
Evidence Summary: Moisture Associated Skin Damage: Classification and Assessment

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QUESTION

What is the best available evidence on strategies to assess moisture associated skin damage?

SUMMARY

Moisture associated skin damage (MASD) is caused by exposure of the skin to moisture, especially when in conjunction with damage to the skin from shear, friction or chemical sources (Level 5 evidence). Moisture associated skin damage should be categorised according to the location and severity of skin damage. Assessment should consider the visual appearance of the skin and characteristics of the individual that could be contributing to skin damage (Level 5 evidence). Assessment tools for MASD that have had psychometric properties evaluated (e.g. *Incontinence-Associated Dermatitis Intervention Tool [IADIT]* and *The IAD Skin Condition Assessment Tool*) report good interrater reliability (Level 3e evidence).

BEST PRACTICE RECOMMENDATIONS

When assessing skin damage, evaluate the location, skin appearance and characteristics of the individual to determine an underlying cause. **(Grade B recommendation)**

Consider using a formal tool to assess moisture associated skin damage. **(Grade B recommendation)**

BACKGROUND

Moisture associated skin damage is an overarching term that describes damage to the skin as a result of exposure to moisture. The moisture causing skin damage can arise from different sources, including (but not limited to):¹⁻³

- urinary incontinence
- faecal incontinence
- wound exudate
- perspiration
- stomal effluent
- saliva or mucous

Skin that is exposed to moisture becomes soft, wrinkled and inflamed, increasing the risk of erosion and a break to the skin. Damage occurs in the presence of friction and/or shear and/or chemical forces.^{1, 4, 5} The precise mechanism by which moisture damages the skin is not fully understood,⁶ but is thought to occur due to physical changes in the stratum corneum (horny layer)^{7, 8} as the corneocytes absorb excess fluid and become over-hydrated.⁴ The inflammatory response to moisture exposure increases transepidermal water loss, decreasing the skin's moisture barrier effect and increasing skin pH.^{5, 6}

Once the skin becomes inflamed, the disruption to natural skin barrier defences, often together with potential breaks to the skin barrier caused by mechanical forces (e.g. shear or friction) or chemical sources (e.g. alkaline pH of moisture source), increases the risk of skin infection.^{1, 4, 5}

CLINICAL BOTTOM LINE

Aetiology and classification of MASD

Moisture associated skin damage is categorised according to the anatomical location and type of moisture associated with skin damage. Expert consensus^{1, 9} and single expert opinion^{3, 7, 8} describe four types of MASD: periwound dermatitis, peristomal dermatitis, intertrigo/intertriginous dermatitis and incontinence associated dermatitis (Level 5 evidence).

Expert consensus¹ and single expert opinion^{3, 6, 7} outline the classification of MASD according to location and primary cause, as summarised in Table 1 (Level 5 evidence).

Identifying MASD: Assessing the individual

Expert consensus^{1, 2, 10, 11} and single expert opinion^{3, 5} detail components to include in a focused assessment of the individual for MASD, as summarised in Table 2 (Level 5 evidence).

Identifying MASD: Assessing the skin

Synthesised expert opinion,¹¹ expert consensus^{1, 3, 10} and single expert opinion^{3, 5, 6, 8, 12, 13} suggest that inspecting the skin is the only way to identify MASD. Visual characteristics of MASD include: (Level 5 evidence)

- Superficial inflammation of the skin^{1, 3, 5, 6, 8, 11}
- Superficial erosion/denudation may be present^{1, 3, 14}
- Peristomal or periwound ulceration commonly present due to uncontrolled leakage¹⁴

Table 1: Factors related to the individual to consider in assessment of MASD^{1, 3, 6, 7}

Type of MASD	Cause	Location
Incontinence associated dermatitis	Urinary or faecal incontinence	Perineum Gluteus Upper thighs
Intertrigo/intertriginous dermatitis	Perspiration Saliva Mucous	Inside and adjacent to skin folds, particularly under the pannus or breasts
Peristomal dermatitis	Stomal effluent Mucous	Immediately surrounding a stoma
Periwound dermatitis	Wound exudate	Within 4cm of the wound edge

Table 2: Factors related to the individual to consider in assessment of MASD

Type of MASD	Factors to consider in assessing the individual
Incontinence associated dermatitis	<ul style="list-style-type: none"> • Presence of incontinence^{1, 5, 6, 10, 11} • Presence of functional limitations that increase the risk of shear or friction (e.g. immobility)^{3, 6, 10, 11} • Presence of functional or cognitive limitations that decrease ability to care for skin (e.g. immobility, obesity, dementia)^{5, 10} • Alterations to nutrition and elimination that could change acidity of faeces (e.g. nasogastric or percutaneous gastrostomy feeding, diarrhoea)¹⁰ • Occlusive skin conditions (e.g. wearing incontinence aids)³ • Exposure of skin to friction (e.g. frequent use of towels, massage)³ • Presence of itching, burning and stinging^{5, 11}
Periwound dermatitis	<ul style="list-style-type: none"> • Individual factors that increase risk including older age, immunocompromised, environmental skin damage, congenital disorder (e.g. epidermolysis bullosa)² • Type of wound exudate¹ • Adequacy of exudate management (e.g. appropriate selection of wound dressing)²
Intertrigo/intertriginous dermatitis	<ul style="list-style-type: none"> • Presence of functional limitations that decrease ability to care for skin (e.g. immobility, obesity)¹⁰
Peristomal dermatitis	<ul style="list-style-type: none"> • Alterations to nutritional intake that could change the pH of stomal effluent² • Administration of medications (e.g. antibiotics) that could change acidity of stomal effluent² • Leakage of appliances due to the position of the stoma, increases or folds, or stoma retraction, prolapse or stenosis^{1, 2} • Alterations to self-management skills (e.g. level of individual's skill in applying pouches, ability of individual to reach stoma)^{1, 2} • Types of pouches and barrier products used^{1, 2} • Alterations to the individual's activities that may influence skin barrier adhesion²

