


Developed by the British Columbia Provincial Nursing Skin & Wound Committee in collaboration with Wound Clinicians from:	
	
<b>Title</b>	<b>Guideline: Assessment, Prevention and Treatment of Moisture Associated Skin Damage (MASD) in Adults &amp; Children</b>
<b>Practice Level</b>	<ul style="list-style-type: none"> <li>• Nurses in accordance with health authority/agency policy.</li> <li>• Clients with moisture-associated skin damage require an interprofessional approach to provide comprehensive, evidence-based assessment, prevention and treatment. This clinical guideline focuses solely on the role of the nurse, as one member of the interprofessional team providing client care.</li> </ul>
<b>Background</b>	<ul style="list-style-type: none"> <li>• Moisture-Associated Skin Damage (MASD) is a general term for skin damage that occurs when the skin is exposed to moisture such as perspiration, urine or feces or both, wound exudate, saliva, mucous fistula, and/or stomal effluent for a prolonged period of time.</li> <li>• MASD is differentiated from Stage 1 and Stage 2 Pressure Injuries (PI) by assessing the location of tissue damage (e.g., perianal skin damage <i>versus</i> a PI over a bony prominence), the wound bed characteristics (edge, colour, odour, and slough) (see Appendix A).</li> <li>• MASD can present as mild, moderate, or severe and can occur in all client age groups:                     <ul style="list-style-type: none"> <li>• mild MASD presents as irritation and inflammation of the skin, and</li> <li>• moderate to severe MASD presents with blistering and erosion and/or denudation of the epidermal layer to the dermis. Secondary fungal or bacterial infection may occur.</li> </ul> </li> <li>• For MASD to occur, other complicating factors in addition to moisture exposure are required. These may include moisture:                     <ul style="list-style-type: none"> <li>• in contact with the skin for a prolonged period of time;</li> <li>• containing chemical irritants (inflammatory substances and/or digestive enzymes);</li> <li>• containing microbial factors (microorganisms); and/or</li> <li>• in combination with friction at the skin surface (mechanical factors).<sup>1</sup></li> </ul> </li> <li>• There are four specific types of MASD.<sup>1</sup> <ul style="list-style-type: none"> <li>• <b>Incontinence-associated dermatitis (IAD-mild, moderate, severe)</b>,<sup>1,3,4,11,35</sup></li> <li>• <b>Intertriginous dermatitis (intertrigo)</b>,</li> <li>• <b>Periwound, peri-tube/drain, and peri-fistula moisture-associated dermatitis</b>,</li> <li>• <b>Peristomal moisture-associated dermatitis</b>.<sup>11</sup></li> </ul> </li> <li>• Clients who are obese, immune compromised, malnourished or live with diabetes mellitus are at greater risk for secondary infection related to MASD.</li> <li>• Skin that is eroded or denuded is usually painful, and at greater risk for damage due to pressure, shear, friction and mechanical stripping (e.g., removal of medical adhesives, tape).</li> <li>• In healthy adults, and as part of the normal aging process, there are renal and hormonal changes that lead to an increase in nighttime urine production and a decrease in functional volume of the bladder. In combination, this predisposes the client to nocturia - the urge to void at night, and urinary incontinence.<sup>57</sup> (see Appendix D)</li> <li>• With advancing age, clients may have detrusor muscle instability. This leads to a decline in bladder volume and heightened sensation that the bladder is full; leading to bladder contractions and an increase in daytime and nighttime voiding frequency.<sup>57</sup></li> <li>• For clients living with Alzheimer's disease, there is a decrease in nighttime secretion of arginine vasopressin (AVP; antidiuretic hormone-ADH) and a reversal of day-night urine production. As a result there is an increased prevalence of nocturia, and both daytime and nighttime urinary incontinence.<sup>57</sup></li> <li>• Fecal incontinence is the inability to control the bowel contents and results in leakage from the rectum. This may present as occasional fecal leakage and/or be accompanied by constipation. Fecal leakage may be partial or a complete loss of bowel control and be accompanied by bloating, gas, diarrhea, and/or constipation.<sup>15,58</sup></li> <li>• If fecal incontinence is chronic, this may be related to chronic diseases, changes to the underlying muscles, and/or nerve damage (e.g., aging, childbirth). Chronic diseases, diabetes</li> </ul>

mellitus, multiple sclerosis, surgical procedures (e.g., hemorrhoid removal), and clients with dementia or Alzheimer's' disease are at greater risk of nerve damage.<sup>15,58</sup>

- Incontinent garments/products may be chosen to help manage urine and/or fecal incontinence. Product use increases the patient's hygiene and dignity, yet also increases the risk of IAD. When wearing a brief/pad insert, urinary and fecal enzymes are trapped next to the skin and may cause epidermal damage. Fecal enzymes are more irritating because of a higher pH.<sup>30</sup> Caution should be used when considering incontinence products for client with fecal incontinence, "as the use of one or more products may lead to development of skin irritation; there is no single product designed to absorb feces or eliminate exposure of the skin to solid wastes"<sup>51,p.14</sup> (see Appendix B).
- Prevention of MASD is always preferable to the treatment of MASD. Research supports the following prevention measures for clients who have been assessed as 'at-risk' for some type of MASD:<sup>3,9,33</sup>
  - Adopt a structured skin care program that
    - removes irritants from the skin,
    - maximizes the skins intrinsic moisture barrier function, and
    - protects the skin from further exposure to irritants.
  - Use devices for products that control or divert sources of excessive moisture, e.g., wound exudate, perspiration, urine and/or feces.
  - Use products that wick moisture away from 'at-risk' skin.
  - Treat all secondary infections (bacterial and fungal).
  - Initiate prevention strategies to reduce or eliminate skin-on-skin contact and friction.

#### **Incontinence-Associated Dermatitis (IAD)**<sup>2,3</sup>

- Commonly used terms for IAD include: diaper rash, diaper dermatitis, irritant dermatitis, perineal rash/dermatitis, and others.<sup>35</sup>
- IAD is defined as mild, moderate and severe.
- Exposure to urine and/or feces is often related to incontinence (for various types see definitions).
- Urinary and fecal incontinence are not related to aging and the cause/etiology should be investigated in all client age groups.
- Urinary and/or fecal incontinence are related to multiple factors and require a comprehensive assessment and individualized client care plan.
- Feces, especially when it is loose, contains active digestive enzymes and has an alkaline pH that causes severe skin irritation (e.g., loose stool may be related to laxatives, antibiotic and/or medication use). Therefore, fecal incontinence or dual (urine and/or feces) incontinence is more likely to cause IAD than urinary incontinence alone.
- Bacterial and fungal infections are more common with fecal and/or dual incontinence than with urinary incontinence alone.
- The risk for IAD is affected by the frequency and duration of the incontinence. While pad inserts/pull-up briefs are designed to wick away and neutralize urine they **do not** wick away or neutralize feces. Consequently, they occlude the skin, trap heat, moisture and feces against the skin making it more susceptible to friction and pathogen damage.<sup>7</sup>
- Research indicates that disposable products are more effective than reusable products for decreasing the incidence of moisture-related skin problems due to the gelling or locking away mechanism of the polymer fibers. As well they may be acceptable to those who wear them.<sup>6,17</sup>
- Briefs, pad inserts, laundered or disposable underpads (soaker pads) trap heat, perspiration and humidity against the skin's surface affecting skin lipid levels leading to increased permeability to bacteria.
- Prolonged contact of the feces with the urethra increases urinary tract infections.
- Higher skin pH (alkaline) is correlated with increased transdermal water loss reducing the skin barrier function. Prolonged skin contact with moisture triggers the inflammatory response increasing transdermal water loss and decreasing barrier functions. This results in infiltration of microorganisms and irritants through the stratum corneum.<sup>2,3,4,50</sup>

#### **Intertriginous Dermatitis (Intertrigo)**<sup>41</sup>

- Intertrigo can occur in any skin fold, but commonly occurs in the axilla, under pendulous breasts, abdominal pannus, in the inguinal folds and/or between the toes. The resulting warm moist

