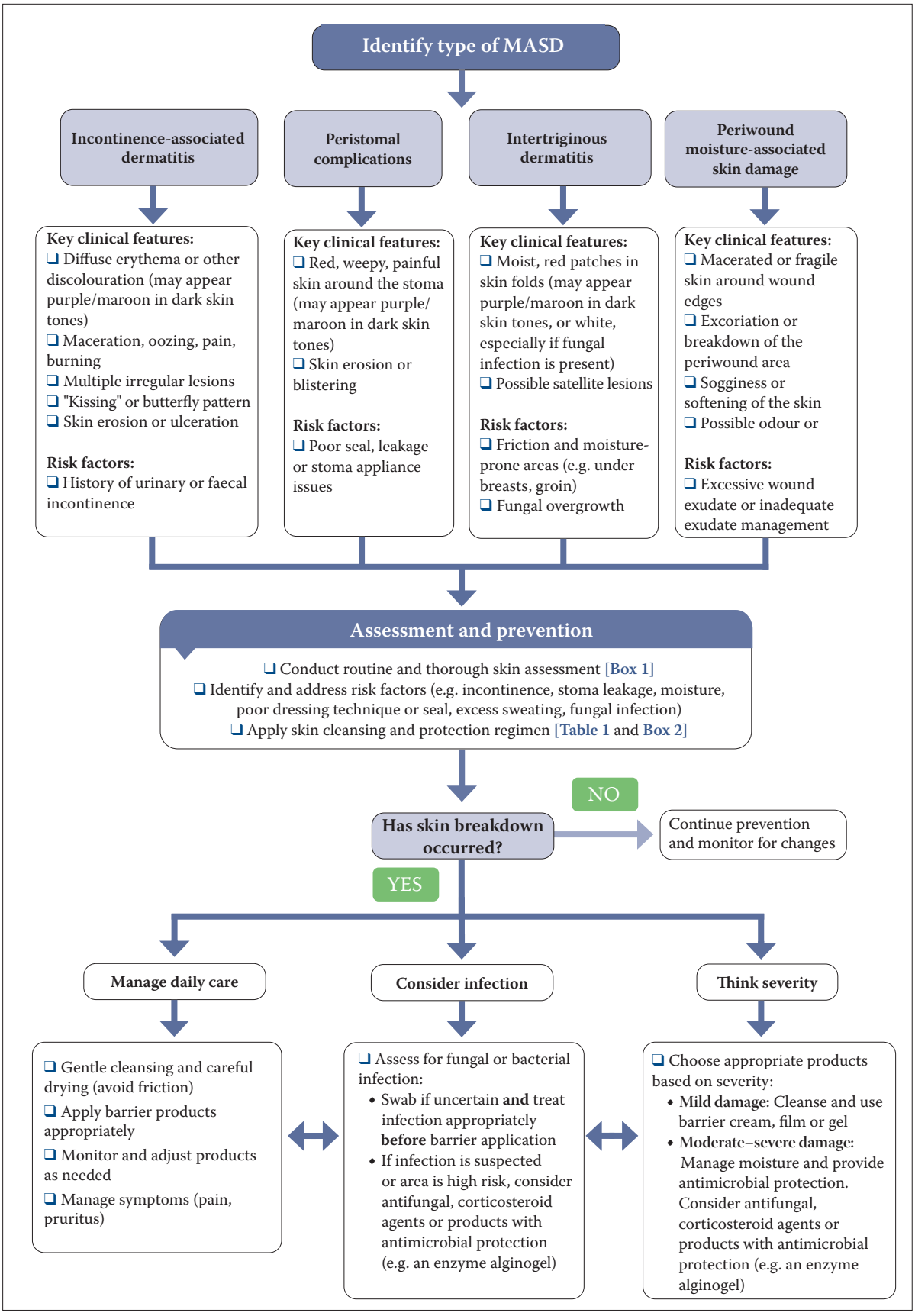


Figure 2. Clinical pathway for the identification, prevention and management of moisture-associated skin damage (MASD).

Box 2. General principles of cleansing.

CHOOSE THE RIGHT CLEANSER

- Use a no-rinse, pH-balanced cleanser
- Avoid fragrance, sodium lauryl sulphate (SLS), alkaline soaps and other foaming agents that strip natural oils and disrupt the skin barrier
- Use soap substitutes with emollient properties if necessary.

PREVENT CROSS-CONTAMINATION

- Use a single-use washcloth
- Do not reuse wipes across multiple body areas
- Avoid multi-use wipes or bulk packaging.

MINIMISE SKIN TRAUMA

- Keep the skin hydrated
- For broken skin, use the pat-and-roll technique to reduce friction
- Dry gently – pat dry with a soft towel or cloth, avoiding rubbing.

PATIENT AND CAREGIVER EDUCATION

- Educate patients and caregivers about avoiding aggressive scrubbing, hot water, fragranced and alkaline soaps
- Reinforce the importance of hydration and gentle cleansing practices.

Perform a systematic head-to-toe skin inspection. Start at the head and neck, move down the torso, examine the arms and legs, and finish at the perineal and sacral areas.

Best Practice Statement

INCONTINENCE-ASSOCIATED DERMATITIS

MYTH

IAD only affects older adults.

TRUTH

IAD can affect anyone with urinary or faecal incontinence, including children, adults and older people.

What is incontinence?

Incontinence is the involuntary loss of urine, faeces or both. It can affect people of all ages, from infants and children, where it may be developmentally normal, to older adults, in whom it is more prevalent (Shaw and Wagg, 2024). Despite its frequency, both urinary and faecal incontinence are often under-reported or misdiagnosed, making it difficult to determine the true extent of the problem (Leslie et al, 2024).

Globally, urinary incontinence affects an estimated 423 million people over the age of 20, while faecal incontinence affects around one in 12 adults. Prevalence rises sharply among older adults, affecting up to 80% of people in long-term care and nearly 40% of women aged 80 years and older (Troko et al, 2016; Vaughan et al, 2018; Mack et al, 2024). Incontinence UK (2022) estimates that approximately 300 million people worldwide – about 5% of the global population are affected.

The severity of urinary incontinence can range from occasional leakage to complete loss of bladder and/or bowel control (Bardsley, 2016; Buckley, 2019; Pizzol et al, 2021; Vaittinen et al, 2024). The different types and underlying causes of urinary and faecal incontinence are summarised in Table 3.

Although not life-threatening, unassessed or poorly managed incontinence can have far-reaching consequences. Stigma, embarrassment and physical complications, particularly skin damage, can limit social participation, reduce independence and negatively affect psychological wellbeing and quality of life (Wounds UK, 2018; Fletcher et al, 2020).

Skin complications associated with incontinence

Prolonged exposure of the skin to urine and/or faeces may lead to a variety of complications, including:

- **MASD, specifically incontinence-associated dermatitis (IAD)**
- **Irritated skin**
- **Skin tears**
- **Urinary tract infections**
- **Fungal infections**
- **Pressure ulcers.**

Table 3. Types of urinary and faecal incontinence (Leslie et al, 2024).

Urinary incontinence	Key features	Faecal incontinence	Key features
Stress incontinence	Leakage during coughing, sneezing, laughing, lifting or exercise due to weakened pelvic floor or urethral sphincter	**Faecal impaction with overflow**	Hard stool obstructs rectum; liquid stool leaks around impaction, often misinterpreted as diarrhoea
Urge incontinence	Sudden, intense and uncontrollable urge to void with inability to delay urination; commonly associated with overactive bladder	**Infective diarrhoea**	Loose stools caused by bacterial, viral or parasitic infection, leading to urgency and leakage
Mixed stress/urge incontinence	Combination of stress and urge symptoms	**Neurological causes**	Damage to nerves affecting bowel control (e.g. spinal cord injury, multiple sclerosis, diabetic neuropathy)
Overflow incontinence	Failure to empty bladder due to obstruction (e.g. prostatic hypertrophy) or neurological damage, resulting in constant dribbling or leakage	**Anal sphincter damage**	Weakening or trauma to anal sphincter muscles (e.g. obstetric injury, anorectal surgery), reducing ability to retain stool
Enuresis: Bedwetting	Involuntary urination during sleep (bedwetting), more common in children but may persist or recur in adults	**Inflammatory bowel disease (IBD)**	Chronic diarrhoea and urgency related to Crohn's disease or ulcerative colitis, may cause faecal leakage

What is IAD?

