Ostomy Skin Care made easy

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Introduction

It is estimated that 120,000 people in the UK live with an ostomy and that 25,000 new ostomies occur each year (Hill, 2020). The most common challenge faced by people with an ostomy is damaged peristomal skin (i.e. the skin surrounding the stoma; D'Ambrosio et al, 2023; Meisner et al, 2012). Given the high number of people living with an ostomy, healthcare professionals (HCPs) must be able to recognise and care for potential peristomal skin problems early. This Made Easy aims to provide an overview of ostomy skincare, focusing on the pathophysiology of ostomy skin, types of ostomy-related skin complications, risk factors for these complications and methods to prevent them. We also review a range of advanced skin care products for ostomy skin care, including 3M™ Cavilon™ No Sting Barrier Film and 3M™ Cavilon™ Advanced Skin Protectant, which are designed to protect the delicate peristomal skin from the harsh effects of constant exposure to effluent, moisture, and adhesive materials used in ostomy care.

WHAT ARE OSTOMIES?

Ostomy is an umbrella term for surgical procedures in which a 'stoma' is created. A stoma is a surgically created opening onto the surface of the body to exteriorise a hollow organ and maintain the passage (Fletcher et al, 2020).

Different types of ostomies

- **Colostomy** = exteriorisation of a section of the colon (large intestine) through the abdominal wall to allow the passage of faecal matter into an external pouching prosthetic system (Burgess-Stocks et al, 2022)
- **Ileostomy** = exteriorisation of a section of the ileum (lowest part of the small intestine) through the abdominal wall to allow the passage of faecal matter into an external pouching prosthetic system (Burgess-Stocks et al, 2022)
- **Urostomy** = diversion of urine away from a diseased or removed bladder, where a small segment of the ileum is used to create a passage for urine removal through the abdominal wall (Burgess-Stocks et al, 2022)
- **Gastrostomy** = the creation of a surgical opening through which a tube is inserted through the abdominal wall directly into the stomach to provide access for nutrition/hydration and/or drain air and secretions (National Cancer Institute, 2024a)
- **Jejunostomy** = the creation of a surgical opening through the abdominal wall into the jejunum (part of the small intestine), through which a feeding tube is placed (National Cancer Institute, 2024b)
- **Tracheostomy** = a surgical procedure that creates an opening in the anterior trachea to support breathing (Hanks and Farwell, 2023; National Library of Medicine, 2023).

OSTOMY-ASSOCIATED SKIN COMPLICATIONS

The skin is considered the largest organ of the body and performs many important functions, one of which is protection (Lloyd Jones, 2016). The uppermost layer of the skin (the epidermis) provides the first line of defence, acting as a barrier to physical, biological, and chemical agents. It also functions as a permeability barrier to prevent excessive water loss (Lloyd Jones, 2016). Prolonged exposure to moisture and the interaction of peristomal skin with medical adhesives can lead to peristomal skin complications, which are regarded as the most common complications for people living with an ostomy (Lloyd Jones, 2016). Ostomy-associated skin complications include (Fletcher et al, 2020; Le Blanc et al, 2019):

- Moisture-associated skin damage (MASD), specifically peristomal dermatitis
- Peristomal medical adhesive-related skin injury (PMARSI).

Peristomal dermatitis (or moisture-associated skin damage)

The term moisture-associated skin damage (MASD) describes a spectrum of irritant contact dermatitis conditions (Woo et al, 2017). Peristomal dermatitis is one of the four subcategories of MASD and refers to skin damage caused by a clear interaction between the skin and the effluent, when leakage occurs at the ostomy site (Fletcher et al, 2020; Woo et al, 2017).

Peristomal dermatitis is caused by (Fletcher et al, 2020; McNichol et al, 2022):

- Exposure to moisture
- Naturally occurring microorganisms on the peristomal skin
- Mechanical forces (e.g. friction)
- Organ-specific pH and chemical irritants within the effluent.

Gastric peristomal dermatitis arises due to effluent leakage from digestive stomas (i.e. gastrostomy and jejunostomy). This has a corrosive effect due to (McNichol et al, 2022):

- masticated food mixed with lipase-rich-bile and pancreatic enzymes
- highly acidic pH within the stomach (pH 1.5–3.5; also see Box 1).

