WOUNDS UK

Best Practice Statement

Principles of wound management in paediatric patients

Second Edition

2024

Wound aetiology, assessment and diagnosis in paediatric patients

Child- and young person-centred wound management

MASD including incontinence-associated dermatitis

PU prevention and management

BEST PRACTICE STATEMENT: PRINCIPLES OF WOUND MANAGEMENT IN PAEDIATRIC PATIENTS (SECOND EDITION)

PUBLISHED BY:
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This document has been developed by Wounds UK and is supported by an unrestricted educational grant from Clinimed Ltd.

How to cite this document:
Best Practice Statement (2024) *Principles of wound management in paediatric patients (Second Edition).* London: Wounds UK. Available to download from: www.wounds-uk.com

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Developing best practice for wound management in paediatric patients

In 2014, the first edition of this document was published (Rodgers et al, 2014), addressing the need for clear and concise guidance for UK clinicians as to how to deliver optimal care to paediatric patients with wounds. There were, at this time, no existing UK guidelines in this area for healthcare professionals who work with paediatric patients.

Paediatric care remains particularly challenging, as there is a lack of research available to guide practice; a lack of tools for standardising assessment, which can lead to inappropriate treatment choices; and a lack of product standardisation across formularies, along with a poor understanding of which of these products can be used in paediatric patients.

Ten years on from the first edition, clear guidance in this area is still lacking and the need was identified to provide updated information for use in today's practice. This updated 2024 edition highlights the key principles in wound management in paediatric patients, and provides expanded and up-to-date information where needed.

This updated Best Practice Statement (BPS) seeks to explain, in accessible and meaningful language, the rationale for application of wound care knowledge in paediatric patients with wounds.

This BPS seeks to provide clinicians with a best practice guide covering several areas of wound management in paediatric patients, updated for 2024 and with new relevant sections added:

- Wound aetiology, assessment and diagnosis in paediatric patients
- Child- and young person-centred wound management
- Moisture-associated skin damage prevention and management
- Pressure ulcer prevention and management.

All guidance is based on best available current literature, local/national initiatives and expert opinion.

GUIDE TO USING THIS DOCUMENT

Each of the sections that follow offer advice about caring for the skin and wounds of paediatric patients. The best practice statements, their rationale, and how to demonstrate best practice for all sections have been compiled in the appendix on page 19.

SECTION 1: WOUND AETIOLOGY, ASSESSMENT AND DIAGNOSIS IN PAEDIATRIC PATIENTS

Although structurally a full-term baby's skin has all the cell layers in the epidermis and dermis, the dermo-epidermal junction is much more fragile, with newborn skin not comparable to adult skin for a few weeks, and a much more fragile epidermal-to-dermal junction (Kong et al, 2017; Visscher et al, 2021). Additionally, the skin's water handling is different, and natural moisturising factor and skin lipid production are reduced compared with adults; due to these developmental differences, the skin in children may be more sensitive to irritation and inflammation (Kong et al, 2017).

As children grow, their skin layers thicken, but paediatric patients generally have more vulnerable skin than adults. A child's skin develops to that of an adult at approximately the age of 12 (Lintzeri et al, 2022). A number of other considerations [Box 1] mean that the approach to wound management in paediatric patients must differ from that in adults.

Regardless of age, wound healing follows the same basic physiological processes. Just as in adults, wounds in paediatric patients heal in four phases (Wallace et al, 2023):

- The haemostatic phase (process of the wound being closed by blood clotting)
- The inflammatory phase (the body's normal response to injury)
- The proliferative phase (when the body structures regenerate and healing begins)
- The maturation and remodelling phase (when scar tissue is formed; RCHM, 2012).

Special care must be taken to create the right environment for healing through all phases, regardless of the mechanism of wound healing (e.g. primary intention, secondary intention, skin graft/flap), while considering the physiological differences in neonatal and paediatric skin [Table 1].

Aetiology of paediatric wounds

The causes of wounds in infants and children may differ from those in adults. Acute wounds occur from trauma such as road traffic accidents, dog bites, lacerations, burns and scalds, or from surgical interventions.

Chronic wounds such as pressure ulcers are largely caused by medical device-related pressure, friction and shear; invasive lines/tubes (e.g. gastrostomy/tracheostomy tubes) can give rise to hypergranulation or skin excoriation; other causes include purpura fulminans due to meningococcal sepsis, epidermolysis bullosa, myelomeningocele, ulcerated haemangioma and vascular anomalies (Smith et al, 2019). Autoimmune skin conditions or graft versus host disease may also contribute (Rahman et al, 2020).

Medical device-related pressure injuries have been reported widely within routine paediatric and neonatal care, particularly in intensive care settings, leading to acute wounds, which can have long term implications. Among neonates and young infants, invasive lines can lead to extravasation or emboli-induced ischaemic injuries.

