

# Prevention and management of moisture-associated skin damage

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# Disclaimer

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- ▶ This session is presented as paid for consultancy work
- ▶ The content of these slides represent my own views and not those of the National Wound Care Strategy or NHS E / I



# Aims

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By the end of the session the attendee should be able to

- ▶ Understand the meaning of MASD
- ▶ Differentiate between the 4 main types of MASD
- ▶ Describe how to assess skin
- ▶ Appreciate how to protect skin



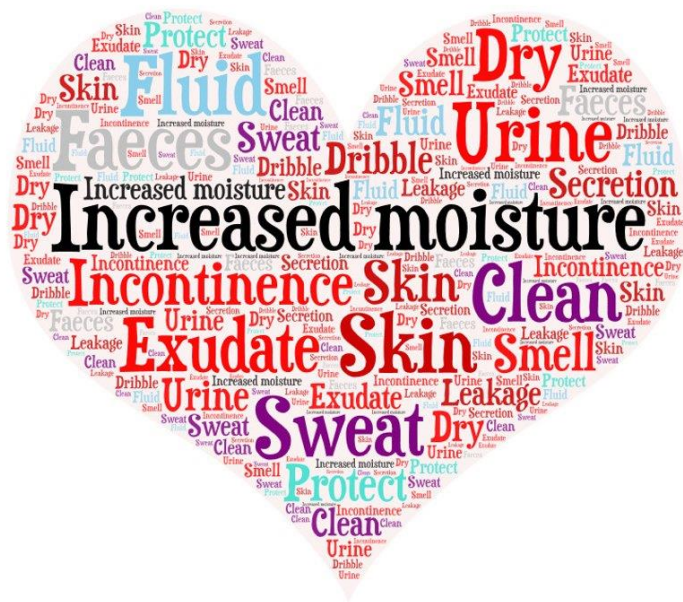
## Love Great Skin?

An increase in moisture levels  
can damage the skin

It's so important to keep skin  
clean and dry.

**MINIMISE** moisture to reduce  
damage

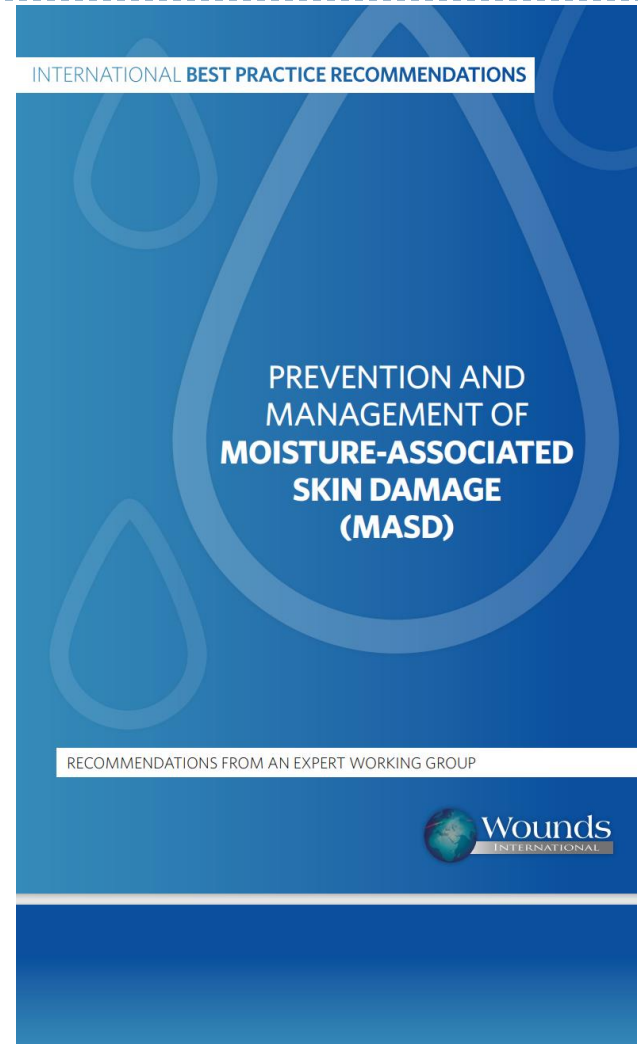
**#Stopthepressure**  
**#aSSKINg**  
**#LoveGreatSkin**



# MASD

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Moisture-associated skin damage (MASD) represents a significant problem and can have a negative effect on patient wellbeing and quality of life.

