

Periwound Maceration



Defining skin maceration

Maintaining the integrity of the skin surrounding a wound is essential if healing is to be achieved. Wound exudate can damage the skin, increasing the risk of breakdown. This Quick Guide examines the causes of maceration, its impact on wound healing and approaches to prevention and management of periwound skin damage.

Maceration is described as “the softening and breakdown of the skin as a result of prolonged exposure to moisture”¹. Body fluids including urine, faeces, sweat and exudate increase the risk of the skin becoming macerated. The cells become over-hydrated and swell, increasing their susceptibility to trauma².

Wound exudate

Wound exudate provides the ideal environment for healing — it speeds up cellular activity, reducing pain and the risk of infection³ — yet too much exudate can be detrimental to the wound and surrounding skin.

The level of exudate is influenced by a number of factors; these should all be considered when undertaking a full assessment of the wound and surrounding skin.

Systemic factors	Holistic factors	Local factors
Congestive cardiac failure	Heat	Wound infection
Renal failure	Limb dependency	Biofilm formation
Endocrine disease	Medication	Wound depth
Obesity	Ageing	Fistula
Fluid overload	Ability to tolerate treatment	Presence of foreign body
Oedema	Mobility	Lymphoedema
Low serum albumin	Poor nutrition	Malignancy

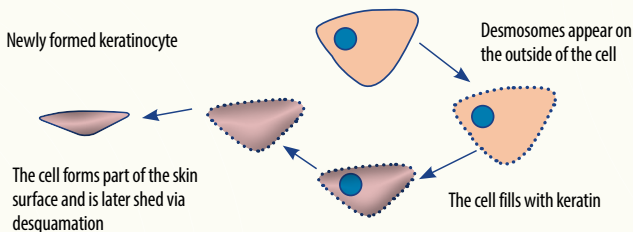
Journey of a cell — how does macerated skin differ?

The epidermis (skin) consists of multiple layers of keratinocytes that form in the base layer of the epidermis, known as the stratum basale. As the cells progress to the skin's surface, they develop desmosomes that allow them to attach to each other and fill with keratin, a protein which gives the skin its waterproofing properties⁴.

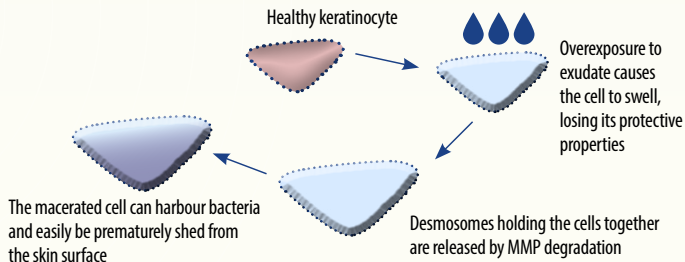
The stratum corneum is the outer layer of the epidermis where the cells are compacted together to form an essential protective barrier.

After 4 weeks, keratinocytes are shed from the surface of the skin in an orderly process known as desquamation. They are then replaced by cells from the layers below.

Life cycle of a healthy keratinocyte



Changes in the cell's life cycle secondary to maceration



Why is maceration a problem for wounds?

Maceration



Reduces the protective barrier of the skin



Softens bonds between cells



Allows bacteria to enter the skin



Makes skin susceptible to trauma from dressing adhesives



Contributes to delayed healing⁵

Haryanto et al (2017) found that healing was significantly delayed in wounds with macerated edges, and maceration contributes to wound pain and discomfort¹.

Biofilm

Changes in the level of exudate of hard-to-heal wounds can contribute to maceration at a level that directly impacts wound healing^{1,6}.

Colonies of bacteria form on the wound surface and survive in a protective biofilm. Their presence stimulates an inflammatory response, increasing exudate and causing neutrophils and macrophages to enter the wound⁷.

To dislodge the biofilm, they release proteases (matrix metalloproteinases [MMPs]) and reactive oxygen species (ROS) to kill bacteria. This response is often ineffective — the ROS damage and destroy healthy cells and MMPs, break down extracellular matrix in the wound bed and desmosomes that hold keratinocytes together.

References

1. Haryanto H, Arisandi D, Suriadi S et al (2017) *Int Wound J* 14(3): 516–22
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3. Dowsett C (2012) *Independent Nurse* 2012(2)
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9. Morris C (2006) *Wound Essentials* 1: 178–83

Management of periwound skin damage

Prevention of periwound skin damage should take a holistic approach, identifying the causes of high levels of exudate and, where possible, acting to reduce them⁸.

Dressings are essential for absorbing exudate away from the skin surface. Absorbent dressings (e.g. alginate fibre dressings, gelling fibre dressings) can help to control exudate production and support wound healing⁹. Where the skin is at risk of breakdown, advance polymer barriers should be used to provide a layer of protection from the effects of exudate.



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Barrier Film is usually recommended for the management of periwound maceration. Following a full assessment, the level of periwound maceration should be identified and documented and guidance used to support intervention.

Product guidance resource

Product guidance — advanced wound and periwound skin care in lower limb ulcers provides a cost-effective treatment strategy against periwound skin damage.

Scan the QR code to view or
download the product guidance ▶



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Guidance to support intervention

MEDI DERMA-S TOTAL BARRIER FILM

Medi Derma-S Total Barrier Film	Selling unit	Product code	PIP code	NHS-SC code
Aerosol (50ml)	1	60819	389-7139	ELY561
Pump spray (30ml)	1	60796	389-7121	ELY562
Wipes	30 pack	60307	341-3184	ELY788
Sterile applicator (1ml)	5 pack	61076	362-8716	ELY532
Sterile applicator (3ml)	5 pack	61090	362-8724	ELY533

Medi Derma-S Total Barrier Film is a non-sting formulation that provides a transparent, quick-drying and long-lasting barrier film protection (up to 72 hours) on mild-to-moderate skin damage and intact skin.

Its application helps to prevent irritation and skin breakdown from incontinence and other bodily fluids (sweat, wound exudate, stoma leakage), adhesive products and friction.

The formulation is ideal for skin folds, periwound, peristomal and intravenous site protection.

Medi Derma-S Total Barrier Film is available as a 50ml aerosol (single patient use), 30ml pump spray, wipes and 1ml and 3ml sterile foam applicator (single use). It must NOT be used if the packaging is damaged or open.



DANGER. HIGHLY FLAMMABLE.

Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Use in a well-ventilated area. Store away from direct sunlight. Store at ambient temperature and humidity.