Paediatric skin conditions

Dermatological conditions are frequently encountered in paediatric practice. Common conditions seen in the paediatric population include atopic and contact dermatitis, eczema and psoriasis. Eczema, one of the most common inflammatory dermatoses in children, is intensely pruritic, which can be debilitating in other domains of life such as sleep and leisure (Min et al, 2023).

Paediatric patients with dermatological condition(s) usually experience numerous symptoms, which may lead to decreased quality of life and increased risk of comorbidities and development of wounds, as well as negative psychological effects (Min et al, 2023).

Epidermolysis bullosa

Epidermolysis bullosa (EB) is a rare and complex group of inherited skin fragility disorders, characterised by skin and mucous

Key points:

1. The approach to wound management in children must differ from that in adults
2. Record baseline data as part of a holistic assessment of both the patient and wound, and reassess and monitor treatment on a regular, ongoing basis
3. Consult a specialist member of the multidisciplinary team in line with local guidelines the event of suspected/confirmed infection or if the wound fails to heal
4. Ensure the special needs of paediatric patients and their parents/guardians are accommodated

Box 1: Wound care considerations in paediatric patients (Patel and Tomic-Canic, 2014)

- Reduced ability to thermoregulate
- Increased body surface-to-weight ratio
- Increased transepidermal water loss
- Propensity towards epidermal stripping
- Immature immune, renal and hepatic systems, which increase risk of infection
- Limited mobility (e.g. in babies)
- Potential age- or cognition-related difficulty in verbal communication
- Different ways of expressing pain compared to adult patients
- Dietary intake potentially affecting the rate of healing.

Table 1: Key differences in neonatal and paediatric skin (IMAG, 2004; White and Butcher, 2006; Visscher et al, 2013; Kanti et al, 2014)

Neonatal skin	Factors affected	Considerations
Stratum corneum 2–3 cells thick, compared to ~20–30 cells in an adult	Reduced barrier functions leaving skin more prone to mechanical trauma, chemical absorption, bacterial colonisation and infection; transepidermal water loss is increased, affecting fluid balance for several weeks in extreme preterm babies	Avoid topical application of potentially toxic chemicals (e.g. iodine, alcohol, high concentrations of chlorhexidine) Good hand hygiene Consider fluid losses +/- nursing in humidity High risk of pressure damage
Fibrils that connect dermis to epidermis are reduced in numbers and widely spaced in preterm infants Dermis is poorly delineated and less dense for several weeks in extreme preterm babies	Prone to damage from skin stripping (especially during removal of adhesives) and shearing forces (e.g. from poor moving/handling techniques, nails, hand jewellery, equipment with surface contact)	Minimise use of adhesives Use sterile silicone adhesive removers Minimise handling Carers must remove all hand/wrist jewellery and keep nails short Minimise device related pressure ulcers by regular pressure relief and frequent examination
Subcutaneous fat is reduced or even absent in very pre-term infants	Reduced energy stores, less 'shock absorption', temperature regulation poor	Increased calorie intake (as per dietician) Reposition as handling allows to prevent pressure ulcers Minimise occasions where cooling could occur (e.g. handling, bathing, excessive exposure)
Increased levels of **type III collagen**	Increased tensile strength and ability to repair damaged tissue faster and more effectively	Faster wound healing (dependent on other factors affecting wound healing)
Inadequate acid mantle in newborn babies (term and preterm), starts to develop in first few weeks	Leaves skin vulnerable to biochemical and microbiological insults Risk of IAD	Attention to good hand hygiene to avoid hospital acquired infections Regular nappy changes, barrier products to protect the skin
Increased **sebaceous secretions** in newborn infants	Can lead to spots on face/nose	Reassure parents it is normal and will not last beyond a few weeks once hormone activity regulates postnatally

membrane fragility. Depending on the location of the molecular and structural defect within the skin, clinical manifestations may include skin peeling, blisters, erosions, ulceration, wounds or scars (Has et al, 2020).

Wounds resulting from abuse or neglect

Keep in mind that not all wounds are a result of medical/clinical issues. Maltreatment, abuse or neglect of a child can result in wounds that present in a typical way (e.g. abrasion, bruise, laceration, burn/scald, bite). Skin signs of maltreatment are often accompanied by other physical injuries, as well as other signs of abuse (e.g. neglect, emotional abuse; NICE, 2017).