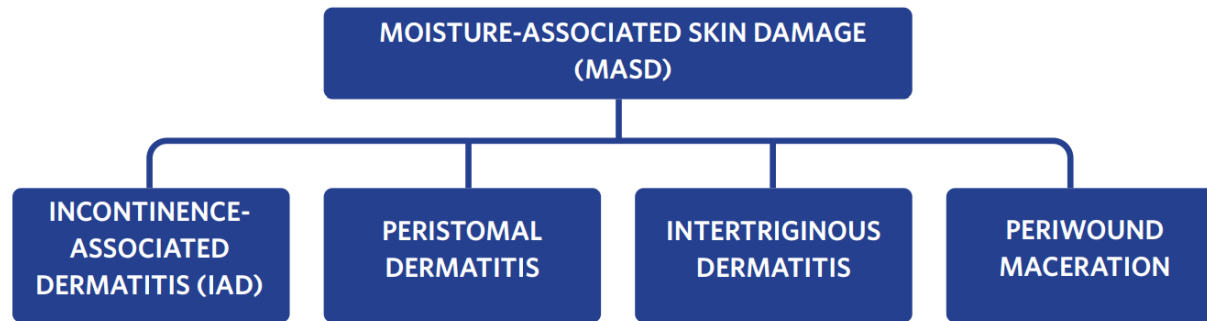


# What is classed as MASD?

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- ▶ 4 key types:
  - ▶ Incontinence-associated dermatitis (IAD)
  - ▶ Peristomal dermatitis
  - ▶ Intertriginous dermatitis (intertrigo)
  - ▶ Periwound maceration.



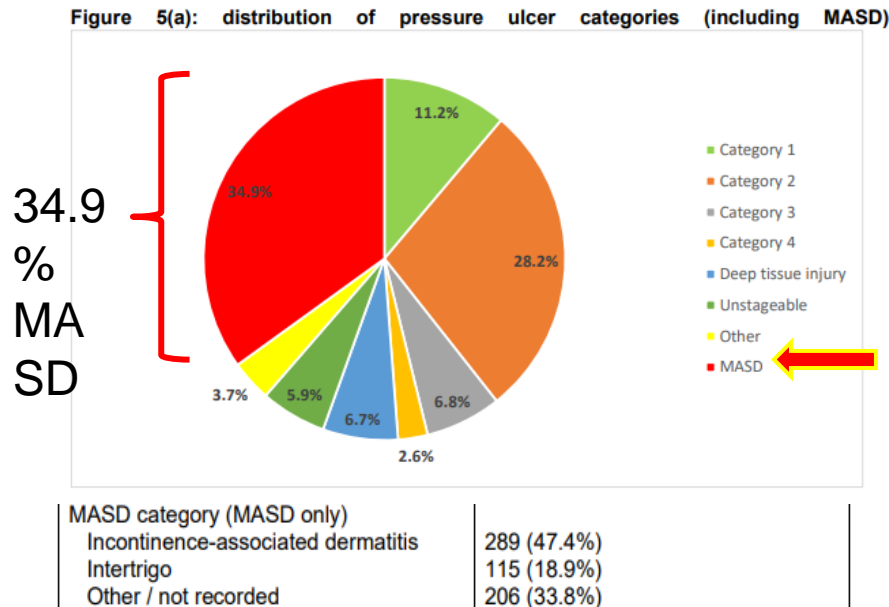


The development of MASD involves more than bodily fluids alone.

Skin damage is attributable to 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 skin flora), and
- mechanical factors such as friction (Gray et al, 2011)

# Is it a big problem?



From an audited population of 10,144 patients from 36 hospitals representing 18 NHS Trusts there were

- 1136 PUs
- 610 episodes of MASD

587 patients were observed to have 1 or more MASDs, corresponding to a prevalence of 5.78%