IAD is a form of irritant contact dermatitis caused by repeated or prolonged exposure of the skin to urine and/or faeces. It most often affects people with urinary, faecal or dual incontinence, and presents as inflammation, discomfort and increased susceptibility to skin breakdown or secondary infections.

While not every person with incontinence will develop IAD, it remains a common and significant risk, especially in cases of chronic or unmanaged incontinence.

Mechanism of skin damage

During episodes of incontinence, excess moisture from urine and/or faeces is absorbed into the corneocytes, causing the skin to become saturated, overhydrated and macerated (Beeckman et al, 2015). This state weakens the skin's natural barrier, making it more susceptible to friction and shear, while also increasing permeability, allowing otherwise harmless skin flora to cause infection (Beeckman et al, 2015).

Urine contributes to this process through urea, which is broken down by urease, producing bacteria into ammonia (Forest-Lalande et al, 2025). This increases the skin's pH from its normal acidic range (4.5–5.5) to a more alkaline state (Falloon et al, 2018; McNichol et al, 2018; Yates, 2020), weakening the acid mantle and reducing the skin's chemical barrier function.

Faeces, especially liquid stool, are even more damaging due to their high water content and presence of proteolytic and lipolytic enzymes, which are highly corrosive to the epidermis (Gray et al, 2022). Combined with excessive moisture, these irritants significantly increase the risk of epidermal injury and inflammation (Young et al, 2017).

Where does IAD occur?

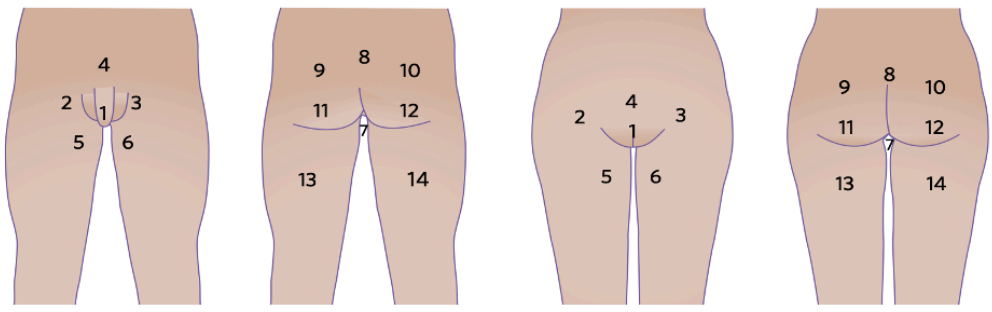
IAD most commonly affects the perineal and perigenital areas, but may extend to adjacent regions depending on the extent and duration of exposure to urine and/or faeces (Black et al, 2011; Banharak et al, 2021). Figure 3 outlines typical locations.

Other areas that may be affected but are easily overlooked include:

- **Under abdominal skin folds**
- **Groin and inner thighs**
- **Beneath the breasts**
- **Between skin folds on the back or flanks.**

These warm, moist areas may be hidden from view and require careful inspection. Failing to assess these regions can delay diagnosis, worsen skin deterioration and increase the risk of secondary, particularly of fungal origin, infection.

HCPs should also be aware for atypical or non-traditional presentations, for example, in bariatric patients, where skin folds trap moisture and friction is heightened.



1. Genitalia (labia/scrotum)
2. Right groin fold (crease) between genitalia and thigh
3. Left groin fold (crease between genitalia and thigh)
4. Lower abdomen/suprapubic
5. Right inner thigh
6. Left inner thigh
7. Perinanal skin
8. Gluteal fold (crease between buttocks)
9. Left upper buttock
10. Right upper buttock
11. Left lower buttock
12. Right lower buttock
13. Left posterior thigh
14. Right posterior thigh

Figure 3. Areas of skin that may be affected by IAD (adapted from Borchert et al, 2010).

IAD (also known as diaper or nappy rash) is one of the most common skin issues in infants due to prolonged exposure to urine and faeces (Beeckman et al, 2015). At birth, infant skin has a higher pH due to an underdeveloped acid mantle. The interaction between urine and faeces under a nappy increases the level of ammonia, further increasing pH and reducing barrier function. As a result, the skin becomes more vulnerable to the enzymatic irritants in faeces.

Consideration for Paediatrics

MYTH

Only urine causes IAD.

TRUTH

Both urine and faeces contribute to IAD. Faecal incontinence, in particular, increases the risk due to enzymes and bacteria that break down the skin barrier.

MYTH

IAD is only seen in the perianal/anal area.

TRUTH

IAD can occur in the perianal/anal area and extend to adjacent regions, including the posterior thigh and lower back.

Table 4. If IAD is suspected, HCPs or support staff can assess using patient questions and clinical observations (adapted from Harte and Marshall, 2025):

Questions to ask the patient:
■ Have you noticed any changes to your skin in this area? ■ Does the area feel different compared to the surrounding skin? ■ Are you experiencing pain, itching or other changes in sensation? ■ Are there any parts of your skin that feel swollen, sore or leaking fluid?
Observations to make:
■ Look for widespread, diffuse or blotchy erythema ■ In patients with dark skin tones, note subtle darkening, textural changes or loss of normal skin markings rather than erythema alone ■ Assess for patches of skin breakdown or partial-thickness loss ■ Check whether the skin feels unusually warm to the touch ■ Look for any exudate or bleeding.

Assessment of IAD

Assessing IAD involves looking carefully at the skin, listening to the person's symptoms and considering all factors that affect continence and skin health.

Initial assessment should include:

- Full clinical history [see Box 1, page 4]
- Visual inspection of the affected area (to rule out other causes such as allergy or pressure ulcers)
- Evaluation of mobility, dexterity and cognitive function
- Urinalysis (to check for infection or other abnormalities
- Frequency-volume chart
- Bowel diary
- Post-void residual urine test (to see how well the bladder empties)
- Medication review (All Wales Tissue Viability Nurse Forum and All Wales Continence Forum, 2014; Harte and Marshall, 2025).

See Table 4 for clinical questions to support with the identification of IAD.

Assessment tools to support clinical practice

Validated tools can support HCPs in identifying and managing skin at risk of IAD. Importantly, the same skin exposed to moisture and at risk of IAD is also vulnerable to impaired skin integrity highlighting the need for integrated assessment approaches:

- **PURPOSE T (Pressure Ulcer Risk Primary or Secondary Evaluation Tool):** Identifies adults at risk of developing pressure ulcers and supports clinical decision-making for primary and secondary prevention (Coleman et al, 2014)
- **SSKIN Bundle and aSSKINg:** Structured care bundles that prompt regular skin inspection, moisture management and pressure relief
- **Waterlow Scale:** Assesses pressure ulcer risk, including moisture as a factor; however, clinical judgement remains key when interpreting results
- **Microbiological swabbing:** Indicated in moderate or severe cases when secondary infection (fungal or bacterial) is suspected.

Categorisation of IAD

The Ghent Global IAD Categorisation Tool (GLOBIAD) provides a validated, standardised framework for assessing IAD severity. Developed through international collaboration with 22 experts and over 800 clinicians across 30 countries, it enables consistent terminology and supports accurate clinical documentation [Table 5].

Skin tone considerations

In light skin, erythema typically appears red or pink. In dark skin tones, it may appear as subtle or deep discolouration (purple, maroon or dark red; Dhoonmoon et al, 2023; Harte and Marshall, 2025). See Figures 4–5 for examples.

Additional considerations:

- Perianal discolouration may be normal for some individuals — always consider patient context and anatomy
- Hyperpigmentation (increased pigmentation) or hypopigmentation (reduced pigmentation) may also occur, especially in chronic or healing stages, with no visible redness (Dhoonmoon, 2023).