Box 2: Factors that could delay wound healing* Adapted from NHS QIS (2009) and Wounds UK Best Practice Statement (2013)

Medications/treatments
- Antibiotics
- Anticoagulants
- Chemotherapy
- Glucocorticoid steroids
- Inotropes

Comorbid conditions
- Anaemia
- Allergies/sensitivities
- Diabetes
- Immunocompromise
- Infection
- Incontinence
- Obesity
- Oedema
- Prematurity
- Respiratory/circulatory disease
- Wound infection

Contributing factors
- Concordance
- Immobility
- Poor nutrition
- Social isolation
- Socioeconomic status

*Not exhaustive

A concise history must be obtained of how an injury/wound occurred. Suspicion should be raised if:

- Accounts of the mechanism of injury keep changing, differ, or are implausible or inconsistent with the injury
- The mechanism of injury is inconsistent with the child's age/developmental stage, normal activities and existing medical conditions
- Delay in seeking medical attention
- Lack of concern from parents/carers
- Demeanour/behaviour of child causes concern (NICE, 2017).

Concerns about maltreatment or abuse must be documented accurately and reported immediately according to local safeguarding and child protection policies (NICE, 2017).

Documentation

Accurate documentation is essential to safe and effective care, and integral to determining the patient-centred plan of care in paediatric patients with wounds. Documentation should be performed as per the Nursing and Midwifery Council and Royal College of Nursing Guidelines (NMC, 2021; RCN, 2023).

Written information about the dressing and treatment plan should be provided to the patient where appropriate, and to parents/carers in accessible language that lets them understand and participate to the extent needed. Patient education should be delivered at an age-appropriate level. For example, education of adolescents is ideally provided on a one-to-one basis with respect for their privacy and autonomy. Reported benefits of providing appropriate patient education include less distress from symptoms, improved engagement with treatment, and improved knowledge; children and adolescents may also benefit from sharing experiences with peers and learning from each other (Stenberg et al, 2019).

Assessment

A thorough assessment begins with recording baseline data. If a photograph is taken, consent in line with local policy must be obtained from the parent/carer. Record any factors that could delay healing **[Box 2]**, along with the results of wound assessment **[Box 3]**.

Management goals (e.g. moisture balance, debridement, reduction of microbial load) and the care plan should be set based on this assessment. Wounds should be reassessed (and re-documented) regularly and examined for signs of progress, delayed healing and infection. All wounds will have a degree of colonisation; if critical colonisation or infection is suspected, consider the use of appropriate antimicrobial wound management products and/or consult a relevant specialist member of the multidisciplinary team in line with local guidelines (IWII, 2022). Review and revise the plan of care accordingly, based on the most recent assessment of the patient and wound. Document the clinical rationale for any changes in management.

Driven by an increase in microbial antibiotic resistance, when considering antimicrobial treatment, it is vital to consider antimicrobial stewardship (AMS) practices. AMS aims to minimise the possibility of micro-organisms developing resistance to antimicrobial therapies by judicious use and optimisation of all treatment strategies (Fletcher et al, 2020a). For example, consideration of appropriate wound debridement, wound cleansers, whether an antimicrobial dressing is required, and/or need for antibiotic therapy.

Pain/anxiety assessment

Pain is whatever the child says it is and must be taken seriously by the clinician; all patients have the right to appropriate pain management treatment (Andersson et al, 2022). Fear and anxiety can increase pain intensity, disability, emotional distress and the need for increased doses/use of medications (Vervoot et al, 2006; WUWHS, 2020). Therefore, the clinician should not separate the two, and must manage them as a whole. Pain levels should be assessed both at rest and during movement. Response to treatment should be evaluated to prevent undertreatment of pain (Andersson et al, 2022).

Commonly encountered pain in relation to wound care can typically be categorised as

Box 3: Wound assessment

Pain and anxiety
- Pain and anxiety levels
- Analgesia requirements (e.g. regular/ongoing, at dressing change)

Wound dimensions
- Length, width, depth
- Tracking/undermining
- Photograph

Tissue type (specify percentages)
- Necrotic
- Sloughy
- Granulating
- Epithelialising
- Hypergranulating
- Haematoma
- Exposed bone/tendon
- Presence of foreign body

Exudate
- Levels (e.g. low, moderate, high)
- Consistency (e.g. serous, haemoserous, purulent)

Periwound skin
- Dry/scaling
- Erythema
- Excoriation
- Fragile
- Maceration
- Oedema
- Healthy/intact

Potential signs of infection
- Heat
- Wound bed deterioration (e.g. new slough or necrosis)
- Pain (e.g. increased intensity, new triggers)
- Increasing exudate
- Increasing odour
- Friable granulation tissue

Adapted from NHS QIS (2009) and Wounds UK Best Practice Statement (2013)

acute rather than chronic. Acute pain may be associated with the wound itself or occur during wound management procedures (e.g. cleansing, dressing change). Chronic pain in children tends to present as abdominal pain, limb pain or headache (Reaney and Trower, 2010). It occurs persistently or recurrently (at least three times over the course of 3 months) and is not usually associated with minor injury (Schechter, 2006). However, chronic pain can occur due to hypertrophic/keloid scar tissue or contractures caused by tight scars. Paediatric patients tend to report 'pain all over', so it is critical that pain be adequately assessed to rule out systemic causes, but not to the extent it increases anxiety.