Faecal and urinary peristomal dermatitis occurs due to effluent leakage from bowel and urinary system ostomies such as (McNichol et al, 2022):

- **Colostomy effluent,** which has a more acidic pH and a higher water content (therefore looser than normal stool). It also contains a higher concentration of digestive enzymes compared to normal stool

Box 1: The role of pH in causing ostomy skin complications

The pH of effluent plays a crucial role in ostomy skin health. Healthy skin has a slightly acidic pH, which helps protect it from harmful bacteria and irritants. When effluent, with its varying pH levels, interacts with the skin, it can disrupt this natural balance. Acidic or alkaline effluents can break down the skin's acid mantle, leading to irritation, inflammation and dermatitis (McNichol et al, 2022).

- **Urostomy effluent** is more likely to be colonised by a range of potentially pathogenic species and is potentially highly alkaline [Box 1]. The pH of urine can range between 4.6 and 8.0; a more alkaline pH has been shown to cause inflammation of the peristomal skin. Therefore, the urine pH in urostomy patients should be kept below 7.0. (McNichol et al, 2022).

Peristomal medical adhesive-related skin injuries (PMARSI)

The term 'peristomal medical adhesive-related skin injury' (PMARSI) has been defined as 'an alteration in skin integrity with erythema and/or other skin alterations, such as skin tears, erosions, bullae or vesicles, that is apparent after removal of an adhesive ostomy pouching system'(Le Blanc et al, 2019). A particularly common form of PMARSI is skin stripping, which can be described as the removal or tearing of the epidermis caused by unintentional traumatic removal of adhesive products (Fletcher et al, 2020). Patient education is an essential prevention strategy for this type of peristomal complication.

OSTOMY SKINCARE – CURRENT CHALLENGES

HCPs and patients currently face significant challenges regarding the care of ostomy skin, including:

- Limited training and lack of specialised knowledge: This occurs across all care settings with gaps existing in nursing, specifically around knowledge and confidence in changing ostomy pouching systems (McNichol et al, 2022)
- Inconsistent delivery of care: Depending on healthcare systems, ostomy services are often delivered at a local and regional level, which has led to inequities in the delivery of services. A recent survey has found that there is significant variation in stoma care received and services available in hospital and at-home (Bowles, 2022)
- No comprehensive standard of care: there is a lack of standardised, comprehensive ostomy guidelines (Naseh et al, 2023), which in the case of peristomal skin care, has led to inconsistency in the use of protectants and preventive techniques, with treatment mostly being administered only after complications arise rather than assessing risks and putting preventative measures in place
- Limited patient education: patient education and autonomy are crucial for effective peristomal skin care (Colwell et al, 2019). Insufficient product supplies and appliance failure have a significant negative psychological and physical impact on patients, especially in younger people who may otherwise be able to continue with their life activities (Mota et al, 2016). Post-operative product selection support, education and guidance from HCPs may minimise the risk of appliance failure and, therefore, the development of peristomal dermatitis (Bowles, 2022).

PATIENT IMPACT OF PERISTOMAL SKIN COMPLICATIONS

The above-mentioned challenges significantly impact both patients and healthcare providers, leading to an increased likelihood of peristomal skin complications. Gaps in healthcare provider knowledge and patient education can lead to a higher incidence of peristomal dermatitis and PMARSIs. The development of these peristomal skin complications can significantly impact a patient's quality of life, causing pain, discomfort, and embarrassment, which can also lead to social isolation and emotional distress. Severe skin issues can reduce patients' ability to manage their ostomy care independently, increasing their reliance on caregivers and decreasing their autonomy (Sun et al, 2013; Annels, 2006; Torquato Lopes and Decesaro, 2014). Ostomy leakage also significantly impacts life activities, with leakage and leakage-related worry hindering the ability to work for the majority of patients (Jeppesen et al, 2019). Approximately 10% of all people with ostomy complications presenting at emergency departments have an ostomy leakage (Barrett et al, 2021). These studies highlight the physical, financial and emotional burden of ostomy complications and underscore the importance of prevention and timely management.

PRACTICAL TIPS FOR PREVENTION AND MANAGEMENT OF PERISTOMAL COMPLICATIONS

An important pre-operative consideration is the selection of an appropriate stoma site, especially for high-risk patients. Poor positioning can cause patient difficulty when changing and cleaning, increasing the risk of peristomal skin complications (Hill, 2020).