Table 3: Systems to categorise MASD and IAD

MASD categorisation ^{3, 9}	IAD categorisation outline in <i>GlobalIAD</i> ¹⁸ (note: categories are not intended to be progressive)
Category I: erythema with no loss to skin integrity	1A: persistent redness without clinical signs of infection)
Category IA: mild to moderate erythema (pink)	1B: persistent redness with clinical signs of infection
Category IB: severe erythema (dark pink or red)	2A: skin loss without clinical signs of infection
erythema with loss to skin integrity (category II)	2B: skin loss with clinical signs of infection

Table 4: Differentiation of IAD from pressure injuries^{3, 12}

Criteria	Incontinence associated dermatitis	Pressure injury
Aetiology	Moisture	Pressure and/or shear
Location	Usually over anatomical sites with no bony prominence	Usually over a bony prominence
Shape	Diffuse, often across many superficial areas	Usually limited to a single location
Depth	Partial thickness skin loss (superficial)	Partial or full thickness skin loss
Necrosis	No necrotic tissue	Necrotic tissue may be visible in full thickness wound
Margins	Diffuse	Demarcated
Colour	Erythema (blanchable or non-blanchable) with pink or white surrounding skin	Non-blanchable erythema

- Erythema, lesions may appear bright or dark red^{1,3,5,6,8,11}
- Shiny appearance of the skin³
- Lesions occur over anatomical sites with no bony prominence¹
- Lesions have diffuse and irregular margins^{1, 3, 5, 11}
- Signs of accompanying infection may be present¹
- Blisters may be presents^{3, 5, 6, 8, 11, 13}
- Perilesional regions macerated with a white-yellow colour may be present¹
- Lesions may appear as intermingled red-pink and white-yellow colouring with scaling^{1, 3}
- Hyperpigmentation or hypopigmentation are visible on darkly pigmented skin (e.g. may have purple tone)^{3,5,10,11}
- Either no exudate or clear, serous exudate (“weeping”)^{5,6,11}
- Necrosis will not be present^{5, 11}

Identifying MASD: Assessment tools

Few valid and reliable tools are available for assessing MASD.

Expert reports^{10, 11, 15} identify three tools (first published pre-2007) that have not been formally validated. The *Perineal Assessment Tool*, *Peri-rectal Skin Assessment Tool (PSAT)* and the *Perineal Dermatitis Grading Scale* all focus on

assessment of IAD. The tools include evaluations of skin appearance (level of erythema/colour, extent of skin erosion/integrity), types of irritants (e.g. urine, liquid stool, solid stool), level of exposure and pain experience^{10, 11} (Level 5 evidence).

A diagnostic study¹⁶ reported a tool to evaluate severity of IAD, The *IAD Skin Condition Assessment Tool*. The tool includes evaluations of the presentation of the skin (level of erythema, rash and skin breakdown) at 13 different anatomical locations. The tool was used by 347 wound ostomy and continence nurses to evaluate IAD in four photo-based case studies. Criterion validity and interrater reliability were reported to be high¹⁶ (Level 3e evidence).

Psychometric properties of the *Incontinence-Associated Dermatitis Intervention Tool (IADIT)* are also reported. The tool is used to classify IAD and the risk of the patient by presenting images with descriptors of various severities of IAD.^{15, 17} In a validation¹⁷ of the German version of the tool (*IADIT-D*) conducted in nursing home residents, high interrater reliability is reported (k=0.57 to 1.00 across three domains and k=0.69 for total tool)¹⁷ (Level 3e evidence).

Classifying MASD

The literature search identified expert consensus^{9, 18} and single expert opinion³ sources that proposed systems to categorise MASD and IAD (see Table 3) (Level 5b evidence).

Differentiating MASD from other skin conditions

Differentiation of MASD from other skin condition is important. Evidence on this topic generally focuses on differentiating IAD

from pressure injuries. Expert opinion^{3, 12} suggests that the criteria outlined in Table 3 are important in differentiating IAD from pressure injuries (Level 5 evidence).

CHARACTERISTICS OF THE EVIDENCE

This evidence summary is based on a structured database search combining search terms that describe moisture associated skin damage and assessment. Searches were conducted in EMBASE, CINAHL, Medline, the JBI Library and the Cochrane Library. Only citations published from January 2007 to June 2017 in English were considered for inclusion. The evidence in this summary comes from:

- Observational studies with no control group^{16, 17} (Level 3e evidence)
- Systematic review of expert opinion¹¹ (Level 5a evidence)
- Expert consensus opinion^{1-3, 6, 9, 10, 18} (Level 5b evidence)
- Expert opinion^{4, 5, 7, 8, 12, 13, 15} (Level 5c evidence)

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KEYWORDS

Moisture associated skin damage, incontinence associated dermatitis, peristomal dermatitis, periwound dermatitis, intertrigo, assessment