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	<p>environment encourages bacterial and fungal colonization, overgrowth and infection.</p> <ul style="list-style-type: none"> <li>• Risk factors for intertrigo include excess perspiration, obesity, immobility, and diabetes mellitus and/or poor skin hygiene (see Definitions).</li> </ul> <p><b>Periwound, Peri-tube/drain, or Peri-fistula Moisture-Associated Dermatitis</b> <sup>9,10</sup></p> <ul style="list-style-type: none"> <li>• Wound exudate, drainage from around tubes, drain sites, or fistulas when in prolonged contact with periwound skin lead to maceration and possible wound enlargement.</li> <li>• Wounds that typically have larger exudate amounts include infected wounds, wounds undergoing autolysis, fungating wounds, burns, lymphedema and venous leg ulcers.</li> <li>• Wound dressings saturated with drainage and in prolonged contact with the periwound skin may contribute to periwound skin damage or maceration.</li> <li>• Peri-tube/drain drainage leading to MASD occurs when output cannot be managed by the tube/drain insitu, or the drainage is bypassing the tube/drain and coming into contact with the skin.</li> <li>• Fistulas may be simple or complex and are classified according to location, structures involved (colon, vaginal, urinary), and volume of output (high, moderate, or low). This output is in prolonged contact with the skin contributes to skin damage and maceration.</li> </ul> <p><b>Peristomal Moisture-Associated Dermatitis</b> <sup>11,43</sup></p> <ul style="list-style-type: none"> <li>• Caused by stomal exudate in prolonged contact with the peristomal skin leading to maceration and possible ulceration.</li> <li>• Risk factors for peristomal dermatitis include: stoma type, (ileostomy, colostomy, urostomy), stoma location, peristomal contours and stoma height, pouching system fit and wear time, effluent type (urine or loose or solid feces), volume, time since surgery, body mass index (BMI) and age (&gt; 65 years).</li> <li>• Fecal effluent from an ileostomy is more damaging to the skin, than urine from a urostomy, or stool from a colostomy because of the higher concentration/volume of digestive enzymes.</li> </ul>
<p><b>Indications</b></p>	<p>For prevention of MASD in all client groups.</p> <p>For use with clients exhibiting signs and symptoms of MASD (any type).</p> <p>The MASD document is colour-coded to aid in finding assessment, prevention and treatment of the 4 key types:</p> <ul style="list-style-type: none"> <li>• <b>Incontinence-Associated Dermatitis (IAD)</b></li> <li>• <b>Intertriginous Dermatitis (Intertrigo)</b></li> <li>• <b>Periwound, Peri-tube/drain, or Peri-fistula Moisture-Associated Dermatitis</b></li> <li>• <b>Peristomal Moisture-Associated Dermatitis</b></li> </ul>
<p><b>Definitions</b></p>	<p><b>Bowel (Fecal) Incontinence</b> - Occurs with involuntary passage of stool and may be related to medications, disease processes or cognitive changes. May be accompanied by diarrhea, constipation, bloating, and gas.</p> <p><b>Bristol Stool Chart</b> - A medical aid designed to classify the forms of human stool into 7 types or categories.</p> <p><b>Children</b> - Clients are considered children if they are 17 years and under.</p> <p><b>Client</b> - Clients are considered to be recipients of care: community - client, residential care -resident, and acute care - patient.</p> <p><b>Client/Family</b> - Two or more individuals who come together for mutual aid. Families are self-defined, and family is 'who the client says their family is'; this is individualized.<sup>55</sup></p> <p><b>Clostridium difficile (C difficile)</b> - A Gram positive, spore forming anaerobic bacillus that is a known cause of diarrhea. It forms spores that are resistant to destruction making environmental contamination, dirty equipment and inadequate hand hygiene potential modes of transmission. <i>C difficile</i> causes significant morbidity and mortality.</p> <p><b>Containment garments/products</b> - Products are used to manage urinary, fecal incontinence or both. Incontinence garments/products are classified as: disposable briefs with liners, reusable briefs with liners, disposable underpads, and reusable underpads. Products are used to manage urinary incontinence, fecal incontinence, or both. (see Appendix B)</p> <p><b>Crusting technique</b> - A procedure where a layer, or more, of stoma powder (antifungal or silver based powder) and alcohol-free skin preparation are used to create a crust to protect excoriated or denuded skin.</p>

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**Cutaneous Candidiasis** - An overgrowth of *Candida* causing a fungal infection. It is characterized by a bright to dull red central area and irregular scaly borders with peripheral red vesicles often called satellite lesions. It causes itching, burning, erythema and pain and may be associated with MASD.

**Denudation** - A common manifestation of MSD characterized by epidermal and dermal loss resulting in a partial thickness wound. This is a common manifestation of severe MASD. It may begin with islands of eroded skin and coalesce to a large volume denudation in severe cases. It has a distinct, effusive irregular perimeter of damage and may be referred to as erosion. Impairs skin tolerance to other forms of damage such as pressure, shear and mechanical stripping.

**Emollient moisturizer** - A moisturizer designed to promote moisture barrier function by replacing intercellular lipids, filling the spaces between rough or peeling skin cells (smoothing the skin surface) and slowing trans epidermal water loss from the skin. They are recommended for MASD treatment. They hydrate the skin by contributing to the stratum corneum layer (see Appendix B).

**Erosion** - A term used interchangeably with denudation.

**Excoriation** - The loss or stripping of the epidermal layer, usually in the perineal/buttocks areas, from the presence of moisture or caustic substances.

**Fecal incontinence (FI)** - FI has been defined in various ways. For example:

- **Complete FI** - Involuntary passage of gas, liquid, and solid stool; or
- **Partial FI** - Leakage of gas and liquid stool, and continent for solid stool; or
- **Seepage and soiling** - Leakage of small amounts of stool between bowel movements in a client that is normally continent of stool and gas and able to delay defecation.

**Fistula** - An abnormal track connecting a hollow organ to the skin surface or wound bed or to another organ.

**Friction** - A mechanical force that results in the loss of protective layers of skin when repeated movements occur over two surfaces such as bedding (e.g., heels,, elbows), creating localized heat and risk of abrasions. Skin on skin friction may also cause damage when moisture is involved.

**Humectant moisturizer** - Moisturizers that attract moisture to the skin. These moisturizers are recommended for the treatment of dry skin but *are not* recommended for the treatment of MASD because in this situation the skin is exposed to excess moisture.

**Incontinence associated dermatitis (IAD)** - Skin damage associated with exposure to urine and/or feces or perspiration.

- **Mild IAD** - "Refers to light redness of the intact skin and the client experiences mild discomfort;
- **Moderate IAD** - Refers to medium redness of the skin, the skin is peeling or flaking, small redness of partial-thickness skin damage and or small blisters are evident. Client may experience pain and discomfort;
- **Severe IAD** - Causes dark or intense redness and rash, with deeper skin peeling or larger areas of erosion, large blisters, weeping skin, and pain"<sup>35,p.8.</sup>

Commonly occurs in clients with urinary and/or fecal incontinence and may present on the buttocks, or as a linear wound in the buttock cleft, inguinal folds, scrotum, labia and inner thighs. It may be associated with secondary bacterial and/or fungal infections.<sup>1,2,3,11,35</sup>

**Intertriginous dermatitis (Intertrigo - ITD)** - Present as itching, burning, erythema, maceration, and noted odour between skin folds in the groin, axilla, under pendulous breasts and between the toes. It is caused by the prolonged interaction of moisture and friction. It may progress to erosion, exudation, crusting and linear cracks in the skin with secondary infection if not treated. Is more common in those with diabetes, obesity or poor hygiene.

**Maceration** - An overhydrating and softening of the skin caused by prolonged exposure to moisture. Macerated skin tends to be paler than surrounding skin and visibly moist with a wrinkled appearance. It is not usually associated with denudation/erosion.

**Moisture Associated Skin Damage (MASD)** - Diffuse or irregular areas of skin irritation, inflammation and erosion from repeated or sustained exposure to moisture from incontinence (urinary, fecal or both), wound exudates, fistula or ostomy effluent, and perspiration. Moisture related lesions are partial thickness wounds and may be free from necrosis as opposed to pressure damage.

**Moisture wicking fabric** - Knitted polyurethane-coated polyester fabric impregnated with a silver compound. The fabric wicks excess moisture from the skin fold to keep the skin dry. The silver-impregnated formulation provides effective antimicrobial action for up to 5 days.

**Nocturia** - The need to wake up in the nighttime and pass urine. In adults over the age of 30, one in three (1:3) will get up to the bathroom twice and this increases as clients age.

**Pain Scales** - Pain is a multidimensional assessment, including physical, emotional, and functional domains. Pain assessment tools have been designed for various age groups and conditions:

- **CRIES Pain Scale** – Used by the neonatal clinician to rate the client's pain by assessing crying, if the client requires oxygen greater than 95% (percent), noting increasing vital signs, facial expression, and sleeplessness.
- **FLACC** - Face, Legs, Arms, Cry, and Consolability is a behavioral pain scale used for the newborn to age 3 year old client (based on nursing judgment).
- **Non-Communicative Patient's Pain Assessment Instrument (NOPPAIN)** - Used to record the clinician's observations and rating of pain behaviors in the client with dementia.
- **Numeric Rating Scale (NRS)** - Involves asking the client to rate their pain from 0-10 (0 = being no pain and 10 = worst possible pain).
- **Pain Assessment in the Advanced Dementia Scale (PAINAD)** - Used to rate pain for the client living with advanced dementia; rates the client's pain after clinician observation of five minutes before scoring; the client may be observed at rest, during a pleasant activity, during care-giving, or after administration of pain medication.
- **Visual Analog Scale (VAS)** - Consists of a scale with face images depicting extremes of pain from no-pain to worst pain.
- **Wong-Baker FACES Pain Rating Scale** - A visual rating scale that asks the client to choose the face on the scale that best depicts the pain they are experiencing. The client rate their pain from 0 = does not hurt, to 10 = hurts as much as you can imagine.

**Panniculus (pannus)** - Excess adipose tissue and skin, especially in the lower abdominal region commonly occurs in association with morbid obesity and may be significantly increased following successful massive weight reduction.