*Stephenson and Fletcher 2020*



# Terminology

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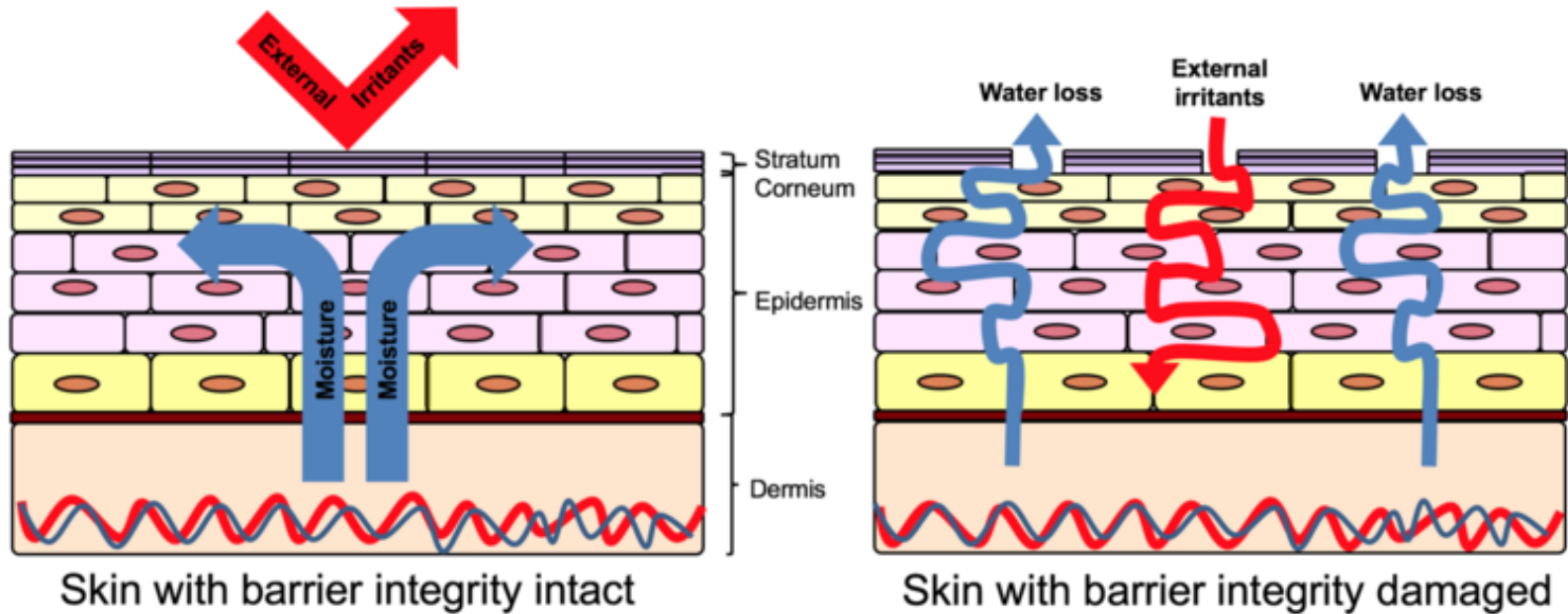
<b>Bulla</b>	A circumscribed lesion > 1 cm in diameter that contains liquid (clear, serous or haemorrhagic), a large blister
<b>Erosion</b>	Loss of either a portion of or the entire epidermis
<b>Excoriation</b>	A loss of the epidermis and a portion of the dermis due to scratching or an exogenous injury
<b>Maceration</b>	An appearance or surface softening due to constant wetting - frequently white
<b>Papule</b>	An elevated, solid, palpable lesion that is ≤ 1 cm in diameter
<b>Pustule</b>	A circumscribed lesion that contains pus
<b>Scale</b>	A visible accumulation of keratin, forming a flat plate or flake
<b>Swelling</b>	Enlargement due to accumulation of oedema or fluid, including blood
<b>Vesicle</b>	A circumscribed lesion ≤ 1 cm in diameter that contains liquid (clear, serous or haemorrhagic), a small blister

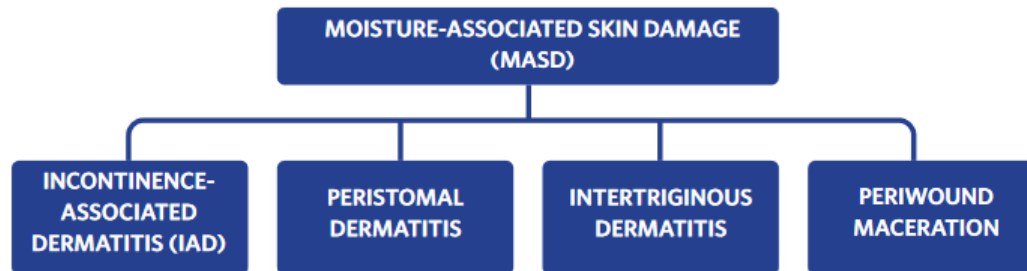
*Beeckman D., et al The Ghent Global IAD Categorisation Tool (GLOBIAD). Skin Integrity Research Group - Ghent University 2017. Available to download from [www.UCVVGent.be](http://www.UCVVGent.be)*