Assessment should involve explaining, to the child's level of understanding, the distinction between hurt and harm (Emerson and Bursch, 2020). It is also helpful to ask the child to use one finger to point to where the pain originates. Pain should be assessed on an ongoing basis, throughout wound management: ideally, before, during and after a procedure (e.g. dressing removal, cleansing, dressing application; WUWHS, 2020).

Pain assessment scales **[Table 2]** can be used as a guide in conjunction with ongoing holistic assessment of the child, their behaviour and the family (Baulch, 2010). This assessment must take into account the cause(s) of the pain (physical and psychological), whether it is acute, chronic or acute on chronic, where it is coming from, how intense it is and what makes it better/worse (APAGBI, 2012; WUWHS, 2020).

In a sedated or unconscious infant/child, monitoring of vital signs may be useful to detect pain. Children with limited cognitive or physical function may have a typical way of expressing pain such as a facial twitch; it is important to listen to the parent/carer, who knows the child best, as this can help identify these indicators (Baulch, 2010).

Table 2: Recommended pain assessment scales according to age (APAGBI, 2012)

Child's age (with normal or assumed normal cognitive development)	**Measure**
Newborn–3 years old Intensive-care setting Sedated/unconscious patient	COMFORT Scale or Face, Legs, Activity, Cry, Consolability (FLACC) Scale
4 years old	Faces Pain Scale-Revised (FPS-R), COMFORT or FLACC
5–7 years old	FPS-R
7 years old+	Visual Analogue Scale (VAS), FPS-R

SECTION 2: CHILD- AND YOUNG PERSON-CENTRED WOUND MANAGEMENT

The key goals of holistic wound management in children are to alleviate/minimise pain, lessen emotional distress and minimise scarring [Box 1]. Care of the paediatric patient with a wound should be holistic and patient-centred. The treatment plan should consider the whole child, not simply the wound being treated, and be concerned with the overall experience of the child and family. Children, young people and parents should be viewed as partners in care, to shape and plan treatment, with services coordinated around the needs of the child and the family. Information should be given to ensure informed consent and engagement with treatment (WUWHS, 2020). An age-appropriate approach to care is also essential; for example, children and adolescents can be encouraged to self-report pain (Wounds UK Expert Working Group, 2013; Emerson and Bursch, 2020).

This section will cover the principles of four key areas of child-centred wound management in paediatric patients:

- Analgesia/pain management
- Epidermal blistering and stripping
- Wound cleansing and debridement
- Dressing selection.

Analgesia/pain management

Decisions regarding the type of analgesia to be used must be carried out by a suitably qualified healthcare practitioner before prescription and administration [Table 1]. Doses must be carefully calculated, according to BNFC dosing and local policies, usually based on the patient's weight. The time from administration to effect depends on the type of drug, route of administration and the patient's ability to metabolise the drug; therefore, it must be administered and given enough time to take effect before commencing the procedure. Relevant monitoring must be used with some analgesics (e.g. nitrous oxide or opiates) per local guidelines (APAGBI, 2012; Anekar et al, 2023).

Anxiety can increase the perception and intensity of pain (WUWHS, 2020). As such, nonpharmalogical methods of pain management should also be employed [Box 2]. The bedside is considered a 'safe space' for the child, so dressing change should be carried out in a treatment room (if possible), to allow psychological separation from the safe space. By the same token, mealtimes should not be interrupted. Parents/carers should be encouraged to be present during dressing change, and cradle the child if possible, to reduce pain levels by alleviating anxiety (Reaney and Trower, 2010). Other interventions include distraction, play therapy, hypnosis, breast-feeding and use of familiar comforter/toy.

Epidermal blistering and stripping

Epidermal skin is loosely bound to the dermis in infants, making them susceptible to blisters and epidermal tears. When there is increased friction and/or tension at the interface between the skin and the wound dressing (e.g. due to use of adhesives), shear forces loosen the connections between the epidermis and dermis, leading to separation of the skin layers and resulting in skin blistering (where fluid seeps between the layers) or stripping (where the epidermis is removed; Johansson et al, 2012; Figure 1). This is also known as MARSI (medical adhesive-related skin injury), referring to any skin damage caused by the use of products containing a medical adhesive – e.g. tapes, dressings, electrodes, medication patches and wound closure strips (Fumarola et al, 2020; Wounds UK, 2023).

The presence of wound exudate, even at normal healing levels, can exacerbate the risk of skin blistering and stripping as moisture increases friction forces and softens the skin which, in turn, weakens the outer layers (Johansson et al, 2012; WUWHS, 2019). Paediatric patients in general have immature and more fragile skin than adults, which also puts them at risk [Box 3].