**Peri-fistula moisture associated dermatitis** - Inflammation and denudation of the skin adjacent to the fistula, secondary to the corrosive nature of the effluent (e.g., colo-cutaneous - colon to skin; entero-cutaneous - small intestine to skin; colo-vesical fistula [between the bowel and bladder that may erode and drain to the skin level]).

**Peri-tube/drain moisture associated dermatitis** - Inflammation and denudation of the skin adjacent to the tube/drain, secondary to the corrosive nature of the effluent (e.g., chest, nasogastric, biliary tube; Penrose drain).

**Peri-wound moisture associated dermatitis** - Inflammation and denudation of the skin adjacent to the wound edge (within 4 cm) secondary to exposure of wound exudate.

**Peristomal moisture associated dermatitis** - Inflammation and denudation of the skin adjacent to the stoma or skin junction and extends outward radius, related to exposure to stomal effluent.

**pH** - A measure on a scale from 0-14 of the acidity or alkalinity of a solution, with 7 being neutral, greater than 7 is more alkaline and less than 7 is more acidic; the skin's natural pH level is 5.3-5.9.

**Potable water** - Tap water that is deemed safe to drink by local water authorities.

**Pressure Injury** - Is "localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue".<sup>35,p.1</sup>

**Product Information Sheet (PISheet)** - Documents developed by the Provincial Nursing and/or Interprofessional Skin & Wound Committee and include directions for the use of skin and wound care products. PISheets are found on the British Columbia Patient Safety and Quality Council's Connecting Learners With Knowledge website. <https://clwk.ca>

**Skin protectants** - Sometimes called moisture barriers or occlusive moisturizers. They occlude the skin to protect against moisture and penetration by chemical irritants and pathogens contained in

	<p>urine, stool and exudate. Protectants can be petrolatum, dimethicone/silicone, zinc oxide-based, or acrylate skin film barrier spray or wipes. They vary in their ability to maintain skin hydration and protect from maceration (see Appendix B).</p> <p><b>Stratum Corneum</b> - The stratum corneum is the outermost of the 5 layers of the epidermis and is largely responsible for the barrier function of the skin.</p> <p><b>Urinary Incontinence (UI)</b> - This is a symptom inability to access toileting, an effect of acute illness, underlying urinary infection, and/or medical condition or diseases.<sup>15,45,58</sup></p> <ul style="list-style-type: none"> <li>• Transient: Sudden onset of incontinence that may be caused by reversible symptoms (e.g., acute illness).</li> <li>• Functional: Incontinence caused by factors outside of the urinary tract e.g., may be due to difficulty or inability of the client to access toileting facilities, or inability of health care professional to toilet the client in a timely manner. Stress: Refers to the immediate involuntary loss of urine with an increase in intra-abdominal pressure (e.g., jogging, lifting heavy objects, coughing, sneezing, or laughing).</li> <li>• Urge: Refers to the sudden involuntary contraction of the bladder muscle and is associated with a strong desire to void, and the inability to delay voiding long enough to access toileting facilities (e.g., there is usually a small amount of urine loss).</li> <li>• Overflow: Refers to leakage of urine without the urge to void, or the inability to void normal volumes (e.g., the urine amount that exceeds the bladder's capacity leaks out, but the bladder remains full).</li> <li>• Reflex: Involuntary loss of urine with diminished or no sensation of urge, voiding, or bladder fullness (e.g., caused by changes to the central nervous system-stroke)</li> <li>• Total: Continuous unpredictable loss of urine without distention or awareness of bladder fullness (e.g., three types - overactive bladder, mixed, and functional incontinence).</li> <li>• Overactive bladder: Involuntary loss of urine associated with bladder spasms, and a strong desire to void in combination with the inability to delay voiding long enough to access toileting facilities. This occurs without any warning especially at night.</li> <li>• Mixed: A combination of stress and urge incontinence.</li> </ul>
<p><b>Related Documents</b>  <a href="http://www.clwk.ca">www.clwk.ca</a></p>	<p><a href="#">Guideline Summary: Prevention and Treatment Interventions for MASD</a>  <a href="#">Teaching Resource: How to Define Incontinence Associated Dermatitis</a>  <a href="#">Guideline: Prevention of Skin Breakdown due to Pressure, Friction/Shear &amp; Moisture</a>  <a href="#">Guideline: Wound Bed Preparation</a></p>

**Assessment of Moisture-Associated Skin Damage (MASD) & Determination of Treatment Goals**

**Assessment**

1. Assess for Client Concerns
  - a. Client/family level of understanding about MASD and related risk factors.
  - b. Impact of MASD on client's daily life.
  - c. Social and financial concerns affecting treatment and the availability of support systems to address these concerns.
  - d. Emotional, cognitive, behavioural or mental health concerns affecting MASD treatment and the availability of support systems to address these concerns.
  - e. Impact of client's current environment on care.
  - f. Client/family preferences for MASD prevention strategies, treatment of skin damage, management of risk factors and their goals for care.
  - g. Acknowledge culture and traditions.
  - h. Client/family ability and motivation to comprehend and participate in the treatment plan.
  
2. Assess for Risk Factors for Developing MASD
  - a. Advanced age.
  - b. Medications that interfere with healing, affect continence or alter stool consistency including but not limited to non-steroidal anti-inflammatory drugs (NSAIDs), anti-neoplastics, systemic

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- corticosteroids, antibiotics, laxatives, antiarrhythmics, antihypertensives, anticholinergics and diuretics.
- c. Medical conditions including diabetes mellitus, neuromuscular conditions that impact bowel or bladder function (e.g., constipation, spinal cord injury, stroke, Multiple Sclerosis, Parkinson's disease) autoimmune diseases, renal disease, organ failure, irritable bowel syndrome, inflammatory bowel disease, ischemic bowel, diverticular disease, venous stasis, lymphedema, rectal or pelvic organ prolapse, cancer, radiation enteritis, depression/anxiety, edema, colon resection and palliative/end of life stage.
  - d. In children, common MASD risk factors include congenital anomalies with impaired sphincter tone - spina bifida, corrective colorectal surgery as in Hirschsprung disease, or genitourinary and/or pelvic surgeries such as imperforate anus. As well, malabsorption syndrome, inflammatory bowel disease, or short bowel syndrome from prematurity of birth.<sup>34</sup>
  - e. Incontinence associated dermatitis (IAD) risk includes urine and/or fecal incontinence; use of incontinence garments/products; and or lack of access to toileting facilities.
  - f. Intertriginous dermatitis (intertrigo) risk includes diabetes mellitus, urinary and/or fecal incontinence, obesity, skin folds, hyperhidrosis, poor hygiene patterns, drooling (infants, children and adults) and/or sepsis.
  - g. Periwound, peri-tube/drain, and peri-fistula MASD risk includes presence of a wound (e.g., diabetes, venous, pressure injuries, fungating and burns); presence of tubes, drains, and fistula management.
  - h. Peristomal MASD risk includes presence of a stoma (all types); skin folds underneath the pouching system; length of time pouching system is worn; degree of stomal protrusion; moisture and perspiration management related to showering, swimming, and activity.
  - i. Oxygenation status of the skin and underlying tissue, e.g., chronic obstructive pulmonary disease (COPD), heart failure (HF), anemia.
  - j. Impaired nutritional status:
    - i. Inadequate oral intake e.g., poor appetite, prolonged nothing by mouth (NPO), clear fluid or full fluid diet.
    - ii. Inadequate enteral (intake/output balance) or parenteral nutrition infusion.
    - iii. Inadequate fluid intake e.g., dehydration as evidenced by poor skin turgor, constipation, decrease in urinary output, dark urine output or lab values.
    - iv. Assess caffeine fluid intake.
    - v. Underweight status, unintended weight loss or overweight/ obesity; complete a malnutrition screening tool as per agency policy.
    - vi. Difficulty swallowing, biting/chewing or self-feeding.
    - vii. Altered gastrointestinal function as evidenced by nausea, vomiting, diarrhea or constipation.
    - viii. Altered nutrition related lab values e.g., poorly controlled blood glucose, altered protein/albumin.
    - ix. Food choices related to psychosocial/cultural factors and client preferences.
    - x. In the palliative, end-of-life population provide nutrition as per client preferences.
  - k. Inability to mobilize, transfer and toilet self independently.
  - l. Lifestyle factors such as smoking history (and motivation to quit) and substance use.
  - m. Current skin care practices and ability to manage own hygiene needs e.g., obesity - may be unable to manage hygiene of lower body.
  - n. Presence of cognitive impairment and impact on functional ability.
  - o. Current use of physical restraints and rationale for restraint use.
  - p. Current use of a microclimate management device and/or pressure redistribution device, if present.