Post-surgery, routine peristomal skin assessment at every pouching, regular reporting of abnormal findings to an HCP and prompt intervention are vital for preventing peristomal skin complications. It is also important that a suitable pouching system is selected, which meets the patient's needs, is appropriate for the specific ostomy type, is matched to the skin contour of the affected area and is well-fitted to the stoma (Le Blanc et al, 2019).

Failing prevention, the following actions are vital for effective management of ostomy skin: early recognition of peristomal dermatitis and PMARSI, prompt referral to a HCP working in ostomy care, support from a Tissue Viability service, and the identification and removal/minimisation of contributing

factors (Le Blanc et al, 2019). Management of peristomal skin complications includes assessment and identification of the specific type of complication (gastric or faecal and urinary peristomal dermatitis, skin stripping, tension injury, folliculitis, allergic dermatitis), as well as assessment of the individual's technique when applying or removing the skin barrier (ostomy face plate) (Le Blanc et al, 2019).

OSTOMY SKIN CARE REGIMEN

Meticulous care of peri-tube/peristomal skin is fundamental to maintaining healthy ostomy skin, thus preventing irritant contact dermatitis (McNichol et al, 2022). While there are currently limited standardised guidelines, recommendations on the cleansing and application of topical products have been highlighted by Fletcher et al (2020). The authors commented that topical products (e.g. skin barrier creams, films and advanced skin protectants) may be used to provide an additional physical barrier, reduce existing irritation and allow for proper adhesion of skin adhesives (Fletcher et al, 2020).

For healthy and intact skin, cleansing with moderately warm tap water or a mild cleanser with no film residue is recommended once daily, followed by prophylactic skin protectant application (McNichol et al, 2022).

For routine protection, a barrier film should be considered to prevent damage. 3M™ Cavilon™ No Sting Barrier Film provides long-lasting protection from enzymes and other harmful elements. The acrylate terpolymer-based film also acts as a sacrificial substrate between the skin and adhesive devices and can be considered to prevent PMARSI (Fletcher et al, 2020). Cavilon No Sting Barrier Film is ideal for use around all ostomy sites.

In patients where the ostomy skin is denuded, applying stoma appliances can be very challenging and cause discomfort. Therefore, advanced cyanoacrylate polymer-based protectants, such as 3M™ Cavilon™ Advanced Skin Protectant, should be applied to protect the skin and allow healing. Polymeric cyanoacrylate-based skin protectants quickly form a tough and flexible film in situ, which provides superior protection against moisture and abrasion compared to liquid acrylic barrier films (Woo and Chakravarthy, 2014).

For further information on when to use polymeric cyanoacrylate-based protectants, please refer to Woo et al (2017). **Box 2** summarises evidence-based recommendations from Woo et al (2017) for managing MASD.

IDENTIFYING PEOPLE AT HIGHER RISK OF PERISTOMAL DERMATITIS AND PMARSI

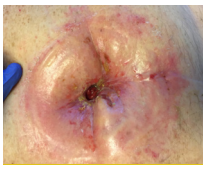
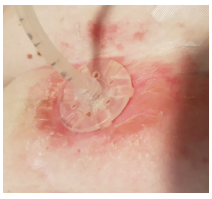
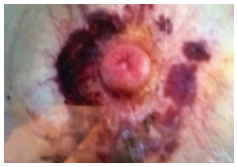
It is important to remember that people with the following risk factors are more likely to develop peristomal dermatitis and PMARSI and require rigorous preventive measures (D'Ambrosio et al, 2023; Fletcher et al, 2020; McNichol et al, 2022):

- Improperly fitting pouching systems: particularly those that are not sized appropriately for a stoma that has changed size or shape, or those that do not match body contours
- Age: increased alkalinity of the skin's pH occurs with increased age, reducing the integrity of the ostomy skin
- Ostomy type: studies report a higher incidence in individuals with an ileostomy
- pH of the organ-specific stoma effluent: a more alkaline pH has been shown to cause inflammation of the peristomal skin
- Surgical technique: including the degree of protrusion and position of the lumen on the abdomen
- Incorrect pouch, changing technique and/or wear time.