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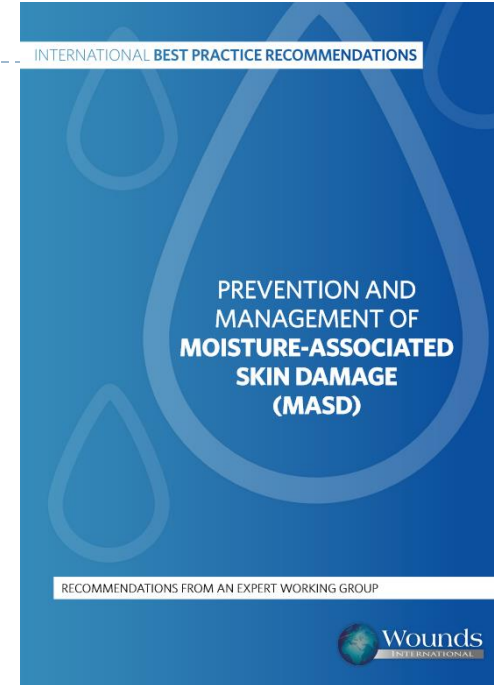


# Why is moisture such a problem?





- Incontinence-associated dermatitis (IAD)
- Peristomal dermatitis
- Intertriginous dermatitis (intertrigo)
- Periwound maceration.



**GLOBIAD**  
Ghent Global IAD Categorisation Tool

THE GHENT GLOBAL IAD  
CATEGORISATION TOOL

Version 1.0 June 2017

**SKINT**  
skin integrity research group  
www.skint.be

**GHENT  
UNIVERSITY**

# Incontinence associated dermatitis

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- ▶ The term incontinence-associated dermatitis (IAD) describes the skin damage associated with exposure to urine, stool or a combination of these in adults.
- ▶ In babies or small children, it is also known as diaper or nappy rash.