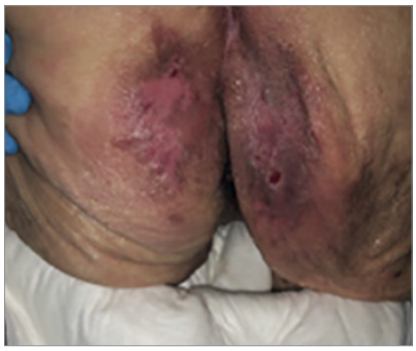


Figure 4. IAD on the buttocks of an individual with light skin tone. Image courtesy of Luxmi Dhoonmoon.

Figure 5. IAD on the buttocks of an individual with dark skin tone. Image courtesy of Luxmi Dhoonmoon.

Table 5. Ghent Global IAD Categorisation Tool (Beeckman et al, 2018).

Category 1: Persistent redness	Category 2: Skin loss
1A - Persistent redness without clinical signs of infection  **Critical criterion** ■ Persistent redness: *A variety of tones of redness may be present. Patients with dark skin tones, the skin may be paler or dark than normal, or purple in colour.* **Additional criteria** ■ Marked areas or discoloration from a previous (healed) skin defect ■ Shiny appearance of the skin ■ Macerated skin ■ Intact vesicles and/or bullae ■ Skin may feel tense or swollen at palpation ■ Burning, tingling, itching or pain	**2A - Skin loss without clinical signs of infection**  **Critical criterion** ■ Skin loss: *Skin loss may present as skin erosion (may result from damaged/ eroded vesicles or bullae), denudation or excoriation. The skin damage pattern may be diffuse.* **Additional criteria** ■ Persistent redness: *A variety of tones of redness may be present. Patients with dark skin tones, the skin may be paler or dark than normal, or purple in colour* ■ Marked areas or discolouration from a previous (healed) skin defect ■ Shiny appearance of the skin ■ Macerated skin ■ Intact vesicles and/or bullae ■ Skin may feel tense or swollen at palpation ■ Burning, tingling, itching or pain
1B - Persistent redness with clinical signs of infection  **Critical criteria** ■ Persistent redness: *A variety of tones of redness may be present. Patients with dark skin tones, the skin may be paler or dark than normal, or purple in colour* ■ Signs of infection: *Such as white scaling of the skin (suggesting a fungal infection) or satellite lesions (pustules surrounding the lesion, suggesting a Candida albicans fungal infection).* **Additional criteria** ■ Marked areas or discolouration from a previous (healed) skin defect ■ Shiny appearance of the skin ■ Macerated skin ■ Intact vesicles and/or bullae ■ The skin may feel tense or swollen at palpation ■ Burning, tingling, itching or pain	**2B - Skin loss with clinical signs of infection**  **Critical criteria** ■ Skin loss: *Skin loss may present as skin erosion (may result from damaged/ eroded vesicles or bullae), denudation or excoriation. The skin damage pattern may be diffuse.* ■ Signs of infection: *Such as white scaling of the skin (suggesting a fungal infection) or satellite lesions (pustules surrounding the lesion, suggesting a Candida albicans fungal infection), slough visible in the wound bed (yellow/brown/greyish), green appearance within the wound bed (suggesting a bacterial infection with Pseudomonas aeruginosa), excessive exudate levels, purulent exudate (pus) or a shiny appearance of the wound bed.* **Additional criteria** ■ Persistent redness: *A variety of tones of redness may be present. Patients with dark skin tones, the skin may be paler or dark than normal, or purple in colour* ■ Marked areas or discolouration from a previous (healed) skin defect ■ Shiny appearance of the skin ■ Macerated skin ■ Intact vesicles and/or bullae ■ Skin may feel tense or swollen at palpation ■ Burning, tingling, itching or pain

Use sensitive language and direct, non-judgemental language to encourage openness — many people feel embarrassed and may not initially disclose symptoms.

Best Practice Statement

When assessing dark skin tones:

- Compare affected and adjacent skin
- Palpate for warmth, swelling or raised areas
- Look for subtle changes such as darkening, texture changes or loss of normal skin markings, rather than erythema alone
- Ask the patient about symptoms such as itching, pain, burning or tingling sensations.

Differentiating IAD from pressure ulcers

Although both conditions share risk factors such as poor health and limited mobility, IAD is distinct and can co-exist with pressure ulcers. Macerated skin from moisture exposure is more prone to friction or shear damage, complicating diagnosis.

Key differences:

- **Location:** IAD typically affects moisture-exposed areas (e.g. perineum, buttocks, skin folds); pressure ulcers typically occur over bony prominences where the body rests against a chair, bed or other surface (e.g. sacrum, heels, ears)
- **Appearance:** Pressure ulcers have well-defined edges and deeper tissue involvement; IAD typically presents as diffuse erythema and superficial damage
- See Table 6 for a detailed comparison.

Identifying people at higher risk of IAD

Although the primary risk factor for IAD is incontinence itself, the factors determining an individual's risk are multiple and complex [Table 7]. Notably, the likelihood of developing IAD is particularly high in cases of double incontinence (urinary and faecal) (Kayser et al, 2019).

Table 6. Differentiating between IAD and pressure ulcers (Beeckman et al, 2015; Harte and Marshall, 2025).

	IAD	Pressure ulcers
Aetiology	Prolonged exposure to urine and/or faeces	Pressure or shear forces acting on the skin and
Location	Typically, areas exposed to moisture (e.g. perineum, perigenital region, buttocks, gluteal folds, thighs, lower back)	Typically occurs over bony prominences (e.g. heels, sacrum/coccyx, ears, elbows) or under medical devices
Symptoms	• Pain • Itching or scratch marks • Burning and tingling sensation	• Primarily painful • Note, some people may not have limited sensation if the ulcer is deep and nerve endings are damaged
Clinical presentation	• Erythema (blanchable/non-blanchable) in light skin • In darker skin: May appear darker, purple or with a subtle sheen; skin may feel warmer or firmer • Maceration • Erosion • Visible signs of moisture-related damage • Secondary superficial skin infection (e.g. candidiasis)	• Non-blanchable erythema • In darker skin: May show as darker or purplish areas, with warmth, firmness or tenderness • Ulceration • Base of wound may contain non-viable tissue • Secondary soft tissue infection may be present
Colour	• Redness/discolouration (note: in darker skin tones, redness may not be visible; instead, look for darker, purple or blue) • Uneven discolouration • Pink or white surrounding skin	• Red granulation tissue • Soft/black necrotic • Sloughy tissue • Non-blanching redness/discolouration • Blue/purple discolouration
Injury type	'Top-down' injury – outer layers of the skin are affected first	'Bottom-up' injury – starts in deeper tissue not true for category 1 and 2
Depth	Usually superficial or partial-thickness tissue loss, but may be full thickness if long term (days) effluent exposure to the skin	May range from superficial to full-thickness tissue loss

Prevention of IAD

Prevention of IAD hinges on the early identification of at-risk individuals, skin protection and a holistic, patient-centred approach. Strategies should not only address incontinence but also consider the broader clinical context, including comorbidities, mobility, self-care capacity and individual risk factors.

Manage underlying causes and assess holistically

IAD should never be addressed in isolation. Comorbidities such as type 2 diabetes, peripheral vascular disease or obesity may be at increased risk due to impaired skin integrity or reduced healing capacity. A full clinical assessment helps identify these contributing factors and informs an individualised prevention plan.

Evaluate self-care realistically

Ensure that patients who are considered self-caring are genuinely able to manage their hygiene and skin care, particularly in hard-to-reach areas. Skin folds, between the buttocks, under the pannus (abdominal apron) and the perineal region are often missed during personal hygiene routines, especially in individuals with limited mobility or dexterity.

Management of IAD

Once IAD develops, management focusses on removing or reducing skin contact with urine and/or faeces and restoring the skin barrier (Bender et al, 2017).

The two key strategies are to:

1. Identify and, where possible, treat the cause of incontinence
2. Implement a structured skincare regimen to maintain or restore skin integrity (Beele et al, 2017).