Epidermal blistering and stripping in patients with wounds tends to occur secondary to

Key points:

1. Prevent and manage pain and anxiety in paediatric patients
2. Prevent epidermal blistering and stripping
3. Cleanse only after thoroughly assessing the patient and wound
4. Adapt dressing selection to the special needs of paediatric patients with wounds

Box 1: Aims of wound care (Rodgers, 2010; Bale and Jones, 2006)

The main objectives when caring for a wound are to restore the function of injured tissue and do no harm. Treatment should:

- Minimise pain and trauma
- Minimise scarring
- Lessen emotional distress, and promote dignity, comfort and wellbeing
- Create the optimum environment for the healing process to take place
- Promote a moist wound healing environment
- Prevent temperature fluctuations
- Remove devitalised tissue and excess exudate
- Prevent/treat infection
- Restore skin barrier function
- Ensure cost-effectiveness

Table 1: Commonly used analgesics*	
Sucrose	Provides an effective analgesic effect in neonates. Can be administered directly into the mouth or by applying solution to a dummy. Very small amounts are recommended. Can be repeated during long procedures
Simple oral analgesics (e.g. paracetamol and ibuprofen)	Very effective for procedural pain, especially when given together. The analgesic dose of paracetamol is higher than the anti-pyretic one. (Ibuprofen not suitable for patients <6 months or for whom NSAIDs are contraindicated)
Opiates	Very effective, quick-acting analgesics for more severe pain, with morphine being the most widely used in children. Can be administered orally, transmucosally, nasally and intravenously. Intravenous morphine doses can be titrated during long procedures to allow for continual effect
Nitrous oxide	Provides rapid-onset and -recovery analgesic effects for procedural pain. Tends to be used (per local guidelines) in patients older than 5–6 years with 'normal' cognitive and physical function due to need for self-administration. Repeated dosage can lead to bone marrow toxicity; appropriately monitor patients
General anaesthetic	May be required for some patients undergoing extremely painful or complex procedures (e.g. perianal wound management, wound debridement, burn and scald assessment and management)

*Based on APAGBI, 2012; Kanagasundaram, 2001; Reaney and Trower, 2010; Rogers et al, 2006; Taddio et al, 2008)

Figure 1: Epidermal stripping

Box 2: Supplementary approaches to pain management

- Allow appropriate time and preparation, pre-arranging time for care with parents/carers when possible
- Address anxiety as well as pain, and ensure adequate pain relief is given in addition to any routine analgesia
- Allow the child an age- and status-appropriate degree of control and participation
- Employ play therapy involvement/distraction
- Use of a familiar comforter/toy
- Hypnosis
- Breast-feeding
- Involve the parent/carer in care
- Remember that care in taking the dressing off is as important as in putting it on
- Safeguard the patient to make sure they are safe and secure during wound assessment and treatment
- Keep the patient warm
- Use a calm, quiet environment
- Utilise electronic devices such as phones, tablets, laptops, VR headsets

the use of adhesive dressings and adhesive tape used to secure tubes and lines. Blistering and stripping are the primary causes of skin breakdown in neonatal intensive care units (Lund et al, 2001; Broom et al, 2019). Epidermal stripping can be avoided by carrying out good skin hygiene, using a sterile silicone barrier film prior to dressing application, using silicone tapes and non-adhesive dressings where possible; adhesive tapes and dressings should be gently applied and should be removed with a sterile silicone adhesive remover when they are used (Butler, 2006; Wounds UK, 2023; **Box 4**).

Wound cleansing and debridement

Wound cleansing is the process of using fluid/gel to remove loose wound debris and remnants of dressings (Mayer et al, 2024). Although not all wounds need to be cleansed, it is important because it can help manage the microbial load, allow better visualisation of wound tissue and help prepare the wound bed for further management and application of dressings.

The decision to proceed with wound cleansing — and which solution to use — should be based on a holistic assessment of both the patient and the wound [Figure 2]. Keep in mind that some dressings have wound-cleansing properties or may be contraindicated with certain cleansing solutions; check manufacturer instructions before initiating cleansing. When cleansing a wound, adhere to the principles of standard infection control precautions. For patient comfort and to aid wound healing, cleansing solutions should