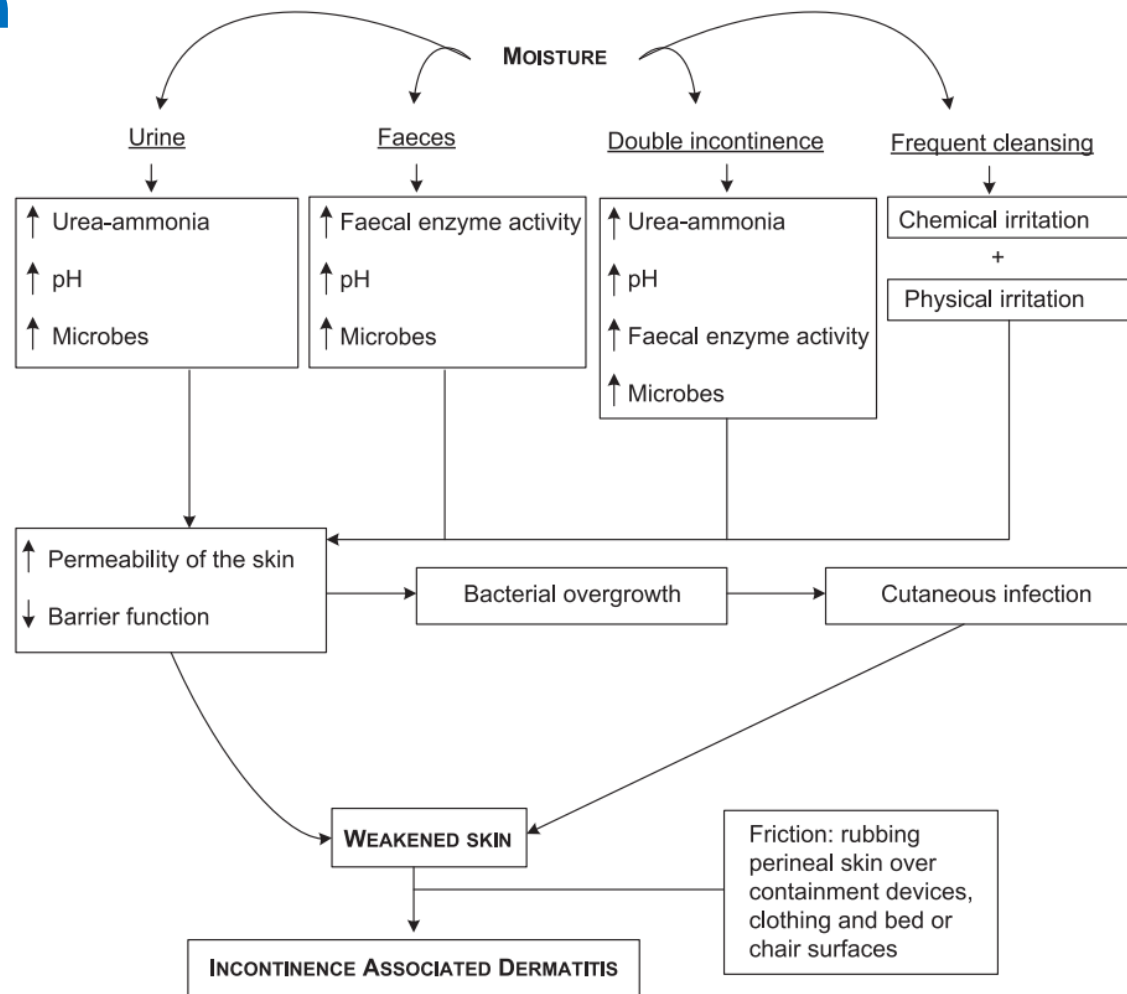
# Causation and risk factors

**Table 2. Examples of causal and indirect risk factors for IAD (adapted from Beeckman et al, 2015)**

Causal	<ul style="list-style-type: none"><li>■ Type of incontinence<ul style="list-style-type: none"><li>- Urine, faeces or both</li><li>- Solid or liquid (liquid stool poses greater risk)</li></ul></li></ul>
Indirect	<ul style="list-style-type: none"><li>■ Use/non-use of diapers</li><li>■ Exposure time</li><li>■ Frequency and volume</li><li>■ Some foods/drugs in urine or stool</li><li>■ Mechanical force (e.g. based on positioning)</li><li>■ Poor skin condition</li><li>■ Type and frequency of washing</li><li>■ Use of occlusive containment products/cleansing</li><li>■ Compromised mobility</li><li>■ Diabetes</li><li>■ Increased age</li><li>■ Psychosocial factors</li><li>■ Diminished cognitive awareness</li><li>■ Inadequate personal hygiene</li><li>■ Medication (e.g. antibiotics, immunosuppressants)</li><li>■ Malnutrition or infrequent/inadequate intake of food or fluids</li><li>■ Smoking</li><li>■ Critical illness</li><li>■ Fever</li><li>■ Low oxygen saturation</li></ul>







# Causation



**Fig. 1** Etiology of Incontinence-associated dermatitis (based on the systematic review by Ref. [6].

# Categorisation of harm

**Table 4. Ghent Global IAD Categorisation Tool (Beeckman et al, 2018)**

Category 1: Persistent redness	Category 2: Skin loss
<p><b>A - Persistent redness without clinical signs of infection</b></p>  <p><b>Critical criterion</b></p> <ul style="list-style-type: none"> <li>Persistent redness</li> </ul> <p><i>A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour.</i></p> <p><b>Additional criteria</b></p> <ul style="list-style-type: none"> <li>Marked areas or discolouration from a previous (healed) skin defect</li> <li>Shiny appearance of the skin</li> <li>Macerated skin</li> <li>Intact vesicles and/or bullae</li> <li>Skin may feel tense or swollen at palpation</li> <li>Burning, tingling, itching or pain</li> </ul>	<p><b>2A - Skin loss without clinical signs of infection</b></p>  <p><b>Critical criterion</b></p> <ul style="list-style-type: none"> <li>Skin loss</li> </ul> <p><i>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.</i></p> <p><b>Additional criteria</b></p> <ul style="list-style-type: none"> <li>Persistent redness</li> </ul> <p><i>A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour</i></p> <ul style="list-style-type: none"> <li>Marked areas or discolouration from a previous (healed) skin defect</li> <li>Shiny appearance of the skin</li> <li>Macerated skin</li> <li>Intact vesicles and/or bullae</li> <li>Skin may feel tense or swollen at palpation</li> <li>Burning, tingling, itching or pain</li> </ul>
<p><b>1B - Persistent redness with clinical signs of infection</b></p>  <p><b>Critical criteria</b></p> <ul style="list-style-type: none"> <li>Persistent redness</li> </ul> <p><i>A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour.</i></p> <ul style="list-style-type: none"> <li>Signs of infection</li> </ul> <p><i>Such as white scaling of the skin (suggesting a fungal infection) or satellite lesions (pustules surrounding the lesion, suggesting a Candida albicans fungal infection).</i></p> <p><b>Additional criteria</b></p> <ul style="list-style-type: none"> <li>Marked areas or discolouration from a previous (healed) skin defect</li> <li>Shiny appearance of the skin</li> <li>Macerated skin</li> <li>Intact vesicles and/or bullae</li> <li>The skin may feel tense or swollen at palpation</li> <li>Burning, tingling, itching or pain</li> </ul>	<p><b>2B - Skin loss with clinical signs of infection</b></p>  <p><b>Critical criteria</b></p> <ul style="list-style-type: none"> <li>Skin loss</li> </ul> <p><i>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.</i></p> <ul style="list-style-type: none"> <li>Signs of infection</li> </ul> <p><i>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/grayish), 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.</i></p> <p><b>Additional criteria</b></p> <ul style="list-style-type: none"> <li>Persistent redness</li> </ul> <p><i>A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour</i></p> <ul style="list-style-type: none"> <li>Marked areas or discolouration from a previous (healed) skin defect</li> <li>Shiny appearance of the skin</li> <li>Macerated skin</li> <li>Intact vesicles and/or bullae</li> <li>Skin may feel tense or swollen at palpation</li> <li>Burning, tingling, itching or pain</li> </ul>