Table 7. Patient-related and external and care-related risk factors for skin breakdown and IAD.

Patient-related factors: These may predispose individuals to IAD (Beeckman et al, 2015; Young 2017)	
Immobility or reduced mobility	Limits ability to reposition or manage hygiene effectively
Cognitive impairment (e.g. dementia)	May reduce the ability to communicate the need to use the toilet, discomfort or participate in self-care
Increasing age	Associated with skin changes and increased incontinence prevalence (Junkin and Selekof, 2007)
Poor nutritional status and low serum albumin	Affects skin health and repair capacity
Comorbidities (e.g. diabetes)	May impair tissue tolerance and perfusion
Obesity and bariatric status	Increased skin folds and moisture retention create an environment conducive to IAD
Paediatric populations	Age appropriate incontinence. Particularly infants and young children, where frequent nappy use and immature skin increase susceptibility
External and care-related risk factors: These may contribute to skin breakdown and IAD	
Friction and shear	Repeated movement against bedding or clothing
Absorbent products	Products that do not effectively lock away liquid allow prolonged exposure to urine/faeces, increasing skin moisture and irritation
Lack of structured skin care protocols	Inconsistent hygiene and barrier protection practices exacerbate risk of IAD
Stomas (e.g. colostomy, ileostomy, tracheostomy)	May contribute to peristomal skin complications that mimic or coexist with IAD
Medications (e.g. corticosteroids, antibiotics, immunosuppressants)	May compromise skin integrity and immune response; can alter urine/faeces pH, consistency or frequency of elimination
Catheter issues	Incorrect catheter size, poor securement or blockage can cause leakage and increase skin exposure.

When microbiological swabs are taken to investigate potential infection in cases of moderate or severe skin damage, it is important that the accompanying documentation includes sufficient clinical detail. Microbiology laboratories rely on this information to provide accurate interpretation and appropriate recommendations. HCPs should ensure that details such as the wound type and location, suspected cause of the damage, any relevant medical history (e.g. diabetes), and current or previous treatments (including antimicrobials or topical agents) are clearly documented. Including observations such as increased exudate, malodour or pain can also assist the laboratory in assessing the likelihood of infection.

Best Practice Statement

All findings should be clearly documented, with any appropriate concerns or interventions recorded and communicated to the multidisciplinary team (Woo et al, 2017; Flanagan, 2020). Document any products used to prevent contraindications with the wider care plan.

Best Practice Statement

Management should be tailored to severity of IAD. Product selection must aim to prevent further damage and address any existing or potential secondary infection. Use products that manage excess moisture and, where indicated, offer antimicrobial or antifungal properties. Prompt management is important, as untreated IAD can progress to deeper breakdown, infection and pressure ulcer development (Gray and Giuliano, 2018).

Cleansing

In addition to the principles in the 'Shared management principles across MASD types' section (**pages 4–7**), cleansing for IAD should focus on the prompt and gentle removal of urine and faecal matter using a pH-balanced, no-rinse cleanser. Harsh soaps, alkaline cleansers or vigorous rubbing should be avoided as they exacerbate skin damage.

The cleansing routine should reflect the individual's continence pattern — for example, patients with frequent or liquid stool may require more frequent cleansing. Always ensure skin is dried thoroughly, especially within skin folds or occluded areas, to prevent moisture accumulation.

MYTH

IAD always looks red, regardless of skin tone.

TRUTH

IAD may appear red or pink in light skin, but can be purple, bluish or less visible in dark skin tones (Dhoonmoon et al, 2023; Harte and Marshall, 2025). Assessment should include palpation and patient-reported symptoms. Not all redness indicates IAD – other conditions such as pressure ulcers, fungal infections or allergic reactions may present similarly but require different management approaches.

Fungal involvement

When infection or inflammation is suspected, consider adjunct therapies such as antimicrobial cleansers or enzyme alginogels that provide antimicrobial protection.

Enzyme alginogels absorb excess exudate, promote autolytic debridement and provide antimicrobial protection against a broad spectrum of microbes (e.g. *Candida* sp.; De Smet, 2009).

See **Figure 6** for an example of fungal infection in dark skin tone, and refer to the 'Shared management principles across MASD types' section (**pages 4–7**) for additional guidance.

Figure 6. Fungal infection secondary to IAD on the buttocks of an individual with dark skin tone. Image courtesy of Luxmi Dhoonmoon.

PERISTOMAL COMPLICATIONS

What is a stoma?

A stoma is a surgically created opening made into a hollow organ that diverts the flow of faeces or urine from the bowel or bladder to an external stoma bag (also called a stoma pouch) attached to the skin.

In the UK, approximately 1 in every 500 people live with a stoma (Colostomy UK, 2022), with around 21,000 people receiving a new stoma each year (Rolls et al, 2023). Maglio et al (2021) reported that around 63% of people develop at least one stomal or peristomal complication within the first month after surgery.

Depending on the medical condition requiring an ostomy and the site of the stoma, procedures include colostomy, gastrostomy, ileostomy, jejunostomy, oesophagostomy, tracheostomy or urostomy. See Table 8 for more information.

Mechanism of skin damage

Peristomal skin can be damaged when exposed to:

- Moisture from urine, faeces or gastric contents
- Chemical irritation from pH changes, enzymes or digestive secretions
- Microbial colonisation
- Mechanical trauma from friction, shear or repeated adhesive removal.

Other contributing factors include:

- Surgical technique
- Preoperative preparation
- Appliance management.

Despite advances in stoma care, peristomal skin complications remain the most common post-operative problem among patients with an ostomy. These complications can be short- or long-term and are reported in 10–82% of individuals with a stoma (Zelga et al, 2021).

Consideration for Paediatrics

High-output stomas (particularly ileostomies) and immature feeding patterns often necessitate frequent pouch changes in neonates and infants. Repeated adhesive removal increases the risk of peristomal MARSI, particularly if adhesive removers or gentle removal techniques are not used.

Table 8. Common types of stoma and related procedures.

Type of stoma/ procedure	Location	Why is it done?
Colostomy	Colon (large intestine)	Formed temporarily or permanently to allow the passage of faecal matter into an external pouching system when stool is unable to pass through the anus (NHS, 2018; Burgess-Stocks et al, 2022)
Gastrostomy (PEG tube)	Stomach	A PEG (percutaneous endoscopic gastrostomy) tube is inserted directly into the stomach to deliver nutrition, fluids and medications when a person is unable to eat or drink adequately by mouth
Ileostomy	Ileum (lowest part of the small intestine)	Created when the large intestine is temporarily or permanently blocked or removed to allow the passage of faecal matter into an external pouching prosthetic system (Burgess-Stocks et al, 2022)
Jejunostomy	Jejunum (middle section of the small intestine)	A feeding tube is inserted through the abdominal wall into the jejunum to provide nutrition, fluids and medications when oral intake is not possible (National Cancer Institute, 2024)
Oesophagostomy	Oesophagus (neck or upper chest)	A surgically created opening into the oesophagus, typically in the cervical or thoracic region, to allow feeding or drainage when the upper digestive tract is obstructed or injured
Tracheostomy	Trachea (windpipe)	A surgically created opening in the trachea to facilitate breathing when the upper airway is blocked or to support long-term ventilation
Urostomy	Urinary tract via the abdominal wall	Created to divert urine when the bladder is non-functional or has been removed (e.g. due to bladder cancer). A small segment of the ileum is used to create a conduit for urine to pass through the abdominal wall (NHS, 2018; Burgess-Stocks et al, 2022)

Infants and toddlers may pull at or dislodge appliances, especially during periods of discomfort or developmental milestones (e.g. crawling). This increases the frequency of dressing changes and the risk of skin stripping unless gentle removal techniques are followed.