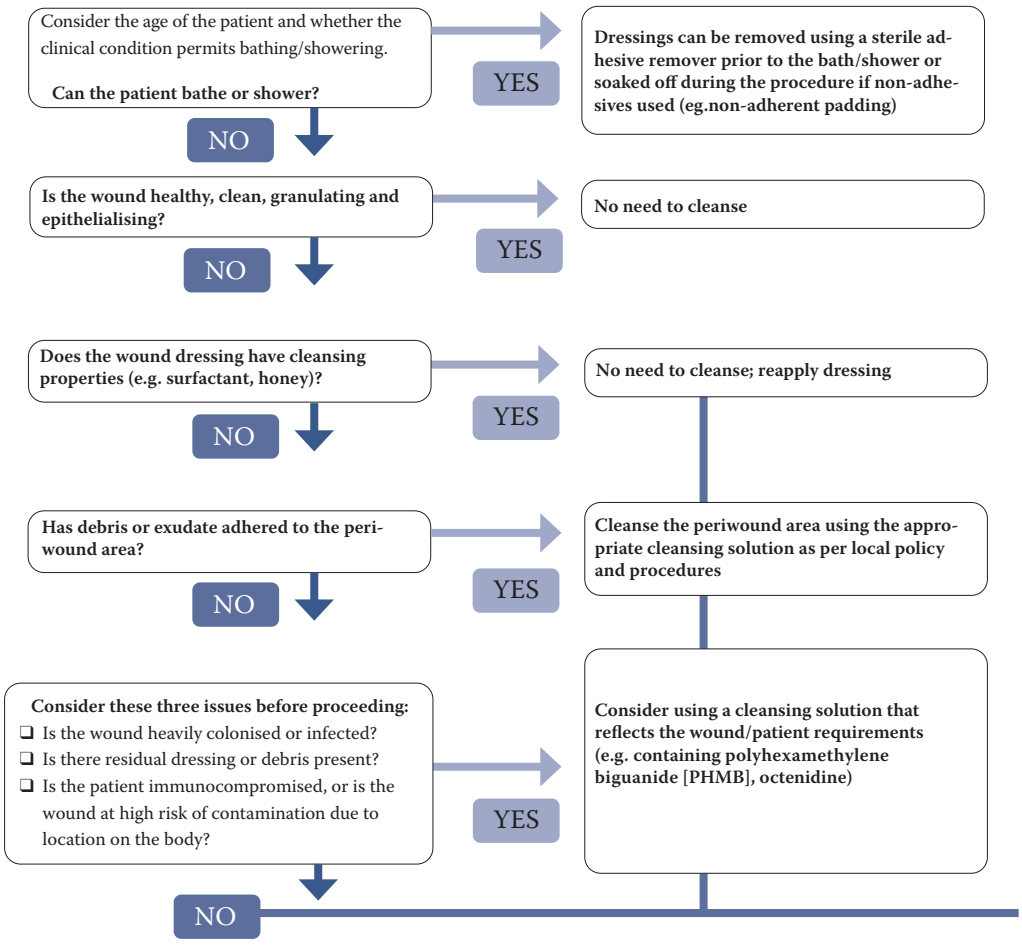
Box 3: Causes of/risk factors for MARSI, skin blistering and stripping (Ousey et al, 2011; Koval et al, 2007; Fumarola et al, 2020)

- Movement at the wound site
- Choice of dressing and application
- Adhesive tape/dressing use
- Poor application and removal technique
- Size of wound (larger wounds)
- Anatomical location (e.g. near a bony prominence)
- Medications (e.g. corticosteroids)
- Comorbidities (e.g. eczema)
- Excessive oedema
- Concordance (e.g. patient removing dressing themselves)

Box 4: Interventions to prevent epidermal blistering and stripping

- Sterile silicone barrier film on the skin under adhesive dressings in neonates less than 30 days old
- Clear film dressings to secure intravenous sites
- Pad splints and padded hook-and-loop-closure straps over splints rather than tape
- Soft silicone or lipidocolloid dressings to treat areas of denudation secured with tubular latex-free stretchy gauze netting
- Adhesive dressing/tape removal with a sterile silicone adhesive remover, which renders removal of an adhesive dressing atraumatic

Figure 2: Paediatric wound cleansing flowchart



be at body temperature (Brown, 2018) Wound cleansing may need to be tailored to the needs of the patient. A preterm infant could get cold during wound care and could sustain burns with certain cleansing agents. Cleansing should also be avoided in wounds with a high risk of bleeding (e.g. haemophiliacs or those with abnormal clotting); in these cases, a wound gel can be applied directly to the dressing, to aid cleansing in these fragile wounds, but may not be required for dressings containing wound-cleansing properties.

Bathing may be utilised to facilitate dressing removal and wound cleansing, and to minimise pain and trauma. If plain tap water is to be used, the tap should be allowed to run for 5 minutes (to discharge the microbial load in the plumbing system) before filling the bathtub. Be sure to be especially conscious of privacy and dignity issues in older children and adolescents when proceeding with bathing (Baharestani, 2007).

Debridement may be safely carried out in a wide range of paediatric wounds to help prepare the wound bed, promote structural restoration and regeneration of damaged tissue, remove necrotic tissue, and reduce the bacterial load and factors that result in a wound's becoming stuck in the inflammatory stage of healing (Patel and Tomic-Canic, 2014). Autolytic debridement is the method typically used in paediatric patients, along with conservative sharp, surgical and biosurgical (larval) debridement (Durante, 2014).