# Management

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- The cause of incontinence should be identified and eliminated
- May be due to a range of factors including
  - ▶ health conditions and
  - ▶ mobility issues
  - ▶ psychological factors
- ▶ This should include evaluation of bladder and kidney function regarding urinary incontinence, and that of the intestine and colon in the case of faecal incontinence (Beele et al, 2017).



# Understanding the cause

## Box 1. Types of urinary incontinence.

**Stress urinary incontinence:** is the complaint of involuntary leakage of urine on effort or exertion, such as sneezing or coughing (Abrams et al, 2002). It occurs when intra-abdominal pressure is raised and the pelvic floor, sphincter muscle and urethral closing pressure are not able to respond or are too weak to prevent leakage. Risk factors include: childbirth, multiple pregnancies, heavy birth weight, interventions during birth e.g. forceps, tears, menopause and obesity.

**Urge urinary incontinence:** is the complaint of involuntary leakage accompanied by or immediately preceded by urgency (Abrams et al, 2002). Symptoms include frequent urination, urgency and nocturia.

**Mixed urinary Incontinence:** is the complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing and coughing (Abrams et al, 2002).

**Voiding symptoms/obstructive incontinence:** any symptoms or obstruction that can cause the bladder to malfunction and usually prevents the bladder from emptying completely i.e. enlarged prostate, faecal impaction, urethral strictures, underlying neuropathies, prolapse. Can present with frequency, urgency, nocturia, incomplete emptying, hesitancy, poor stream, splitting or spraying of stream, terminal dribble or post-micturition dribble. Voiding symptoms/obstructive incontinence may indicate presence of a urinary tract infection.

**Functional incontinence:** when the environment cannot support the individual's continence needs i.e. due to poor mobility, poor dexterity and inappropriate toileting equipment.

Table 1. Causes of faecal incontinence (adapted from Norton and Chelvanayagam, 2004).

Primary problem	Common causes
Anal sphincter or pelvic floor damage	Obstetric trauma, iatrogenic (haemorrhoidectomy, anal stretch, sphincterotomy, gynaecological surgery), idiopathic degeneration, direct trauma or injury, congenital anomaly
Gut motility/stool consistency	Infection, inflammatory bowel disease, irritable bowel syndrome, pelvic irradiation, diet, psychological state such as anxiety
Ano-rectal pathology	Rectal prolapse, anal or recto-vaginal fistula, haemorrhoids or skin tags
Neurological disease	Spinal cord injury, multiple sclerosis, spina bifida/sacral agenesis (usually secondary to constipation)
Degenerative neurological disease	Alzheimer's disease
Impaction with overflow	Immobility
Spurious/overflow diarrhoea	Older person
'Lifestyle' and environmental	Poor toilet facilities, inadequate care, drugs with side effects that affect the gut, frailty and dependence
Idiopathic	Unknown cause

# Containment products

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- ▶ Body worn pads
- ▶ Urinary sheaths, pubic pressure urinals and containment devices
- ▶ Urinary catheters
- ▶ Urinals and absorbent gels
- ▶ Anal plugs
- ▶ Faecal collectors
- ▶ Faecal management systems



# Skin care

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- ▶ Keep the skin clean, dry and well hydrated
- ▶ Use a simple system of skin protection



# Intertrigo

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- ▶ Intertrigo, or intertriginous dermatitis, is a common inflammatory condition of skin folds characterized by moist erythema, malodour, weeping, pruritus, and tenderness.
- ▶ Initiating factors include moisture and friction associated with an absence of air circulation in deep skin folds