3. Complete a Skin Assessment
  - a. Inspect all skin folds and where 'skin touches skin' at least daily, if possible. Describe the location, the size of the damaged area, the appearance of the skin e.g., maceration, erythema, blistering, and erosion. Maceration may appear as white, moist, or wrinkled skin.
  - b. Position the client to allow for visualization of the skin, and assess the following skin areas:
    - Occiput and neck folds.
    - Face and around oral cavity (drooling)
    - Axillae and under breasts.
    - Perineal/peri anal areas (labia, scrotum) and inguinal skin folds.
    - Buttocks and gluteal cleft.
    - Inner and posterior thighs.
    - Abdominal and leg folds.
    - Panniculus, all large and deep skin folds, and areas of increased tissue weight.
    - Ankle folds and between the toes.
    - Around/under medical related devices masks, splints, braces, or restraints.
    - Skin around wound, tube/drain, fistulas, and stomas.
  - c. Assess for odour - malodour may indicate a bacterial or fungal skin infection.
  - d. Assess for allergies or sensitivities to skin products.
4. Differentiate between MASD and Stage 1, Stage 2 Pressure Injuries (see Appendix A).
  - a) MASD and Pressure Injuries can occur simultaneously.
  - b) Determine the difference between MASD and Stage 1 and 2 pressure injuries for treatment plans.
  - c) Consult with a Wound Clinician if unsure whether skin damage is MASD and/or a pressure injury as treatment goals are based on etiology (cause).
5. Assess for **Incontinence Associated Dermatitis (IAD)**
  - a. Assess for presence of urinary incontinence.
    - i. Determine the type of urinary incontinence (see Definitions).
    - ii. Assess the risk of fecal constipation as it may cause urinary urgency, frequency and incontinence.
    - iii. Current toileting program and effectiveness.
    - iv. Events associated with the onset of urinary incontinence (e.g., urinary tract infection-UTI).
    - iii. Client awareness of urge to void and ability to delay urge.
    - iv. Duration, frequency and volume of incontinent urine and continent voiding.
      - Frequency and volume are based on the number (#) of undergarment, brief/pad insert and linen changes and the amount of incontinent urine present with each change.
      - Use of external collection devices
        - External urinary pouch
        - Condom catheter pouching system
      - Use of containment products, briefs/pad inserts and the frequency of emptying or product changes.
      - Use of internal collection devices (e.g., urinary catheter)
  - b. Assess for presence of fecal incontinence
    - i. Current toileting program and effectiveness.
    - ii. Events associated with the onset of fecal incontinence (e.g., presence of fecal pathogens *C difficile*).
    - iii. Client awareness of urge to defecate, and ability to delay urge, if present.
    - iv. Assess stool consistency and frequency with every episode (e.g., Bristol Stool Chart).
    - v. Duration, frequency, and volume of incontinent stools.



- Frequency and volume are based on the number (#) of undergarment, brief/pad insert, and linen changes and the amount of incontinent feces present with each change.
  - Use of external collection devices (e.g., condom catheter system)
  - Use of containment products, briefs/pad inserts and the frequency of emptying or product changes.
  - Use of internal collection devices (e.g., fecal management system)
- vi. Consult Wound Clinician, Physician/NP for a prevention plan for more than 3 liquid/loose stools in 24 hours.
6. Assess for **Intertriginous Dermatitis (Intertrigo - ITD)**
- a. Assess for itching, burning, redness, or erythema between opposing skin surfaces, and in all skin folds (e.g., inframammary, axillary, and inguinal areas; abdominal and pubic panniculi).
  - b. Assess for cause and evidence of excessive sweating.
7. Assess for **Periwound, Peri-Tube/Drain, and/or Peri-fistula Skin Damage**
- a. Assess wound and periwound skin (Link to Wound Assessment and Treatment Flow Sheet):
    - i. The periwound skin for reddened, pale, boggy, painful, or evidence of denuded skin.
    - ii. Wound assessment includes colour, consistency, odour, and amount of exudate.
    - iii. The presence of excessive edema related to venous insufficiency, lymphedema or organ failure (heart, renal), with or without evidence of weeping skin.
    - iv. Current dressing, including dressing frequency, method of application, and evidence of leakage.
    - v. Additional products being used to protect periwound skin e.g., barrier film, hydrocolloid, dimethicone/silicone, including frequency and method of application.
  - b. Assess skin around/under peri-tube/drain:
    - i. The size, type, and location of all tubes/drains and securement devices.
    - ii. For evidence and characteristics of leakage.
    - iii. For the presence of skin irritation and/or excoriation.
    - iv. Current peri-tube dressings and/or skin protection, including frequency and method of application.
    - v. Current peri-drain dressings and/or skin protection, including frequency and method of application.
  - c. Assess skin around fistula and peri-fistula:
    - i. The type and anatomical location of the fistula (e.g., stomatized).
    - ii. The size and number of openings, and location(s) of the fistula(s).
    - iii. For evidence and characteristics of drainage - volume of output, high versus low.
    - iv. For the presence of skin irritation or excoriation.
    - v. Current dressings and/or skin protection, including frequency and method of application.
8. Assess for **Peristomal Skin Damage** (colostomy, ileostomy, or urostomy)
- a. Ostomy type, location on the abdomen and length of time since surgery.
    - i. Note type of surgical procedure (e.g., urinary or fecal diversion).
  - b. Stoma characteristics: appearance (oval, round), edema, and colour.
  - c. Stoma protrusion, flush (level with the skin), or retracted (stoma below skin level).
  - d. Stoma position and stoma lumen note the direction of effluent drainage.
  - e. Amount and type of ostomy effluent (e.g., stoma output).
  - f. Abdominal contours while the client is in a sitting, lying or standing position (e.g., stoma in skin folds).
  - g. The pouching system being used: 1- piece, 2- piece and barrier type (flat or convex).
  - h. The usual length of wear times of the pouching system and any current issues.

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- i. Ostomy pouching system and accessory products in use, including company/product names and product numbers; describe the frequency of pouching system changes. Describe any leakage or other issues with the pouching system.
- j. Peristomal skin integrity including location, colour, shape, size and distribution of any skin damage.
- k. Peristomal skin care routine (ability to wash and dry skin).
- l. Client or caregiver ability to empty, remove, and change the pouching system, and additional products used (powder, paste, rings).

9. Assess for Pain

- a. Type, location, frequency and quality of discomfort, burning, itching, tingling or pain occurring with MASD or as a result of treatment.
- b. Pain severity using client self-report, observation of nonverbal cues and/or a pain scale, for examples see Pain Scale definitions.
- c. Current analgesic regimen and its effectiveness.
- d. Onset and duration of discomfort and precipitating/alleviating factors.
- e. Impact of discomfort, burning or pain on function, sleep and mood.
- f. Autonomic dysreflexia and/or increased spasticity in clients with a spinal cord injury.
- g. Non pharmacological measures to alleviate pain, discomfort or burning.

10. Assess for Infection

- a. Monitor for *cutaneous fungal* infections in skin areas exposed to excess moisture. Fungal (candida) infections present with an erythematous, shiny base with an irregular scaly border and satellite macules/papules. The area may burn, feel itchy and be painful. There may be an odour present after cleansing.
- b. Monitor for *cutaneous bacterial* infections in all skin areas exposed to excess moisture. Bacterial infections present as blistering, weeping skin with progressive erythema and may be burning, itchy and painful. There may be an odour present after cleansing.
- c. Monitor for folliculitis in areas where a pouching system is used.
- d. For clients on antibiotics, monitor stools for signs and symptoms of *fecal* pathogens such as *C difficile* (clients on antibiotics are at greater risk for *C difficile*).
- e. For clients who are incontinent, especially those with a urinary tract infection, monitor irritated or broken skin for signs of skin infection.

11. Investigations (where available), based on results from the client assessment could include:

- a. Referral for glycosylated hemoglobin (HgA1c) and blood glucose if recent results are not available and the client has a diagnosis of diabetes mellitus.
- b. Consult with Physician/NP for investigations related to urinary tract, fecal and skin infections.

**Determine Prevention Strategies and/or Treatment Goals**

1. Prevention strategies/interventions are determined based on the:

- a. The client's overall assessment data.
- b. Type and severity of MASD.
- c. Ability to modify or eliminate client risk factors.
- d. Client/family willingness and ability to participate in the treatment plan.

## **Interventions**

Develop a plan of care, in collaboration with the client and/or family and interprofessional team. Ensure that the care plan incorporates: client care concerns; treatment of risk factors including sources of moisture and skin irritants; preventive interventions; management of damaged skin; intended and unintended outcomes; and client education and discharge plans.

Preventive MASD measures are a key part of the care plan when addressing sources of moisture and the condition of the skin. They are used to prevent MASD from occurring but are also used as part of the plan to treat MASD as they help to prevent further deterioration and promote healing. Preventing MASD skin damage is always preferable to treating it.

## **Client Care Management**

### **1. Address Client Concerns**

- a. Develop the plan of care taking into account client/family abilities, finances, concerns, preferences and motivation for treatment.
- b. Develop strategies to promote and support client and family participation in a skin care regimen and/or treatment based on the type and severity of MASD.
- c. Provide psychological support.
- d. Consider clients' culture and traditions.
- e. Consult with Social Work, Facility Liaison, Aboriginal Liaison, or Clinical Lead if the client has psychosocial or financial concerns and/or requires emotional support or counseling.