When choosing a method of debridement, clinicians should consider the patient's age, size of the wound, type of wound, location

of the wound, selectivity of the method, the pain management that will be required and the length of the procedure, as well as the clinician's level of competence with debridement methods (Patel and Tomic-Canic, 2014; Durante, 2014; Mayer et al, 2024). For example, surgical debridement is suited to patients with larger wounds (e.g. burns) who are not contraindicated for general anaesthesia (Mayer et al, 2024). Autolytic debridement is a good choice for small wounds where the patient is not immunocompromised or does not have other risk factors for developing a chronic wound (Mayer et al, 2024). First-hand experience has found that autolytic debridement is ideal for paediatric and neonatal wounds, to balance minimising the impact on the patient with ensuring that non-viable tissue is effectively debrided.

In neonatal skin and extravasation injuries, the depth of injury should be considered and whether debridement may expose underlying structures. A 'wait and see' approach may be required until the patient becomes more clinically stable and the wound able to heal. Frequent observation will determine when debridement is appropriate.

Dressing selection

Historically, dressing products are developed and indications determined based on adult research studies (McCord and Levy, 2006); up-to-date evidence in the literature for paediatric patients in still lacking. As a result, the practitioner usually must adapt the products available for use in children to reduce risk of surrounding skin damage by avoiding covering more body surface than necessary. In addition, clinicians need to ensure that the dressing products selected have been shown to be safe and effective for the intended indication and population (Baharestani, 2007; **Table 2, page 10**).

The dressing chosen should optimise the environment for moist wound healing to take place; prevent infection; minimise pain and trauma; prevent cooling; and be cost-effective **[Box 5]**. Dressing selection in paediatric patients should be based on the wound-healing phase, wound location, amount of exudate, tissue type, age of the child and signs of wound colonisation (McCord and Levy, 2006). All open wounds are contaminated with microbes; however, the presence of non-multiplying microorganisms is not of clinical concern. If a wound shows signs of local infection, manage as per local protocol. If the wound becomes infected, consult with a specialist member of the multidisciplinary team in line with local guidelines (IWII, 2022).

All infection protocols should be in line with AMS-informed principles (Fletcher et al, 2020a). In general, prophylactic use of antimicrobials is strongly discouraged (IWII, 2022). Refer to local guidelines regarding the management of burns and scalds, as antimicrobials may be recommended to prevent complications such as Toxic Shock Syndrome.

Box 5: Special considerations in paediatric dressing selection

Size

- Many dressings come in suitable sizes for adults
- Many can be cut to size; ensure that cutting the dressing does not reduce effectiveness of the product or deposit debris in the wound (e.g. superabsorbents)

Irritants

- Paediatric skin may be more sensitive to product ingredients
- Care should be taken to identify irritants (e.g. fragrance, alcohol, iodine and lanolin)
- Alcohol-based adhesive removers, chlorhexidine and povidone-iodine may cause chemical burns and should be avoided, particularly in patients younger than 6 months
- Use sterile silicone (alcohol-free) adhesive removers and sterile silicone barrier films

Figure 3: Extravasation injury

Figure 4: Series of photographs showing wound debridement of ungradeable/unstageable Medical Device Related Pressure Damage (caused by straps from BIPAP mask) using autolytic debridement

Table 2: Wound products commonly used in paediatric patients

Type	Actions	Indications/use	Precautions/contraindications
Alginates/CMC	Absorb fluid Promote autolytic debridement Moisture control Conformability to wound bed	Moderately to highly exuding wounds Special cavity presentations in the form of rope or ribbon Combined presentation with silver for antimicrobial activity	Do not use on dry/necrotic wounds Use with caution on friable tissue (may cause bleeding) Do not pack cavity wounds tightly
DACC™-coated hydrophobic dressing	Antimicrobial/anti-bacterial/anti-fungal action Binds bacteria, fungi and endotoxins in to non-adherent wound contact layer Allows passage of exudate in to secondary dressings	Low to high exuding wounds Critically colonised wounds or clinical signs of infection	Requires moisture to work effectively
Copper impregnated	Antimicrobial/anti-bacterial action Moisture control	High exuding wounds Critically colonised wounds or clinical signs of infection	Known sensitivity to copper
Enzyme Alginogel	Antimicrobial/anti-bacterial action Hydrates wound bed Promotes autolytic debridement Moisture control Reduces odour	Sloughy, low to high exuding wounds Critically colonised wounds or clinical signs of infection	Do not use near eyelids or the eye
Foams	Absorb fluid Moisture control Conformability to wound bed	Moderately to highly exuding wounds Special cavity presentations in the form of strips or ribbon Low adherent versions available for patients with fragile skin Combined presentation with silver or PHMB for antimicrobial activity	Do not use on dry/necrotic wounds or those with minimal exudate
Honey	Rehydrate wound bed Promote autolytic debridement Antimicrobial action	Sloughy, low to moderately exuding wounds Critically colonised wounds or clinical signs of infection	May cause 'drawing' pain (osmotic effect) Known sensitivity
Hydro-responsive	Rinsing-Absorption-Mechanism (RAM) technology Hydrates wound bed Promotes autolytic debridement Moisture control	Rapid debridement Use on dry sloughy, necrotic tissue	Do not cut May cause maceration to surrounding skin Consider barrier film Use film/Hydrocolloid as secondary dressing
Hydrocolloids	Absorb fluid Promote autolytic debridement	Clean, granulating/epithelialising, low- to moderate-exuding wounds Thicker versions can be used to debride sloughy/necrotic wounds	Do not use on highly exuding wounds May encourage overgranulation May cause maceration
Hydrogels	Rehydrate wound bed Moisture control Promote autolytic debridement Cooling	Dry/low to moderately exuding wounds	Do not use on highly exuding wounds or where anaerobic infection is suspected May cause maceration
Iodine	Antimicrobial action	Critically colonised wounds or clinical signs of infection Low to moderately exuding wounds	Use under specialist supervision only Do not use on dry necrotic tissue Known sensitivity to iodine Do not use on children <6 months