Box 2: Managing MASD with an evidence-based approach (adapted from Woo et al, 2017):

1. **Clean gently.** Wash vulnerable skin with a gentle cleanser with minimal rubbing. Avoid the use of soaps with an alkaline pH.
2. **Use appropriate dressings.** Use absorbent dressings for high-exudate wounds and match dressing change frequency to exudate levels.
3. **Use atraumatic tapes or adhesives.**
4. **Create a barrier.** Use a barrier film, such as the 3M™ Cavilon™ No Sting Barrier Film, to prevent MASD. The choice of barrier film depends on availability and patient needs (e.g. consider what the patient feels comfortable with or if they have sensitivity to a particular product).
5. **Promptly manage infections.** Remember that chronic wounds can make people prone to dermatitis. Infections should be treated as per local guidelines. If dermatitis develops, treat the cause of primary infection, manage secondary infection and treat inflammation with topical steroids.
6. **Assess regularly.** The peri-wound skin should be regularly assessed for appearance of any signs of damage that may occur due to excessive moisture damage (e.g. maceration, erythema and erosion).
7. **Educate on optimal skin health.** It is important to find a balance to keep the skin moisturised to the normal moisture content (10-15% moisture in healthy stratum corneum). Dry skin can result in skin breaks which can quickly lead to irritant-induced damage.

Each person with ostomy should be assessed based on their risk status, even if the skin appears intact and there are no visible signs of damage. It is also important to consider in this assessment any previous history/episodes of peristomal dermatitis.

	Clinical Presentation	How to use	What to use
Step down / Step up	**Prevention** No signs of erythema and skin remains intact 	Cleanse the skin with moderately warm water or a mild cleanser with no film residue, once daily (Fletcher et al, 2020)	Prophylactic application of 3M™ Cavilon™ No Sting Barrier Film 
	Management Presenting with signs of erythema and mild skin excoriation 	Cleanse the skin with moderately warm water or a mild cleanser with no film residue, once daily	Prophylactic application of 3M™ Cavilon™ No Sting Barrier Film 
	Presenting with signs of erythema and moderate to severe skin excoriation  	Cleanse the skin with moderately warm water or a mild cleanser with no film residue, once daily	Application of 3M™ Cavilon™ Advanced Skin Protectant to treat and prevent further skin breakdown 
	High-risk/severe excoriation Presenting with erythema, maceration, erosion of affected skin adjacent to the stoma/tube, serous exudate, partial-thickness skin loss with irregular borders, and sensations of itching, burning, and pain 	Cleanse the skin with moderately warm water or a mild cleanser with no film residue, once daily	Application of 3M™ Cavilon™ Advanced Skin Protectant. Recommended for use on at-risk, wet/weepy and denuded skin 

What does post-treatment improvement look like? The above images present the case of a patient with ostomy with severe skin damage and pain, requiring morphine prior to each device change. Following images depict what the improvement looked like over time, after application of 3M™ Cavilon™ Advanced Skin Protectant.

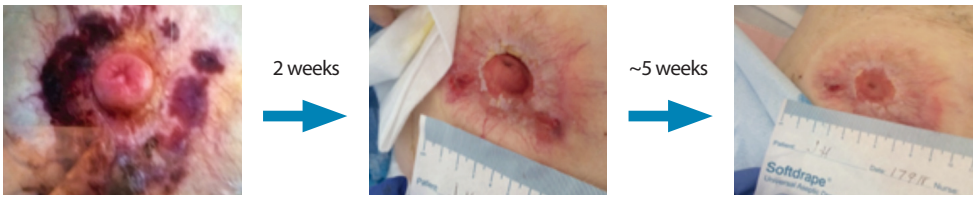


Figure 1a: Peristomal dermatitis prevention and treatment. (Images provided by Chrisse Aquino and Jacqueline Dark.)

Assess the risk status of each person with ostomy, even if the skin appears intact and there are no visible signs of damage. It is also important to remember if previous history/episodes of PMARSI have already occurred.			
	Clinical Presentation	What to use	When to use
Management	Visible alteration in skin integrity with erythema and/or other skin alterations such as skin tears, erosions, bullae, or vesicles (Le Blanc, 2019) 	An acrylate terpolymer-based film (acts as a sacrificial substrate between the skin and the hydrocolloid skin adhesive (Fletcher et al, 2020) e.g. 3M™ Cavilon™ No Sting Barrier Film 	At each appliance change

Figure 1b: PMARSI prevention and treatment

Currently, there is an unmet need to identify early-on the people at high-risk of peristomal skin complications and utilise appropriate preventive measures. To ensure optimal outcomes, this identification of risk should start right from the decision of stoma positioning (pre-surgery) followed by comprehensive post-surgery preventive measures.