### **2. Manage Pain Relief**

- a. Gently cleanse MASD areas with a no-rinse, pH balanced, non-sensitizing skin cleansers if available, and appropriate for the area of skin damage. Gently pat skin dry with a plain disposable wipe or dry gauze.
- b. Organize care to coordinate with scheduled analgesic administration allowing sufficient time for the analgesic to take effect; monitor for sedating side effects.
- c. Administer prn (as needed) analgesic medication regularly, and in the appropriate dose to control pain. Refer the client to a Physician/NP if pain is not well controlled.
- d. Reassess pain at regular intervals and address any increase in severity.
- e. Use low air loss and air fluidized support surfaces, as appropriate and available, to relieve pressure and manage moisture over painful MASD areas; and ensure MASD areas being treated, are not covered up with pads, pullups/briefs, or dressings.

### **3. Promote Preventative MASD Interventions**

#### **a. Treat Risk Factors**

- i. Support the client to monitor edema related to venous stasis, lymphedema, organ failure (heart, renal), or other pre-existing illnesses. Consult a Physician/NP if changes occur.
- ii. Treat co-morbid conditions contributing to excess moisture, e.g., edema, fecal incontinence, diarrhea, or wound infections.
- iii. Encourage client to take medication(s) as prescribed.
- iv. Support client to stop smoking and discuss referral to a smoking cessation program; refer for harm reduction/substance use management with the client's consent.
- v. Manage risk factors for urinary and fecal incontinence such as optimizing body weight and reducing caffeine intake.
- vi. Nutritional Care:
  - Maximize client nutritional status through high protein supplements, if required.
  - Encourage 1500 - 2000mL of hydrating fluid daily, unless contraindicated.

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- Encourage client to take in adequate amounts of dietary fiber to promote soft formed stools unless contraindicated.
  - Consult with a Registered Dietitian (RD)
    - If skin damage is not healing and nutritional risk factors are present,
    - If there is excess fluid loss from stoma, diarrhea, or excessive wound exudate,
    - For dietary management of obesity or unplanned weight loss, and/or
    - For clients receiving palliative/end-of-life care, if needed.
- b. Promote Preventative Skin Care Regimen for **All** Clients with Intact Skin
- i. Inspect the skin for any new or additional damage when the client is repositioned, toileted or assisted with ADLs and each time the client's brief/pad insert or collection device, pouching system is changed.
  - ii. Cleanse the skin gently, at least daily, and as soon as possible after each incontinent episode with a pH-balanced, no-rinse, non-sensitizing skin cleanser.
  - iii. It is preferable to use one product which both cleanses and moisturizes the skin at the same time. Ensure that the product does not restrict application of a containment pouching system.
  - iv. Avoid hot water, bar soap, and excessive scrubbing/friction during hygiene care. Ideally use a soft disposable cleansing cloth to cleanse, and gently pat the skin dry following.
    - For females
      - Cleanse the perineal area by separating the labia and cleansing downward from front to back with one stroke. Use a clean part of the cloth with each stroke. Use more than one cloth if needed.
      - To cleanse the rectal area, wipe from the vagina to the anus with one stroke. Use a clean part of the cloth with each stroke. Use more than one cloth if needed.
    - For males
      - Cleanse the perineal area from front to back toward the base of the scrotum. Use a clean part of the cloth with each stroke. Use more than one cloth if needed. To cleanse the male's perianal parts, assess if the client is uncircumcised. If not, retract the foreskin, hold his male part and use a circular motion to cleanse the penis tip.
      - If the client is not circumcised retract the foreskin. Hold the penis and use a circular motion to cleanse the penis tip. Then cleanse the shaft of the penis and testicles. Reposition the foreskin into position. To cleanse the rectal area, wipe from the base of the scrotum to the anus with one stroke. Use a clean part of the cloth with each stroke. Use more than one cloth if needed.
  - v. Moisturize skin with an emollient based moisturizer each time the skin is cleansed unless using a combined cleanser/moisturizer. Avoid moisturizer in skin creases unless areas are visibly dry or cracked.
    - Avoid moisturizers with allergens such as perfume, lanolin, preservatives, emulsifiers and stabilizers. Avoid humectant moisturizers as they draw water into the epidermis (see Appendix B).
  - vi. For clients who are incontinent, apply a dimethicone/silicone-based skin protectant following cleansing after each incontinent episode. Ensure that dimethicone/silicone - based protectant is not applied when adherence of a pouching system is required.
  - vii. All skin care products should be used according to the manufacturer's instructions or Product Information Sheets ([www.clwk.ca](http://www.clwk.ca))

4. Promote Preventive Interventions for **Incontinence-Associated Dermatitis: Urinary Incontinence**
- a. Implement a toileting program based on client incontinence pattern, with the goal of promoting functional continence. For example: if the client is incontinent every 4 hours, offer toileting every 3 hours. Ensure clients have opportunity to toilet before going to sleep in the evening and first thing in the morning upon rising (see Appendix D).
    - i. For mobile clients assist to toilet or provide access to a commode chair.
    - ii. For immobile clients transfer the client with a lift, offer a bedpan or urinal.
    - iii. Continue to offer the bedpan, urinal, or toilet at night as per client continence routine.
  - b. For clients with signs and symptoms of a urinary tract infection consult with Physician/NP for a Culture and Specificity (C&S) of the urine.
  - c. Reduce exposure to skin irritants:
    - i. Avoid briefs as they contribute to IAD. The warm occlusive environment of the brief traps heat, enzymes, and moisture against the skin increasing skin vulnerability and promoting fungal and bacterial growth. The low pH of the skin's healthy stratum corneum (4.3- 5.9) is significantly altered and skin loses its' protective buffering capacity to pathogens, friction, shear, or pressure; when fecal and urinary chemical irritants mix, the resulting irritants have a greater risk of damaging skin.
    - ii. If toileting alone is not successful for ambulatory men, consider use of a penile pouch or self-adhesive male external catheter.
    - iii. External urine collection devices are also available for women; however it may be difficult to get a good seal with these devices.
    - iv. If toileting alone is not successful for ambulatory clients and it is not possible to use an external collection device, use a correctly sized mesh pant and high absorbency pad insert. Polymer wrap-around briefs are **only used** if the mesh pant and a pad insert cannot contain the volume of urine voided.
      - Check pads and briefs every 2-3 hours and as necessary during the day and night to ensure they are changed before they are saturated. This is especially important if the client has a urinary tract infection.
      - Never double-pad a client who voids large amounts. Ensure the client is in an appropriately sized brief that can absorb large amounts of urine and change the brief appropriately. Pad inserts are not designed to allow excess to urine and/or feces flow into a brief.
      - Pads and briefs **are not to be used** when the client is fully continent, and/or can ask to use the toilet. If client experiences urgency and frequency that interferes with reaching the bathroom on time, a light pad may be used.
      - Pads and briefs **are not to be used** when the client has a bladder catheter insitu.
      - Reusable or disposable soaker pads can be used to protect the linen if clients are not wearing briefs or pads. Specially designed disposable air permeable pads must be used on therapeutic overlays, mattresses, and beds.
      - Consult Wound Clinician/Nurse Continence Advisor for a containment brief if needed.
  - c. If unable to manage urine or considering the use of containment brief consult Wound Clinician and or a Nurse Continence Advisor (NCA).
  - d. For clients with mobility problems provide a structured daily exercise program and prompted voiding opportunities, if appropriate. Consult with Physiotherapist (PT) if available.
  - e. Consult with Physician/NP or Pharmacist for pharmacological treatment options for urinary incontinence.
  - f. Encourage client to discuss alternates to medications that may be contributing to urinary incontinence with a Physician/NP or Pharmacist.