This will be covered in the 2<sup>nd</sup> webinar of the series



# Peristomal dermatitis

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- ▶ Peristomal moisture–associated dermatitis is defined as inflammation and erosion of skin related to moisture that begins at the stoma/skin junction and can extend outward in a 4-in radius.
- ▶ The aetiology of peristomal moisture–associated dermatitis is multifactorial: the principal cause is prolonged exposure of the peristomal skin to urine or stool, although perspiration, an external water source (eg, bathing, swimming), or wound drainage also may act as causal factors.
- ▶ Additional factors contributing to the aetiology of peristomal moisture–associated dermatitis are: occlusion, trauma, age, and pouch wear time

# Occlusion, trauma, age, and pouch wear time

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- ▶ Occlusion: by the stoma wafer may result in overhydration of the skin as TEWL is compromised
- ▶ Trauma: removal of the stoma wafer can cause mechanical stripping of the epidermis.
  - ▶ This can also compromise the seal of the stoma resulting in stomal effluent flowing on to the skin.
- ▶ Age: Associated skin changes such as flattening of the rete pegs
- ▶ Pouch wear time: going beyond the recommended wear time may compromise the seal

# Classification and documentation

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- ▶ Although there are several in use - e.g.
  - ▶ Ostomy Skin Tool (Martins et al, 2010),
  - ▶ Ostomy Algorithm (Beitz et al, 2010),
  - ▶ Peristomal Lesion Scale (Menin et al, 2018)
- ▶ there is currently no standardised classification system for peristomal dermatitis or for PMARSI
- ▶ In order to improve care, standardisation is required, therefore documentation of peristomal dermatitis is important.

The purpose of this is to:

- Standardise record-keeping in peristomal skin care
  - Guide future care and improve outcomes
  - Facilitate incident reporting
  - Facilitate research
- 





# Peristomal dermatitis

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## Risk factors

The following factors increase the risk of developing peristomal dermatitis (Hoeflok et al, 2017):

- Abdominal anatomy: creasing of the skin when changing positions (standing, sitting, supine)
- Location of stoma (e.g. in the GI tract)
- Stoma construction, including degree of protrusion and position of the lumen on the abdomen
- Incorrect pouch, changing technique and/or wear time
- Increased perspiration or exposure to external moisture, which may disrupt the ability of the stoma base plate to fix to the skin, allowing effluent to come into contact with skin (e.g. showering, swimming)
- Incorrect values for how much different types of stoma should be spouted for effective management.



Colwell JC et al MASD Part 3: Peristomal moisture – associated dermatitis and periwound associated dermatitis: A consensus *Journal of Wound Ostomy Continence Nurs.* 2011;38(5):541-553

# Assessment considerations

## Assessment Considerations

Barrier	Abdominal Contour	Stoma	Other Considerations
Type (extended vs standard)	Weight gain or loss	Shape	Observe the method used by the patient to remove and replace the pouching system to determine potential involvement of mechanical stripping, inappropriate technique, or improper use of products
Size/shape of aperture	Pregnancy	Location of lumen	Determine whether a change in exercise regimen (eg, swimming and increased perspiration) is affecting solid skin barrier adhesion
Barrier shape (flat or convex)	Parastomal herniation	Color	
Rigidity (flexible or firm)	Time since surgical procedure	Texture	
Presence/amount of erosion at proximal edge (noted upon removal)	Certain disease states	Integrity	
Presence of moisture on back of barrier (noted upon removal)	Growth of pediatric patients	Type (end and loop)	
	Assess abdomen in supine, sitting, and standing positions to determine if skin creases disrupt pouching system adhesion	Mucocutaneous junction	
		Degree of protrusion (eg, if a stoma is flush with the skin, effluent may seep under the solid skin barrier and cause pouching system failure)	

▶ Colwell JC et al MASD Part 3: Peristomal moisture – associated dermatitis and periwound associated dermatitis: A consensus *Journal of Wound Ostomy Continence Nurs.* 2011;38(5):541-553

# Don't forget tracheostomies!

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# Periwound maceration

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- ▶ The production of exudate is vital to the wound healing process, if not managed effectively, exudate can cause damage to the periwound (surrounding) skin
- ▶ Periwound skin is particularly vulnerable to MASD when drainage volume exceeds the fluid-handling capacity of the dressing.
- ▶ Repetitive application and removal of adhesive tapes and dressings may strip away the periwound stratum corneum, precipitating further skin damage (MARSI)



# Maceration and excoriation

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- ▶ Maceration is purely overhydration



- ▶ Excoriation relates to the damage caused by the chemical constituents of the fluid



# Prevention

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- ▶ Good skin care
- ▶ Use of skin protectants
- ▶ Reduce dressing change frequency to minimise MARSI
- ▶ Manage fluid well



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- ▶ In order to manage periwound maceration, the cause of excess exudate should be identified. Any management strategy must then address the factors that are contributing to high exudate levels (and potential periwound damage), as well as physically handling the volume of exudate.