SIMPLIFYING PREVENTION AND TREATMENT FOR PERISTOMAL SKIN COMPLICATIONS

Depending on the level of skin damage and the individual patient's risk factors, different topical products can be adopted. It is crucial to remember that, in high-risk patients, peristomal skin care should be prophylactic. Timely intervention is the key, as skin deterioration may develop rapidly causing significant distress to the patient. It is important to note that, while prevention may be possible with typical ostomy skin care products, deploying polymeric cyanoacrylate-based products is important once skin has become irritated or when the patient is deemed at a very high risk of developing peristomal skin complications. For example, preventative measures can be undertaken in known cases of patients with gastrostomy tubes and production of high levels of gastric acid.

See Figures 1a-b for a matrix to help tailor skin care to patient's needs and level of risk for peristomal dermatitis and PMARSIs.

Figure 2 depicts the method of application of 3M™ Cavilon™ No Sting Barrier Film. To apply both this and 3M™ Cavilon™

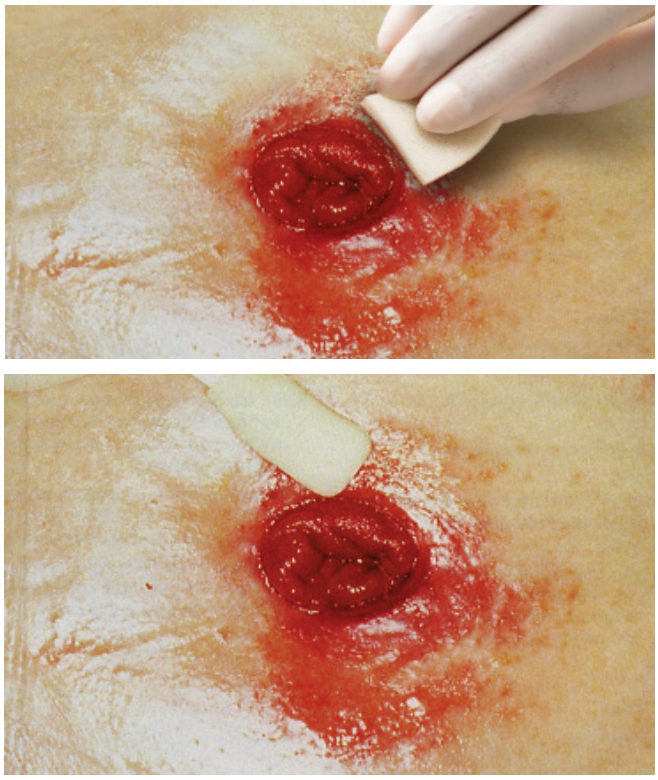


Figure 2: Application of 3M™ Cavilon™ No Sting Barrier Film with the supplied wipe (above) or the applicator wand (below). (images provided by Solventum.)

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Advanced Skin Protectant, it is important to apply the film in even, smooth and unidirectional coats. The aim is to 'paint on' the film on in one layer so it can dry optimally. If an area is missed, it is important to wait until the already-applied film is completely dry, and then apply to the missed area. If application is done via 'back and forth' strokes, the film will not dry properly. When applying between skin folds (e.g. between buttocks), it is important to hold the skin folds apart until the film is touch-dry. For detailed application instructions, consult the product's Instruction For Use.

CONCLUSION

Effective ostomy care is essential for maintaining the health and well-being of people with an ostomy. With the growing number of individuals living with stomas, it is imperative that healthcare professionals possess the knowledge and skills to prevent and manage peristomal skin complications. Understanding the pathophysiology of ostomy-related skin issues, recognising risk factors, and implementing preventive strategies are crucial steps in minimising the occurrence of complications such as peristomal dermatitis and PMARSI.

Cyanoacrylate-polymer-based skin protectants such as 3M™ Cavilon™ Advanced Skin Protectant and other Solventum products can be used prophylactically to avoid skin breakdown, ensuring that people with an ostomy can lead comfortable and fulfilling lives. By prioritising preventive care, healthcare providers can play a pivotal role in supporting the long-term health of their patients. It is also crucial to empower patients and their carers by educating them on the importance of self-care that they can routinely perform to prevent several of these challenges.

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