- g. Consult with a Nurse Continence Advisor, Enterostomal Therapist/Wound, Ostomy Continence Nurse (ETN/WOCN) or specialty trained PT, if available, for conservative management of urinary incontinence.
  - i. Consult with nurses/therapists with specialty training for assessment of pelvic floor muscle and re-education/training if appropriate.
5. Promote Preventive Interventions for **Incontinence-Associated Dermatitis: Fecal Incontinence**
  - a. Collaborate with a Physician/NP to address potentially treatable causes of diarrhea.
  - b. Treat fecal impaction to prevent stool bypassing and implement measures to prevent constipation. Consult with the Registered Dietitian.
  - c. If the client has 3 or more loose stools in 24 hours and no evidence of impaction, increase non soluble dietary fibre to tolerance or supplement with fibre bulking medications until the number of stools decreases and the consistency of loose stools improves, unless contraindicated, e.g., infectious diarrhea. Consult with a Registered Dietitian and/or Pharmacist.
  - d. Implement a toileting program based on the client's pattern of incontinence, with the goal of promoting functional (fecal) continence.
    - i. If the client incontinent of 'formed-stools' encourage client to establish a prompted fecal toileting regimen e.g., with the use of bowel stimulants and/or laxatives, if necessary.
    - ii. If the client is incontinent of 'loose-stool':
      - For the mobile client, assist to toilet or provide access to a commode chair every 2-3 hours.
      - For the immobile client, transfer with a lift or offer a bedpan every 2-3 hours.
      - Offer the bedpan or toilet at night if the client is awake, or as per client continence routine.
      - Encourage client with non-infectious diarrhea to discuss the use of antidiarrheal medication(s) in consultation with a Physician/NP or Pharmacist.
    - iii. Encourage client to discuss alternates to medications that may be contributing to fecal incontinence with a Physician/NP or Pharmacist.
    - iv. Consult with Registered Dietitian if client is receiving enteral feeds or for a nutrition assessment e.g., fibre.
  - e. Reduce exposure to skin irritants:
    - i. If toileting alone is not successful, consider use of an external fecal collection device for clients who are bedfast, have intact peri-anal skin and are not agitated (e.g., delirium, dementia). It may be challenging to get a good seal with these devices. Consult the Wound Clinician, if necessary.
    - ii. Consider use of an **internal** fecal containment device if the hospitalized client has liquid or semi-liquid stools, denuded peri anal skin, is bedfast and/or has a decreased level of consciousness. Clients with internal devices need to be monitored closely for adverse events such as stool leakage, rectal pain, rectal bleeding, pressure necrosis or ulceration of the anal/rectal mucosa. Follow agency/health authority guidelines and consult the Wound Clinician if necessary.
    - iii. If toileting alone is not successful, and it is not possible to use an external or internal fecal collection device, use a mesh pant and high absorbency pad insert. Pad inserts and briefs are to be checked every 2-3 hours and changed after each fecal incontinent episode.
    - iv. Polymer wrap-around briefs are **only used** if the mesh pant and a pad insert cannot contain the volume of fecal matter or solid wastes in a 2-3 hour time frame. Briefs are not designed to absorb solid wastes and therefore the fecal waste remains in the brief and in contact with the skin.
    - v. Use a disposable soaker pad and expose the affected skin area when the client has irritated/broken skin, and use a barrier cream.

- h. For clients with mobility problems provide a structured daily exercise program and regular toileting opportunities, if appropriate. Consult with Physiotherapist (PT) if available.
  - i. Consult with Physician/NP or Pharmacist for pharmacological treatment options for fecal incontinence.
  - j. Consult with a Nurse Continence Advisor, Enterostomal Therapist/Wound, Ostomy Continence Nurse (ETN/WOCN) or specialty trained Physiotherapist, if available, for conservative management of fecal incontinence.
    - i. Consult with nurse/therapists with specialty training for assessment of pelvic floor muscle assessment, re-education/training if appropriate.
6. Promote Preventive **Interventions for Intertrigo**
- a. Cleanse the skin folds gently with a pH-balanced no-rinse non-sensitizing skin cleanser to remove skin irritants and bacteria. Gently pat dry.
  - b. Avoid use of talc, cornstarch-based powders or bed linens, gauze or other fabrics in skin folds as they hold moisture against the skin.
  - c. Avoid use of occlusive barriers such as petrolatum.
  - d. Use moisture wicking fabric to manage moisture:
    - i. Place moisture wicking fabric in affected skin folds to reduce moisture and prevent skin on skin friction.
      - Most effective in inguinal skin folds if client is continent or urine and/or feces is diverted.
    - ii. Moisture wicking fabric **cannot be used** with any creams or powders, especially zinc-based skin protectants or medicated creams (Link to PISheet).
  - e. Encourage clients to wear light loose clothing made from natural fibers and quick drying material.
  - f. Encourage clients to wear supportive undergarments to reduce skin on skin contact.
7. Promote Preventive Interventions for **Periwound, Peri-tube/Drain, and Peri-fistula MASD.**
- a. Address the cause/source of drainage, e.g., wound drainage related to wound infection; drain blocked, tube/drain skin opening is larger than tube insitu; edema related to venous insufficiency; or moisture related to fistula drainage.
  - b. Protect periwound skin by:
    - i. Applying an acrylate skin film barrier **or** a dimethicone/silicone based or zinc oxide based skin protectant to the peri wound skin, or
    - ii. Framing wound margins with a protective adhesive dressing, use a hydrocolloid or film dressing.
      - Film dressings or hydrocolloids are not indicated if the skin is thin and fragile and susceptible to skin tears.
      - When removing periwound dressings such as transparent films and hydrocolloids, press down on the skin and carefully lift an edge of the dressing. Continue lifting around the dressing until all adhesive edges are free. Gently peel away the dressing from the skin in the direction of the hair growth while stabilizing the skin. This strategy prevents damage to periwound skin.
  - c. Manage excess moisture
    - i. For periwound MASD, use dressings that minimize the lateral tracking of fluid, and a skin protectant. Increase the frequency of dressing changes if needed. Consider a wound pouching system if wound exudate exceeds dressing capacity.
    - ii. For peri-tube/drain MASD use a tube/drain dressing or pouching device that supports moving fluid away from the skin, and a skin protectant. Increase the frequency of dressing changes if needed. Consider a wound pouching device if tube/drain drainage exceeds drain/tube capability. Assess reasons for tube/drain bypassing.

- iii. For peri-fistula MASD consider a pouching device if fistula exudate exceeds dressing capacity.
  - iv. Consult with a Wound Clinician if unable to manage excess moisture.
8. Promote Preventive Interventions for **Peristomal MASD**:
- a. Ensure accurate measurement of pouching system skin barrier to match stoma shape and size.
  - b. Use water rather than cleansers to cleanse peristomal skin.
  - c. Consult an ETN/WOCN to select a pouching system that provides an effective barrier between the peristomal skin and stoma effluent.
  - d. Avoid products or astringents on the peristomal skin unless recommended by an ETN/WOCN.
9. Promote Preventive Interventions Skin Infections
- a. Implement strategies to prevent skin infection
    - i. Routine hand hygiene and Personal Protective Equipment (PPE), as needed, before, during, and after client contact.
    - ii. Use no-touch technique when treating periwound skin damage.
    - iii. Use clean technique when treating peristomal skin damage, intertrigo and IAD.
    - iv. Skin care products must be single client use.
  - b. Protect the skin from infected urine and/or feces.

### Treatment of the Four Types of Moisture-Associated Skin Damage

A Wound Clinician or a Physician/NP must be notified if the damaged skin does not show signs of healing after 2-3 days of treatment, or if skin damage deteriorates.

1. Manage **Urine and/or Fecal Incontinence-Associated Dermatitis (IAD)**
- a. Use the following treatment strategies for IAD in addition to the **Prevention Interventions** above.
    - a. Skin Care for Mild/Moderate IAD:
      - i. Provide routine skin care as outlined under Prevention Interventions.
      - ii. For large affected areas, apply a dimethicone/silicone-based skin protectant, e.g. [Remedy HydraGuard](#), following cleansing.
      - iii. Avoid the use brief/pad inserts as much as possible as they contribute to IAD.
      - iv. Manage pain associated with IAD.
      - v. Assess for improvement at least 2x daily.
      - vi. Consult with a Wound Clinician if the skin condition deteriorates
    - b. Skin Care for Moderate/Severe IAD
      - i. Provide routine skin care as outlined under Prevention Interventions.
      - ii. Consult with a Wound Clinician.
      - iii. Apply a zinc e.g. [Secura Extra Protective Cream \(EPC\)](#), or petroleum-based skin barrier following cleansing.
      - iv. Under the direction of an ET/WOCC Nurse/Wound Clinician, a cyanoacrylate skin film barrier, e.g. [Marathon](#) or [Cavilon Advanced Protectant](#) may be used following cleansing.
      - v. Avoid the of use brief/pad inserts as much as possible as they contribute to IAD. If a brief/pad insert is required:
        - o zinc and petroleum-based products may decrease the effectiveness of the briefs/pad insert absorption of urine; use a dimethicone/silicone skin protectant.
        - o remove the brief/pad insert and position the client in a semi-prone position for 30 minutes twice daily to expose the affected skin area to the air. Protect the bed linen with a continence pad liner.
      - vi. Manage pain associated with IAD.
      - vii. Monitor for fungal infection and treat if present.