Consideration for Paediatrics

Types of peristomal complications

The two most common peristomal skin injuries are:

- **Peristomal moisture-associated skin damage (MASD)**
- **Peristomal medical adhesive-related skin injury (MARSI).**

Differentiating peristomal MASD from peristomal MARSI

Key differences:

- **Cause:** Peristomal MASD results from prolonged exposure to stoma effluent or moisture, whereas peristomal MARSI is caused by mechanical trauma from adhesive removal
- **Appearance**: MASD presents with maceration, erythema and inflammation, whereas MARSI shows signs of epidermal stripping, blistering or erosion
- **Interrelationship:** Both may occur simultaneously, as moisture-damaged skin is more prone to adhesive injury.

See Table 9 for a detailed comparison.

Assessment

Assessment of peristomal MASD involves careful inspection of the peristomal skin during appliance changes. Clinicians should observe the location, appearance and severity of any damage and consider contributing factors such as appliance fit, effluent type and skin fragility.

Peristomal MARSI should be suspected when irritation, blistering or stripping occurs immediately after appliance removal. Assessment involves inspecting the peristomal skin before and after each appliance change, documenting any deterioration and identifying contributing factors.

Table 9. Distinguishing features of peristomal MASD and peristomal MARSI.

Peristomal MASD

Definition
Skin damage caused by repeated exposure to effluent or moisture.

Clinical signs

- Erythema (may appear red or pink in individuals with light skin tones, or purple, maroon or deep red in dark skin tones
- Maceration
- Rash
- Inflammation
- Pruritus
- Papules
- Plaques
- Scaling
- Fissures.

Factors contributing to peristomal MASD

- Ill-fitting or poorly positioned stoma appliances
- Excess exposure to effluent or moisture
- Naturally occurring microorganisms on the peristomal skin
- Mechanical forces (e.g. friction or trauma)
- Organ-specific pH and chemical irritants within the effluent (Fletcher et al, 2020; McNichol et al, 2022). This exposure can lead to maceration, inflammation and loss of skin integrity (Parnham et al, 2020).

Peristomal MARSI

Definition
Skin damage caused by inadvertent stripping of the epidermis during removal of adhesive pouching systems

Clinical signs

- Erythema (may appear red or pink in individuals with light skin tones, or purple, maroon or deep red in dark skin tones
- Epidermal skin stripping (superficial loss of epidermal layers), which leaves the skin shiny, fragile and susceptible to further damage
- Blisters, bullae or vesicles
- Erosion or skin tears (LeBlanc et al, 2021; Wounds UK, 2023)

Types
May be:

- *Non-allergic (irritant contact dermatitis)* — caused by mechanical trauma or prolonged adhesive exposure
- *Allergic (contact dermatitis)* — due to hypersensitivity to adhesive components (Wounds UK, 2023)

A structured assessment may include targeted questions [Table 10] to identify underlying causes.

Identifying people at higher risk of peristomal complications

Certain people are at higher risk for peristomal MASD and peristomal MARSI, including those with frequent appliance changes, high-output or enzyme-rich effluent, poorly fitting stomas, fragile skin, or comorbidities affecting skin integrity (Fletcher et al, 2020; D'Ambrosio et al, 2022; McNichol et al, 2022). See Table 11 for a summary of risk factors.

Escalate early. In stoma care, even minor skin damage can have significant consequences, including reduced appliance adherence, increased leakage, infection risk and reduced patient quality of life. Once established, peristomal skin complications can be difficult to reverse. Early referral to a stoma care nurse or tissue viability specialist is essential

Best Practice Statement

Table 10. Questions to determine causes of a peristomal skin complication (adapted from Burch et al, 2021).

Observe the location and appearance	Identify clinical history
■ What type of stoma is it (e.g. colostomy, urostomy, tracheostomy, jejunostomy)? ■ Where is it located? Is it near bony prominences or areas of movement (e.g. waistline, neck, abdomen)? ■ What is the extent and severity of erosion, tissue overgrowth and discolouration? ■ Are there folds, creases or other visible skin changes?	■ When did the condition begin, and under what circumstances? ■ What interventions have been tried? ■ Is the stoma functioning normally? ■ How long since the surgery and what was the indication? ■ What comorbidities are present?
Ask the patient/carer about potential causes	**Product review**
■ Have you experienced a recent leakage? ■ What is the consistency of the stomal output? ■ Is there excessive moisture under the flange? ■ Is there discomfort or pain on appliance removal? ■ Are there signs of bacterial, fungal or viral infection? ■ Do you have any known allergies? ■ Has the abdomen been shaved in the past week? ■ Do you have particularly fragile skin?	■ What stoma appliances and accessories are being used? ■ How long do you wear their appliance before changing? ■ Is the template well-fitting? ■ Is there disintegration of the flange? ■ What is the rationale for any accessory use? ■ Have there been any recent changes in stoma care regimen? ■ Have these changes coincided with changes in skin condition?
Determine the appliance leakage	**Medication review**
■ How frequently has leakage occurred? ■ Is the abdominal area flat or contoured? ■ Is the stoma spouted or retracted, flush or prolapsed? ■ How skilled are you at forming a seal? ■ Are there visible leaks tracking along a crease in the flange?	■ What topical treatments and/or hygiene products are being used in the peristomal area? ■ What medications (prescribed or over the counter) are being taken? ■ What recreational drugs (including alcohol) are being consumed? ■ Have there been any recent changes in medication? ■ Have these changes coincided with changes in skin condition?

Appropriate interventions must be tailored to each patient using evidence-based products and a holistic approach to care.

Best Practice Statement

Patient education is fundamental, as most stoma care is self-managed. Providing guidance on appliance use, skin protection, emotional wellbeing and body confidence can greatly influence outcomes.

Best Practice Statement

There is no one-size-fits-all solution. Each case is unique. HCPs should feel confident seeking advice from stoma care specialists, dermatology or tissue viability nurses. There is no expectation to have all the answers – collaboration is key

Best Practice Statement

Table 11. Patient-related and external and device and stoma-related risk factors for peristomal MASD and peristomal MARSI.

Patient-related risk factors	
Age	Skin pH tends to become more alkaline with advancing age, reducing the skin's barrier function and increasing susceptibility to peristomal damage
Higher body mass index (BMI)	Excess adipose tissue can create uneven abdominal contours, making it difficult to achieve a secure seal between the skin and the stoma appliance (Burch et al, 2021)
Limited engagement	Children and adults with behavioural or developmental conditions may inadvertently remove or dislodge appliances due to discomfort or misunderstanding
Continuous movement	Conditions involving constant or repetitive movement, such as persistent head motion in children with neurological disorders, can amplify friction and shear forces on the skin, particularly in areas like the neck where moisture and delicate skin increase the risk of peristomal MASD and peristomal MARSI
Cognitive and neurodevelopmental conditions	Individuals with learning disabilities, dementia or neurological disorders may be unable to understand or cooperate with stoma care procedures. Using distraction techniques, comfort positioning or involving carers during appliance changes may reduce distress and improve outcomes (Falloon et al, 2018; McNichol et al, 2018; Yates, 2020).
Device and stoma-related risk factors	
Improperly fitting pouching systems	Appliances that do not accommodate changes in stoma size, shape or body contours can compromise adhesion and skin protection
pH of stoma effluent	The chemical nature of stoma output influences skin health; alkaline effluent is associated with increased peristomal inflammation
Stoma type	Higher incidence of skin damage is reported in individuals with an ileostomy compared to a colostomy (Taneja et al, 2017). Ileostomy output is typically liquid or loose and high in volume, whereas colostomy output is more formed and lower in volume, reducing leakage risk (Taneja et al, 2017; Voegeli et al, 2020; Burch et al, 2021)
Surgical technique	The stoma's anatomical placement, degree of protrusion and lumen position affect appliance fit and skin integrity
Incorrect appliance use	Inappropriate pouch selection, poor changing technique and improper wear time increase the risk of skin damage (Kulawik-Pióro et al, 2025).

Prevention of peristomal MASD and peristomal MARSI

Peristomal MASD and peristomal MARSI are common but often under-reported complications in ostomy care (Stelton, 2019). Prevention requires a proactive, holistic approach that focuses on patient education, correct sizing and fitting of appliances, appropriate skin care, and safe application and removal of adhesive devices.