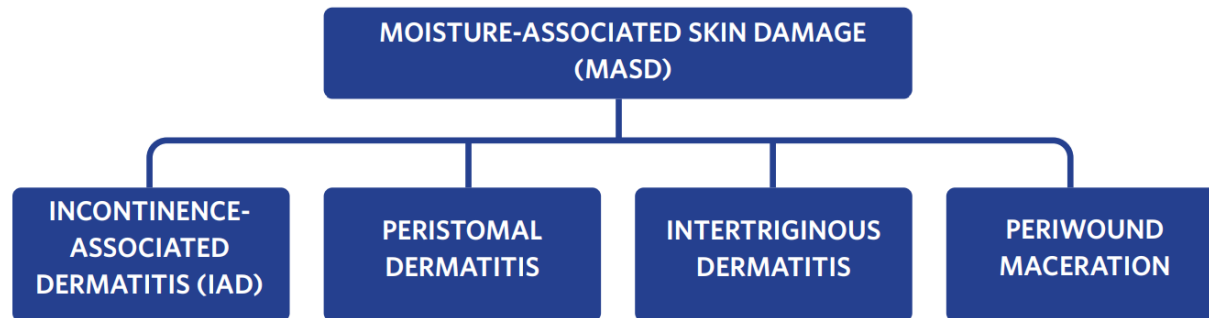




# Skin care and COVID

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- ▶ High number of intensive / critical care patients
- ▶ Increased use of proning
- ▶ Increased use of ventilation / respiratory







*Image courtesy of Irena Pukiova OUH*

**When identifying risk, consider causal, indirect and contextual factors**

**Best Practice Statement**

Peri-tube skin protection may be required, for example in the care of individuals with a tracheostomy, gastrostomy or jejunostomy

**Best Practice Statement**

**Emphasise the importance of maintaining good principles of hygiene for individuals at risk**

**Best Practice Statement**

**Any underlying causes for excess exudate should be identified and addressed**

**Best Practice Statement**

**Consider the use of moisture-wicking textiles specifically indicated for skin fold management**

**Best Practice Statement**

# Conclusions

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- ▶ Emerging evidence now highlights the links between MASD and other skin conditions such as cutaneous infection and pressure ulcers
- ▶ Adopting a holistic, integrated approach, focused on prevention strategies and the importance of skin integrity, can have overall beneficial results and help to break down barriers to effective care in practice
- ▶ Clinicians must be vigilant, both in maintaining optimal skin conditions and in diagnosing and treating early stages of MASD to prevent progression and skin breakdown



# Conclusions

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- ▶ Risk assessment and prevention strategies are of key importance in MASD.
- ▶ Interventions can be taken to protect the skin and prevent MASD, including the use of skin protection products, such as
  - ▶ barrier creams,
  - ▶ liquid polymers, and
  - ▶ cyanoacrylates

These create a protective layer on the skin surface that simultaneously maintains hydration levels while blocking external moisture and irritants



# Conclusions

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- ▶ While MASD can be divided into four main categories, there are common contributing factors.
- ▶ It is not just the moisture that matters, but the chemical composition of the bodily fluids, friction and occlusion.
- ▶ Basic care strategies should focus on
  - ▶ risk assessment,
  - ▶ prevention of mitigating factors, and
  - ▶ employing an appropriate and structured care pathway to maintain skin integrity



# Coming in webinar 3

Liverpool Heart and Chest Hospital **NHS**  
NHS Foundation Trust

## M.I.N.I.M.I.S.E. Moisture (Associated Skin Damage)

What does **M.I.N.I.M.I.S.E.** stand for?

**M**anagement of incontinence – making the right choice at the earliest opportunity:  
pads, urinary catheter, faecal management system

**I**nspect the skin – checking areas that can be affected by urine, faeces, sweat and  
wound fluid

**N**utrition – to optimise

**I**mplement care plan for prevention/management of MASD for those at risk

**M**ore moves – changing the patient's position regularly aids evaporation of moisture  
& cooling

**I**dentify moisture damage correctly: understanding the differences between  
pressure and moisture damage

**S**kin care – skin care protocol for those at risk, cleansing and topical products

**E**ducate – staff who you work with and patients – about actions they can take to  
reduce the risk of MASD



Thank You



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