- viii. Consider the use of micro-climate manager or low-air-loss/ air-fluidized therapeutic support surfaces, if available, to assist with the management of moisture when severe IAD is present; ensure that the area is not covered up with pads, pull-ups/ briefs, or dressings.
      - ix. Assess for improvement at least 2x daily.
    - d. Urinary Incontinence Interventions:
      - i. If moderate/severe skin damage does not improve with appropriate treatment, consider use of an external collection device or short-term indwelling urinary catheter keeping in mind the increased risk for a urinary tract infection.
    - e. Fecal Incontinence Interventions - see Preventative Interventions #5 above
2. Manage **Intertriginous Dermatitis (Intertrigo)**
  - a. Ensure the **Prevention Intervention** strategies are in place (see above).
  - b. Use a moisture wicking fabric e.g. [InterDry Ag.](#)
  - c. Use a cyanoacrylate skin film barrier, e.g. [Marathon](#) or [Cavilon Advanced Protectant](#).
  - d. Assess for improvement at least 2x daily.
  - e. Consult a Wound Clinician, ETN/WOCN, and/or Physician/NP.
3. Manage **Periwound, Peri-Tube/Drain, and Peri-Fistula MASD**
  - a. Ensure the **Prevention Interventions** are in place (see #5).
  - b. Avoid the use of tape over damaged skin.
  - c. For periwound MASD consider Negative Pressure Wound Therapy if other interventions are not successful to manage the highly exudating wound, and the wound meets NPWT indications for use.
  - d. Assess for improvement with every dressing change.
  - e. Consult a ET/WOC Nurse/Wound Clinician and/or Physician/NP.
4. Manage **Peristomal MASD**
  - a. Ensure **Prevention Interventions** are in place (see #5).
  - b. Consult an ETN/WOC Nurse for peristomal skin problems.
  - c. Treatment should alleviate skin damage while providing a dry pouching surface in order to maintain an effective seal between the solid skin barrier and peristomal skin.
    - Start with 'crusting' the affected area; see [No-Sting Skin Prep](#) Crusting Procedure steps.
    - If crusting not effective then, under the direction of an ET/WOCC Nurse/Wound Clinician, a cyanoacrylate skin film barrier, e.g. [Marathon](#) or [Cavilon Advanced Protectant](#) may be used.
  - d. If the pouching system is leaking it needs to be changed. Do not use tape to reinforce the skin barrier when it is leaking as this increases peristomal skin damage.
  - e. Assess for improvement with each flange change.
5. Treat Infection (all MASD types)
  - a. Consult with a Physician/NP or Wound Clinician if a cutaneous infection is present and take a swab for C&S, if indicated ([C&S Procedure](#)).
  - b. Cutaneous Bacterial infection
    - i. Use non-sensitizing broad spectrum antimicrobial dressings for wounds with significant bioburden and/or critically colonized-localized infection.
  - c. Cutaneous Candidiasis (fungal) and Peristomal Candidiasis infection
    - i. For a mild infection, apply an over-the-counter topical antifungal powder over the affected area. Consult a Wound Clinician/Pharmacist, if necessary. Use ointments with caution.
    - ii. If over-the-counter (OTC) topical antifungals are not effective within 24-48 hours or if the infection is moderate to severe, consult with a Physician/NP. Topical treatments contain antifungal, antibacterial and anti-inflammatory agents (or combinations) and are very

- effective and require a Physician/NP order. Keep all powders away from client/nurse airway.
- iii. Use a moisture wicking fabric to keep the area dry, e.g. [InterDry Ag.](#) .
  - iv. Use a “crusting procedure” over areas affected by a fungal infection; this involves layering antifungal powder and acrylate barrier film 2 or 3 times over the affected area. see [No-Sting Skin Prep](#) Crusting Procedure steps
- d. Clostridium Difficile
    - i. Collaborate with a Physician/NP to treat *C difficile*; if the skin is intact and the client has *C difficile* use chlorhexidine wipes to clean affected skin (Check agency policy).
    - ii. Provide client with a dedicated toilet or commode.
    - iii. Consult with health authority infection control policies and procedures regarding *C difficile*.
  - e. Urinary Tract Infection
    - i. Collaborate with a Physician/NP to treat UTI’s.
  - f. Consult the Physician/NP or Wound Clinician if treatment of infected area is not effective within 2-3 days.

## Client Education and Resources

1. Teach the client and/or family
  - a. Identification and management of the client’s individual risk factors for developing MASD.
  - b. Appropriate hygiene measures (e.g., hand, bathing, showering), and a structured skin care regimen including skin care education.
  - c. Appropriate strategies for client MASD concerns (client may have more than one)
    - i. Manage IAD MASD related to urinary and/or fecal incontinence and appropriate hygiene measures (e.g., equipment, devices, and products).
    - ii. Manage intertrigo dermatitis.
    - iii. Manage appropriate dressings to protect periwound, peri/tube/drain, and peri-fistula MASD.
    - iv. Manage peristomal MASD and appropriate pouching system change (e.g., the client know how to manage if burning, stinging, or pain felt under the skin barrier).
  - d. Appropriate product, device, and/or equipment availability and use.
  - e. Signs and symptoms of infections the client’s specific MASD concerns.
  - f. Pain management strategies.
  - g. The benefits of smoking cessation and harm/substance use reduction.
  - h. Strategies for improving nutrition and optimizing body weight, as appropriate.
  - i. Availability of community resources (e.g., Pharmacy, ETN/WOC Nurses, Nurse Continence Advisors, and funding sources).
  - j. Role of interprofessional team members and when to seek assistance from healthcare personnel.

## Discharge Planning

1. If the client is being transferred across sectors (acute care, home health care or residential care), ensure that the receiving site/facility is provided with a current client care plan.
2. Discharge planning should be initiated during the initial client encounter and should support timely discharge and optimal client independence, if discharge is anticipated.

## **Client Clinical Outcomes**

1. Intended Outcomes for MASD (any type)
  - a. The client's skin remains intact.
  - b. There is early recognition of the risk of developing MASD.
  - c. Interventions are implemented to prevent or limit MASD.
  - d. If MASD occurs (any type), appropriate strategies are implemented to promote skin healing.
  - e. If MASD occurs (any type), there is no associated skin infection(s).
  - f. If IAD occurs, the event is reported according to the health authority/agency guideline (Link to BC Patient Safety Learning System).
2. Unintended Outcomes for MASD (any type)
  - a. The client develops MASD (any type).
  - b. There was no early recognition of the risk of MASD.
  - c. Interventions were not implemented to prevent or limit MASD skin breakdown.
  - d. MASD (any type) occurred, and appropriate strategies were not implemented to promote skin integrity.
  - e. IAD has occurred and the event was not reported according to the health authority/agency guideline (not reported in the BC Patient Safety Learning System).

## **Documentation**

1. Document the initial assessment including the client's concerns, specific risk factors, skin assessment, type of MASD (if present), and if pain and/or infection are noted.
2. For those at risk for MASD, document initial preventative care plan, any care plan revisions and the effectiveness of interventions as per agency policy.
3. If MASD is present or occurs:
  - a. Document initial and ongoing wound assessments (Link to Wound Assessment and Treatment Flow Sheet).
  - b. Document initial treatment care plan, any care plan revisions and the effectiveness of interventions as per agency policy.
4. Report the IAD 'safety event' as per health authority/agency policy.

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## **Document Creation/Review**

This guideline is based on the best information available at the time of its posting and relies on evidence, expert consensus and avoids opinion-based statements where possible.

<b>Created By</b>	British Columbia Provincial Nursing Skin and Wound Committee in collaboration with the Wound Clinicians from across all Health Authorities.
<b>Publication Date</b>	February 2017
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<b>Review Date(s)</b>	

**APPENDIX A:**  
**Differences between Moisture-Associated Skin Damage and Stage 1 & 2 Pressure Injury**

Type of Skin Injury →	Moisture Associated Skin Damage	Pressure Injury Stage 1	Pressure Injury Stage 2
Factors to Consider ↓			
Client History	Exposure to urine and/or feces.	Exposure to pressure, moisture, and/or friction/shear.	
Location	In areas where urine and/or feces can accumulate in skin folds in the gluteal cleft or over the perineal area.	Skin over bony prominences (heels, sacral, coccyx, and ischial tuberosities), skin folds or skin exposed to other external pressure or related to a medical device.	
Characteristics of involved area	Blotchy, not uniform in appearance. Diffuse irregular areas of erythema with or without satellite lesions.	An area of non-blanchable erythema, with change in skin temperature or firmness. In darkly pigmented skin the area may differ from adjacent skin.	Dermis is exposed leading to a partial thickness wound. Usually from moisture and/or skin friction/shear.
Wound Bed	Shiny, red, glistening area. No slough in wound bed.	Intact skin with non-blanchable erythema. <b>Note:</b> Purple and maroon discoloration may indicate a Deep Tissue Injury (DTI).	Viable, pink or red, moist with distinct wound margins. Slough/eschar are not present.
Periwound Skin	Red, irritated, edematous.	Intact & healthy, or may appear different in darker skin tones, or edema may be palpable when compared to adjacent skin.	
Pain	Burning, itching, and tingling.	Painful	
Odour	Urine and/or fecal odour.	None	Not present unless infection.
Risk of Infection	Candidiasis common, as seen as satellite lesions.	None to Low	Low to moderate depending upon wound location.
Healing Projection	Wound bed is shallow & heals through epithelialization.	Skin is intact and non-blanchable redness should resolve over time with pressure redistribution.	Wound bed is shallow and heals through epithelialization.

**Adapted from:**

1. Beeckman, D., et al. (2009). Prevention and treatment of incontinence-associated dermatitis: Literature review. *Journal of Advanced Nursing*, 65(6), 1141-1154.
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## APPENDIX B: Emollient and Humectant Moisturizers

The information in this appendix summarizes the available information on moisturizers.