As ostomy appliances are frequently applied and removed, the peristomal skin is exposed to repeated mechanical stress. Maintaining skin integrity through effective cleansing, protection and technique is essential to minimise the risk of complications.

1. Cleansing the peristomal skin

In addition to the general principles outlined in the 'Shared management principles across MASD types' section (see pages 4–7), cleansing during stoma pouch changes requires particular care to prevent irritation or damage. Inadequate or overly aggressive cleaning can shorten pouch wear time and increase the risk of injury (Burch et al, 2021).

To support healthy peristomal skin and ensure optimal appliance performance:

- Use only skin cleansers specifically designed for individuals with a stoma. Avoid baby wipes, perfumed soaps or standard wet wipes, as these may contain moisturisers or fragrances that interfere with adhesion or cause irritation
- Gently cleanse the peristomal area to remove residue and effluent without scrubbing
- Thoroughly dry the skin before applying any appliance, as residual moisture can compromise adhesion and increase the risk of MASD.

2. Use of barrier products

Barrier products help protect the skin from moisture and friction:

- Apply a barrier film, cream or gel, allowing it to dry fully (typically 5–10 minutes) before fitting the appliance
- For patients with excessive moisture, stoma powders may be used to aid adherence (unlike in IAD, where powders are generally avoided)
- Depending on the severity of skin damage, use products selected to prevent further damage and deterioration. If necessary, ensure products also provide moisture management and antimicrobial protection.

3. Correct application and removal of stoma appliances

Peristomal MARSI is largely preventable through correct appliance selection, careful handling and the use of medical adhesive removers. Incorrect application or removal techniques can cause friction, shear or direct skin trauma.

4. Review, document and refer

Ongoing complications warrant review by a multidisciplinary team, including stoma care, dermatology, tissue viability and nutrition as needed.

Consideration for Paediatrics

Barrier films can help protect the peristomal skin in children but it's important to select alcohol-free formulations to avoid stinging or sensitisation. Products should also be tested for compatibility with the child's appliance to avoid reduced adhesion.

When APPLYING a stoma appliance

DO

- Ensure the skin is completely dry before applying the device
- Position the device in an orientation that does not restrict movement or exert tension on the skin
- Use firm but gentle pressure to smooth the adhesive, ensuring no gaps or wrinkles
- Always follow the manufacturer's instructions and consult a stoma care nurse if the fit is suboptimal (Wounds UK, 2023).

DON'T

- Stretch the appliance during application, as this can cause lifting, leakage or skin trauma
- Apply over wet or irritated skin, which may compromise adhesion and increase the risk of MASD or MARSI.

When REMOVING a stoma appliance

DO

- Gently loosen the edges of the adhesive first before removal
- Use a medical adhesive remover, if necessary, to reduce trauma and ease detachment
- Peel the adhesive slowly, in the direction of hair growth, using a "low and slow" technique
- Support the skin with the opposite hand to prevent dragging or tearing (Fumarola et al, 2020; Wounds UK, 2023).

DON'T

- Pull or rip the appliance away from the skin abruptly
- Remove the device dry without support or adhesive remover, particularly in fragile or already compromised skin.

INTERTRIGINOUS DERMATITIS

In infants, intertriginous dermatitis most often affects the neck creases of infants due to a short neck, flexed posture and frequent drooling (Janniger et al, 2005).

Consideration for Paediatrics

What is intertriginous dermatitis?

Intertriginous dermatitis (intertrigo) is a common but often under-recognised inflammatory skin condition that occurs where two skin surfaces are in close contact, such as within skin folds.

Often referred to as "sweat rash," intertrigo is not merely a hygiene issue but a form of irritant dermatitis exacerbated by heat, friction and moisture, particularly trapped perspiration (Nobles et al, 2024).

When sweat is unable to evaporate, the stratum corneum becomes overhydrated and macerated (Cotterell et al, 2020). Over time, this compromises the skin barrier and increases susceptibility to secondary bacterial or fungal infection.

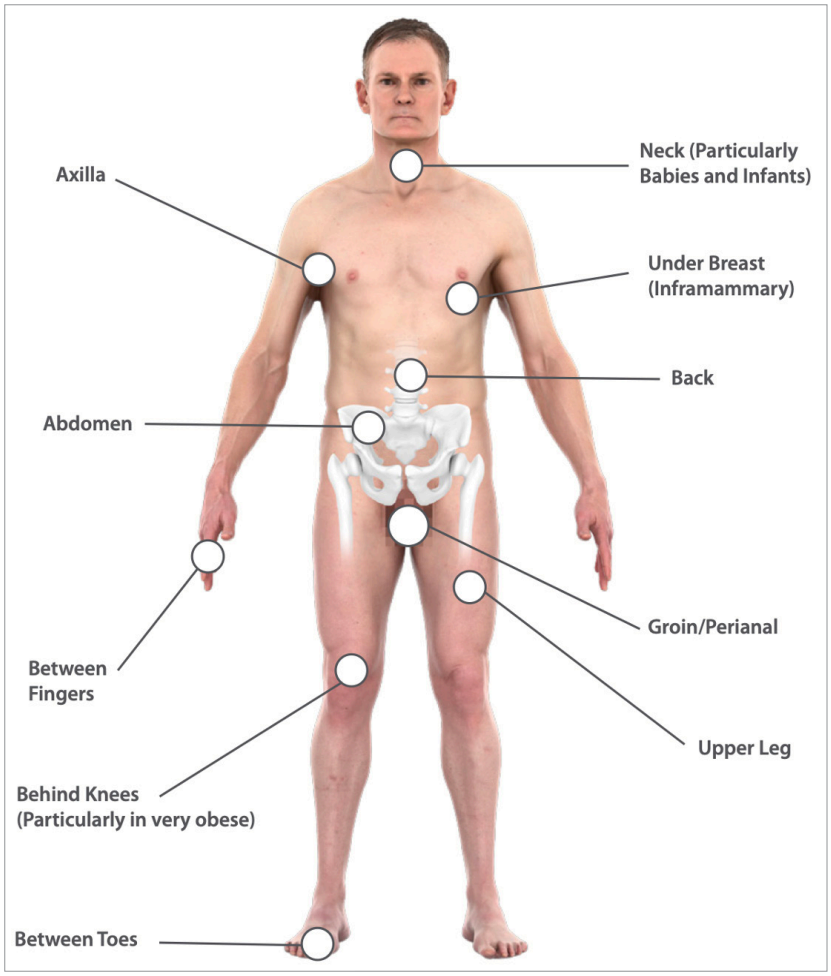


Figure 7. The most frequent cutaneous localisations of intertrigo

Intertrigo may cause burning, itching, pain and malodour, impacting comfort, mobility and dignity. Despite its prevalence, it is frequently misdiagnosed or dismissed.

Where does intertrigo occur?

Intertrigo commonly affects large skin folds, including the:

- Axillary (armpits)
- Inframammary (under the breasts)
- Inguinal (groin)
- Perianal
- Umbilical
- Interdigital (between the fingers or toes) areas.

See Figure 7 for a body map illustrating common sites of intertrigo.

Any anatomical site where skin surfaces remain in prolonged contact, particularly in warm, moist environments, is at risk. These areas are often intimate or sensitive, and individuals may be embarrassed or reluctant to seek help, especially if there is an associated odour or discomfort.

Assessment

Intertrigo is primarily assessed through careful visual and tactile examination. HCPs should document the anatomical site, extent of involvement (e.g. measure from the skin crease to assess spread) and characteristics of the affected skin, including colour, texture, odour, exudate and the presence of suspected or confirmed infection.

Clinical presentation

Intertrigo typically presents as erythema, maceration and fissuring within skin folds (Young, 2017). Patients may report itching, burning, discomfort or pain (Southgate and Bradbury, 2016). The affected area often feels moist and tender, and may have a noticeable odour.

Intertrigo often presents symmetrically, with damage mirrored on both sides of the affected skin fold (Dowsett and Allen, 2013; Voegeli, 2020).

Figure 8. Examples of intertrigo in (a, b) light skin tones and (c) a dark skin tone. Images courtesy of Luxmi Dhoonmoon.

Skin tone considerations

In light skin, erythema usually appears red or pink. In darker skin tones, inflammation may present as hyperpigmentation, purple or maroon discolouration or subtle textural change rather than redness (Dhoonmoon et al, 2023; Harte and Marshall, 2025).

See Figures 8a–8b for examples in light skin tones and Figure 8c for darker skin tones.

Signs of secondary infection

When secondary infection is present, clinicians may observe:

- Malodour
- Increased exudate
- Superficial erosion, oozing or crusting (Beeckman et al, 2015; Primary Care Dermatological Society, 2018; Voegeli, 2020)
- Satellite lesions, suggesting fungal involvement
- Weeping, crusting or erosions, suggesting bacterial superinfection.

Identifying people at higher risk of intertrigo

Patient and clinical factors that increase intertrigo risk are summarised in Table 9.

Differentiating intertrigo from other forms of MASD

Intertrigo may be confused with other forms of MASD, particularly IAD, when skin folds are exposed to urine or faeces (Young, 2017).

Key differences:

- **Cause:** Intertrigo is caused by heat, friction and trapped moisture in skin folds, whereas IAD results from prolonged exposure to urine or faeces
- **Appearance**: Intertrigo presents as erythema, maceration, fissures or hyperpigmentation; IAD shows diffuse erythema, erosion or weeping, usually in perineal or perigenital areas
- **Pattern**: Intertrigo is typically symmetrical and confined to skin surfaces in contact, while IAD may be irregular and extend beyond skin folds.

As posture and neck length develop, the risk of intertrigo in the neck decreases (Cotterell et al, 2020; Romanelli et al, 2023). However, in older or overweight infants, intertrigo may still occur in other skin folds such as the groin, axillae and abdominal creases (Janniger et al, 2005). These areas should be inspected regularly, as skin breakdown may be hidden from view.

Consideration for Paediatrics

Intertrigo, like other forms of MASD, may present in paediatrics with a clinical range from mild erythema to extensive skin breakdown (Young, 2017).

Consideration for Paediatrics

Table 12. Patient-related and external and care-related risk factors for intertrigo

Patient-related risk factors	External and care-related risk factors
■ Obesity (increased skin folds) ■ Hyperhidrosis (excessive sweating) ■ Diabetes mellitus (associated with higher skin pH) ■ Immobility ■ Oedema ■ Immunodeficiency ■ Incontinence ■ Individuals with significant weight loss may also develop excess skin folds	■ Poorly fitting prosthetics or medical garments ■ Tight, restrictive clothing ■ Occlusive dressings ■ Inadequate skin care routines in dependent individuals

Patient expectation

It's important for patients to know that intertrigo is a real skin condition and not caused by poor hygiene. Understanding this can help reduce stigma and encourage early care. People who may be at risk should learn to recognise the early signs and how to care for skin folds to prevent the condition from developing or getting worse (Cotterell et al, 2020).

Prevention

Prevention focusses on maintaining clean, dry and well-ventilated skin. Skin care should include non-irritant, pH-balanced cleansers and avoidance of harsh soaps (Beeckman et al, 2015). Skin should be gently patted dry, especially in skin folds, to minimise friction. Breathable, well-fitting garments that wick moisture can reduce risk (Voegeli, 2020). Regular inspection is essential for at-risk individuals, particularly those who are immobile or dependent on care.

Management

The management of intertrigo is guided by its severity and presence or absence of secondary infection. A structured skin hygiene regimen is essential, particularly in moisture-prone areas.

For uncomplicated intertrigo, the goal is to reduce moisture and friction while restoring skin integrity. Use no-rinse, pH-balanced cleansers, avoid alkaline soaps and gently pat the skin dry. Emollient-based soap substitutes are preferred. A barrier product (cream, film or gel) may be applied to protect the skin, although further research is needed to confirm efficacy in all cases. Depending on severity, products should be selected to prevent further damage while managing moisture and providing antimicrobial protection, if indicated.

Targeted care is needed for high-risk areas

Targeted care is essential for areas prone to moisture accumulation and friction. For interdigital spaces, 'toe flossing' with moistened gauze or a soft cloth helps remove debris and reduce moisture build-up (IWII, 2025), minimising maceration and microbial growth. Lower limbs should be gently washed and inspected, with skin folds lifted to ensure hidden areas are thoroughly examined for erythema, discolouration or early signs of breakdown.

Moist environments promote secondary infections. *Candida* species and dermatophytes such as *Trichophyton*, are common, particularly in interdigital intertrigo (Metin et al, 2018; Nobles et al, 2024). The rising prevalence of virulent non-albicans *Candida* species highlights the need for updated microbiological understanding (Metin et al, 2018).

When secondary infection is suspected, see page 5 for appropriate topical treatment.

Long-term management includes patient education and self-care. Providing a "rescue pack" for early treatment of recurrence helps patients manage chronic or recurrent intertrigo.

Skin fold care

DO

- Advise patients to wear breathable, well-fitting garments that minimise friction and wick moisture
- Encourage gentle cleansing with pH-balanced products and thorough drying, particularly in folds and creases
- Recommend the use of barrier creams or films, ensuring they are allowed to dry fully before dressing
- Reinforce the importance of adequate hydration to support skin barrier function
- Identify and manage underlying conditions that increase vulnerability (e.g. diabetes, obesity, hyperhidrosis)
- Review the fit and compatibility of any products or dressings, following manufacturer guidance and consulting a stoma care nurse or tissue viability specialist if issues persist (Wounds UK, 2023)
- Use proactive language with patients, for example, "when it comes back" rather than "if," to normalise recurrence and support self-management.

DON'T

- Place fabric, paper towels or similar materials in skin folds, as they trap moisture and increase the risk of fungal infection and MASD
- Use talcum powder, cornflour or turmeric, which can irritate the skin, promote fungal growth and interfere with cleansing.

PERIWOUND MOISTURE-ASSOCIATED SKIN DAMAGE (MASD)

What is the periwound area?

The periwound area refers to the skin and tissue immediately adjacent to the wound edge, extending up to 4cm, and may include skin under the wound dressing (IWII, 2025; Figure 9).

What is periwound MASD?

Periwound MASD is a type of irritant contact dermatitis caused by prolonged exposure of the surrounding skin to excessive moisture, typically from wound exudate. This overexposure disrupts the skin's acid mantle and epidermal barrier, leading to maceration, inflammation and increased risk of infection and further tissue breakdown.

Wounds with high exudate often contain proteolytic enzymes and inflammatory cytokines, which are corrosive to periwound skin and can delay healing (Voegeli, 2020; Harte and Marshall, 2025).

Where does periwound MASD occur?

Periwound MASD occurs around wounds with moderate to high exudate, including:

- Venous leg ulcers
- Pressure ulcers
- Diabetic foot ulcers
- Surgical wounds
- Any acute or chronic wound with excessive exudate.

Assessment

HCPs should:

- Visually inspect the periwound skin for changes in integrity, colour, texture and uniformity
- Assess exudate volume, colour and consistency
- Document signs of maceration, softening, wrinkling, erosion or superficial skin loss
- Ask about periwound pain, which may indicate MASD rather than wound bed pain.

Currently, no validated scoring system exists for periwound MASD; most practice relies on descriptive documentation of extent, severity and complications (Harte and Marshall, 2025).

Clinical presentation

- Maceration: White, swollen waterlogged tissue
- Erythema or colour changes: In dark skin tones, look for subtle changes such as darkening, texture changes or loss of normal skin markings, rather than erythema alone
- Swelling, soggy appearance
- Pain, burning or itching around wound margins
- Irregular, diffuse borders (not sharply demarcated)
- Erosions or superficial skin loss
- Absence of classic infection signs unless secondary infection occurs (Bernatchez and Thayer, 2020).

MYTH

Periwound MASD is inevitable in wounds with heavy exudate.