### Definitions

1. **Ceramides** are an essential component of normal stratum corneum and help to maintain the barrier function of the skin.
2. **Creams** are semi-solid emulsions containing 50% oil and 50% water. They spread easily, absorb quickly and wash off with water. Creams can penetrate the outer layer of skin and are thicker than lotions.
3. **Lotions** are thinner than creams. They absorb very quickly and feel very light on the skin. They are easier to distribute on hairy areas. Most over-the-counter body moisturizers are lotions.
4. **Ointments** are 80% oil and 20% water. They feel greasy, do not absorb well and are generally not easy to use on large areas. They are used as emollients or for application to the skin for protective or therapeutic purposes and where a degree of occlusion is desired.
5. **Squalene oil** is an oily liquid hydrocarbon that occurs in shark liver oil, human sebum and vegetable oils.
6. **Trans epidermal water loss (TEWL)** is the rate at which water is lost through the skin. It is used as a measure of the skin's barrier function, e.g., a high TEWL indicates an abnormal rate of water loss from the skin indicates an impaired skin barrier function.

### The Skin

Keratinocytes, the main cells in the epidermis, migrate up from the dermis and undergo changes to become the flat keratin rich corneocytes in the stratum corneum, the outer layer of the epidermis. During this migration through the layers of the epidermis, lipids are released into the spaces between the cells forming the skin's own natural moisturizing factor. The retention of water in the stratum corneum is dependent on the protective surface layer of lipids that form a barrier to trans epidermal water loss (TEWL) while protecting the skin from the intrusion of water and irritants.<sup>6,8,11</sup>

When these lipids are disrupted for any reason, the skin becomes rough and gaps occur in the corneocytes. Prolonged or repeated exposure to moisture of any kind (water/perspiration/urine) especially in the presence of occlusion will compromise this natural lipid skin barrier and increase TEWL. In addition, intestinal and bacterial enzymes in feces break down protein in the keratinocytes eroding the epidermis.<sup>1,5,6</sup>

### Humectant, Emollient and Occlusive Moisturizers (Refer to CLWK – for Skin Barriers/Protectants)

The terms emollient and moisturizer are used interchangeably<sup>2</sup> but, the categories most often used are humectant, emollient moisturizers, and occlusive moisturizers (barrier products/skin protectants).<sup>3,4,5,10,11</sup>

Moisturizers contain varying amounts of emollients, humectants, skin protectants, and water. Moisturizers should have the ability to repair or augment the lipid barrier, retain the water content in the stratum corneum, reduce TEWL, and restore the lipid barrier's ability to hold and redistribute water in the skin.<sup>5</sup>

#### 1. Humectant Moisturizers

Humectants enhance water absorption from the dermis into the epidermis and in humid conditions support the stratum corneum to absorb water from the external environment.<sup>5</sup> Components that act as humectants include glycerin, sorbitol, sodium hyaluronate, urea, propylene glycol, lactic acid and alpha hydroxyl acids.<sup>4,10</sup>

#### 2. Emollient Moisturizers

Emollients are designed to support the moisture barrier to function effectively by replacing intercellular lipids, filling the spaces between rough or peeling skin cells (to smooth the skin surface) and slow TEWL.<sup>3</sup> Moisturizers with a balanced combination of humectants and emollients are beneficial for aging or dry skin, and are not used to moisturize saturated skin. Emollient moisturizers with a high lipid content

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should be used for clients with hyper hydrated skin (MASD).<sup>1,3,5</sup> Emollient moisturizers include cholesterol, fatty acids (Linoleic acid), squalene, lanolin, mineral oil, and ceramides. Although primarily an occlusive, petrolatum can also act as an emollient.<sup>10</sup>

### 3. Occlusive Moisturizers (Moisture barriers/skin protectants)

Occlusive moisturizers act as a moisture barrier protecting the skin from exposure to urine, feces, and/or excess moisture. Although the goal of skin protectants are to act as a barrier to irritants and moisture, they can also maintain skin hydration and normal TEWL, and help prevent maceration when left on the skin for longer periods.<sup>5</sup> Occlusive moisturizers are available in cream or ointment form and the active ingredients are usually petrolatum, dimethicone/silicone, and zinc oxide either alone or in combination.<sup>9</sup> However, skin protectants can also include moisturizers and vary in their composition.<sup>5,7,11</sup>

Moisture barriers are also called skin protectants. They are used to protect the skin from irritants or moisture. Active ingredients in moisture barriers include dimethicone, petrolatum, lanolin, or zinc-oxide. Dimethicone is a silicone-based product. It is non-occlusive and does not affect absorbency of incontinence products when used sparingly in a thin layer. [http://www.woundsinternational.com/media/other-resources/\\_/1154/files/iad\\_web.pdf](http://www.woundsinternational.com/media/other-resources/_/1154/files/iad_web.pdf)

<b>Characteristics of the main types of skin protectant ingredients.</b>		
Note: Principle ingredients vary according to the overall formulation and usage (e.g., amount applied).		
Principle skin protectant ingredient	Description	Notes
<b>Petrolatum (petrolatum jelly)</b>	Derived from petroleum processing. Common base for ointments	<ul style="list-style-type: none"> <li>• Forms an occlusive layer, increasing skin hydration</li> <li>• May affect fluid uptake of absorbent incontinence products</li> </ul>
<b>Zinc oxide</b>	White powder mixed with a carrier to form an opaque cream, ointment, or paste	<ul style="list-style-type: none"> <li>• Can be difficult and uncomfortable to remove (e.g., thick, viscous pastes)</li> <li>• Opaque, needs to be removed to inspect skin</li> </ul>
<b>Dimethicone</b>	Silicone-based; also known as siloxane	<ul style="list-style-type: none"> <li>• Non-occlusive, does not affect absorbency of incontinent products when used sparingly</li> <li>• Opaque or becomes transparent after application</li> </ul>
<b>Acrylate terpolymer</b>	Polymer form a transparent film on the skin	<ul style="list-style-type: none"> <li>• Does not require removal to inspect skin</li> <li>• Transparent, allows skin inspection</li> </ul>

Source: Beeckman, D., et al. (2015). Proceedings of the Global IAD Expert Panel. Incontinence-associated dermatitis: moving prevention forward. *Wounds International*. Retrieved from [www.woundsinternational.com](http://www.woundsinternational.com)

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## Appendix C: Continence Product Information Sheets

For specific continent product use please use the Product Information Sheet(PISheet) link provided.

<b>Continence Product Information Sheets</b>			
Category	Sub-Category	Product	PISheets
Linen Protector		Ultrasorb AP Underpad	Please see <a href="#">PISheet</a>
2-Piece Containment Pad System	Mesh Brief	Mesh Underwear	Please see <a href="#">PISheet</a>
	Pad/Light	Comfort Day Pad Light	Please see <a href="#">PISheet</a>
	Pad/Moderate	Comfort Day Pad Extra	Please see <a href="#">PISheet</a>
	Pad/Heavy	Comfort Day Pay Plus	Please see <a href="#">PISheet</a>
Fecal Collection Devices	External	Fecal Pouch	Please see <a href="#">PISheet</a>
	Internal	Flexiseal	Please see <a href="#">PISheet</a>
Urinary Collection Devices/Male	Condom/Regular	InView Extra	Please see <a href="#">PISheet</a>
	Condon/Short	InView Special	Please see <a href="#">PISheet</a>
	Pouch/Retracted	Urinary Pouch	Please see <a href="#">PISheet</a>

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## Appendix D: Urinary Incontinence - Background Information

### Promote Preventive Interventions for Urinary Incontinence: Facts

- Urine 24-hour volume is approximately 800-2000 milliliters, with a fluid intake of approximately 2 liters per day.
- In healthy adults, and as part of the normal aging process there are renal and hormonal changes leading to an increase in nighttime urine production and a decrease in functional volume of the bladder. In combination this predisposes the client to nocturia (urge to void at night) and urinary incontinence.<sup>57</sup>
- Age-associated loss of renal function is recognized as being related to systemic hypertension, lead exposure, smoking, lipid levels, atherosclerotic disease, inflammatory disease, obesity, and male gender. In adulthood, the “ratio of daytime to nighttime urine production is 2:1, so that about 25% less of daily urine output occurs during sleep”<sup>57,p.1</sup>. This occurs until about age 60, when there is a reduction of daytime urine production and an increase in nighttime urine production. Sometimes nighttime urine production exceeds daytime volumes.
- With advancing age, clients may have detrusor muscle instability. This leads to a decline in bladder volume and heightened sensation that the bladder is full; leading to bladder contractions and an increased in daytime and nighttime voiding frequency.<sup>57</sup>
- For clients living with Alzheimer’s disease, there is a decrease in nighttime secretion of arginine vasopressin (AVP; antidiuretic hormone-ADH) and a reversal of day-night urine production. As a result there is an increased prevalence of nocturia, and both daytime and nighttime urinary incontinence.<sup>57</sup>

**Table 1: Association between nighttime urine flow rate, bladder volume, and nighttime urinary frequency in health young and elderly adults\*.**

	Young Adults	Elderly Clients
Nighttime urine flow rate (ml/hour)	35	70
Time in bed (hours)	8	8
Nighttime urine production (ml)	280	560
Bladder capacity (ml)	400	200
Number of voids during sleep period	0	2
<b>Source:</b> Miller, M. (2009). Data show typical values based on literature and/or author’s experience.		