TRUTH

Periwound moisture can come from multiple sources including wound exudate, sweat, urine or faeces. Moisture itself isn't always harmful but prolonged exposure without proper management increases the risk of skin damage.

General wound assessment tools may be used but do not specifically address periwound moisture damage.

Best Practice Statement

The area affected often extends up to several centimetres (4cm; IWII, 2025) from the wound edge with the pattern of skin damage reflecting the exudate volume, direction of spread and dressing effectiveness.

Best Practice Statement

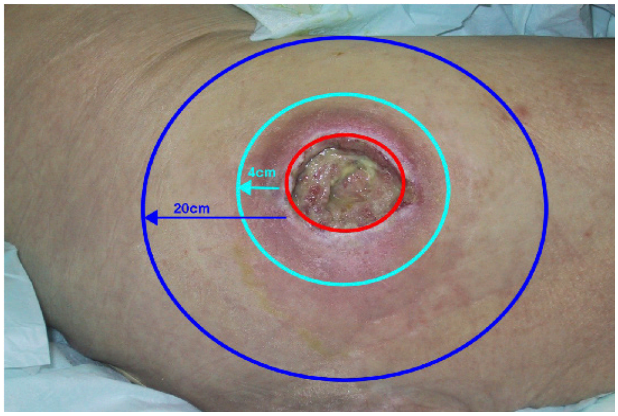


Figure 9. The wound area is divided into three zones. Zone 1 (red): wound bed and wound edge; Zone 2 (light blue): periwound approximately 4cm from wound edge; Zone 3 (blue): surrounding skin zone approximately 20cm from wound edge (Image courtesy of Kimberly LeBlanc; IWII, 2025).

MYTH

Moisture around a wound is only from exudate and is always harmful.

TRUTH

Periwound moisture can come from multiple sources including wound exudate, sweat, urine or faeces. Moisture itself isn't always harmful but prolonged exposure without proper management increases the risk of skin damage.

Identifying people at higher risk of periwound MASD

Several intrinsic and extrinsic risk factors increase a patient's vulnerability to periwound MASD [Table 13].

Understanding these risk factors enables HCPs to identify at-risk individuals and implement timely preventive measures.

Excessive or persistent exudate is a major risk factor for maceration and breakdown of the periwound skin.

Prevention

Preventing periwound MASD focuses on reducing exposure of the surrounding skin to excessive moisture and maintaining skin integrity.

Key strategies include controlling exudate, protecting the periwound area using barrier preparations, monitoring skin condition at every dressing change and managing underlying risk factors such as oedema, hypoalbuminaemia or poor nutrition.

Table 13. Patient-related and external and care-related risk factors for periwound MASD

Patient-related risk factors	
Chronicity and composition of exudate	Exudate from non-healing or chronic wounds contains higher levels of proteolytic enzymes and inflammatory cytokines, which are more corrosive to periwound skin than acute wounds (Bernatchez and Thayer, 2020)
Age and skin condition	Older adults, people with thin or atrophic skin, or those with dermatological conditions (e.g, eczema, psoriasis) are at increased risk because their skin barrier is already compromised (Bernatchez and Thayer, 2020)
Comorbidities	Conditions such as diabetes, renal insufficiency, congestive heart failure, malnutrition and immunosuppression impair skin integrity and healing, increasing susceptibility to periwound damage
Oedema and lymphoedema	Swelling stretches the skin and impairs local circulation and lymphatic drainage, creating fragile, less oxygenated skin. Leakage of fluid further compromises the periwound environment
Reduced mobility	Immobility contributes to increased moisture accumulation and pressure, weakening periwound skin
Poor nutrition	Low serum albumin and other markers of malnutrition reduce the skin's ability to repair and resist breakdown
External and care-related risk factors	
Inadequate dressing selection	Use of dressings without sufficient fluid-handling capacity or infrequent changes, allows exudate to pool and damage periwound skin (LeBlanc et al, 2021)
Dressing technique and frequency	Changes that are too infrequent or unnecessarily frequent without clinical indication can compromise periwound skin. Poor technique or lack of adhesive remover increases friction, shear and MARSI risk (Bernatchez and Thayer, 2020)
Local environment	Increased temperature and humidity at the wound site (e.g. under occlusive dressings or in skin folds) weaken the skin barrier and promote maceration (Bernatchez and Thayer, 2020)
Wound infection	Infection increases exudate volume and alters its composition, making it more damaging to the periwound area (Harte and Marshall, 2025)
Patient handling of dressings	Inconsistent concordance, such as removing or repositioning dressings due to discomfort or misunderstanding, can lead to excess moisture exposure, friction or contamination, particularly in paediatric or cognitively impaired patients

Consideration for Paediatrics

Paediatric patients are at increased risk of periwound MASD, often due to difficulties in engaging and keeping dressings in place, for example, they may end up pulling off if they are uncomfortable. This can expose the skin to prolonged moisture and even increase the risk of MARSI. The risk is further heightened if inappropriate dressing sizes are used, which is particularly common in the paediatric population due to limited dressing choices. Additionally, using lateral-wicking dressings that extend beyond the wound bed onto the periwound skin can exacerbate skin damage.

Highly exuding wounds benefit from superabsorbent dressings, hydrofiber, enzyme alginogels or foam dressings, which lock away moisture and minimise further maceration of the periwound skin. Placement of dressings should consider gravitational flow to capture exudate and prevent leakage.

Management

When secondary infection is suspected, appropriate topical treatments should be used (see **page 5**). The frequency of dressing changes should correspond to exudate levels, with regular reassessment of the dressing's fluid-handling capacity, particularly if the wound or surrounding skin deteriorates. In patients with oedema or "leaky legs," consider compression therapy when not contraindicated, as it reduces oedema and the volume of transudate (Broadhead et al, 2020; Anderson, 2017).

Dressing fixation should be adapted for patients with fragile or swollen skin. Large adhesive borders may cause trauma or MARSIs; alternatives such as non-adhesive dressings secured with bandages or tubular retention may be more suitable.

Ongoing assessment is imperative. The periwound area should be examined at every dressing change for signs of maceration, erythema, erosion or infection. If the wound fails to progress or skin damage worsens, a full reassessment is needed, including evaluation of comorbidities such as hypoalbuminaemia, infection or poor nutrition. Understand how different dressings absorb, contain and manage exudate to optimise healing outcomes.

Consideration for Paediatrics

Managing exudate in the paediatric population is also complicated by the limited availability of appropriately sized superabsorbent dressings. Many are unable to be cut to fit paediatric/neonatal wounds without compromising the dressing's fluid-handling properties. In such cases, alternative, "outside of the box" strategies may be needed, such as using sterile barrier products to protect surrounding skin or applying a small drainable stoma appliance to collect high levels of exudate until wound fluid decreases.

CONCLUSION

While MASD can be divided into four umbrella terms, there are several common contributing factors that underpin all forms of this condition. Importantly, it is not only the presence of moisture that leads to skin damage, but rather the complex interplay between chemical irritants in bodily fluids, sustained occlusion, friction and compromised skin barrier function that leads to inflammation and tissue breakdown.

Accurate and timely assessment is critical for the prevention and management and MASD. Visual inspection remains the primary method of recognising MASD, but HCPs must also consider symptoms such as patient discomfort, malodour and changes in skin texture. Special attention should be paid to signs of secondary fungal infection, which frequently occur in moist and occluded areas, particularly in intertrigo and peristomal skin complications. The presence of satellite lesions, itching or persistent erythema despite standard interventions may indicate fungal overgrowth and warrant targeted antifungal management.

In complex cases, particularly those involving significant skin breakdown, high levels of exudate, or signs of infection, dressings that provide antimicrobial protection alongside exudate management and debridement, such as enzyme alginogels, may offer added therapeutic value. It is particularly beneficial in compromised tissue where healing is likely to be delayed.

Ultimately, MASD should be viewed as a preventable condition. Early recognition, patient education, appropriate skin care routines and evidence-based product selection, supported by timely specialist input, are essential to reducing the burden of MASD and improving outcomes for patients across all care settings.

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