Table 2: Wound products commonly used in paediatric patients (Continued)			
Type	**Actions**	**Indications/use**	**Precautions/contraindications**
Low-adherent wound contact layer (e.g. lipido-colloid, silicone)	Protect new tissue growth Atraumatic to periwound skin Conformable to body contours	Low to highly exuding wounds Can be used as a carrier for topical preparations (e.g. honey)	May dry out if left in place for too long Known sensitivity to silicone
Negative Pressure Wound Therapy – (disposable dressing and pump)	Delivers constant NPWT (-80mmHG) for up to 7 days, depending on exudate levels. Reduces oedema Promotes granulation tissue and perfusion Removes exudate and infectious material	Low to moderate exuding wounds Reduces lateral tension Minimises "dead space" between outer skin and underlying tissue	Do not use on sloughy wounds, require debrided first. Do not use on patients with bleeding disorders. If wound depth >than 2cms then filler required- foam or moist sterile gauze. Remove batteries prior to disposal
Negative Pressure Wound Therapy – (non-disposable consists of dressing, sensor pad and pump)	Delivers constant NPWT (from -25- 150 mmHG) for up to 7 days, depending on exudate levels. Reduces oedema Promotes granulation tissue and perfusion Removes exudate and infectious material	Low to high exuding wounds Reduces lateral tension Minimises "dead space" between outer skin and underlying tissue Use Granufoam or moist, sterile gauze for packing wounds.	Do not use on sloughy wounds, require debrided first. Do not use on patients with bleeding disorders. Ensure correct pressure is being delivered appropriate for patient's age and stature.
Sterile silicone barrier film	Prevent epidermal stripping of periwound skin secondary to adhesive removal Protect against skin erosion from wound exudate or other moisture	Skin at risk of epidermal stripping Wounds with high levels of exudate or exposure to other moisture (e.g. moisture- or napkin-associated dermatitis) Sensitive periwound skin	Known sensitivity to silicone (if a silicone-based product)
Activated charcoal	Odour absorption	Malodorous wounds Combine presentation with silver for antimicrobial activity	Do not use on dry wounds
Polyhexamethylene biguanide (PHMB)	Antimicrobial action	Low to highly exuding wounds (depending on dressing presentation) Critically colonised wounds or clinical signs of infection May require secondary dressing	Known sensitivity to PHMB
Silver	Antimicrobial action	Critically colonised wounds or clinical signs of infection Low to highly exuding wounds (depending on dressing presentation)	Use under specialist supervision only Some may cause discolouration Known sensitivity to silver Prolonged use (e.g. longer than 2–4 weeks)
Polyurethane film	Moisture control Breathable bacterial barrier Transparent (allow wound visualisation)	Primary dressing over superficial low exuding wounds Secondary dressing over honey or hydrogel for rehydration of wound bed	Do not use on patients with fragile/compromised periwound skin Do not use on moderately to highly exuding wounds
Remember: if packing any wound to document the length and number of dressing inserted to ensure the same amount are removed at next dressing change.			

SECTION 3: MOISTURE-ASSOCIATED SKIN DAMAGE: PREVENTION AND MANAGEMENT

Moisture-associated skin damage (MASD) is a complex and increasingly commonly recognised condition (Fletcher et al, 2020b). Overexposure of the skin to bodily fluids can compromise its integrity and barrier function, making it more permeable and susceptible to damage (Woo et al, 2017). Individuals with MASD experience persistent symptoms that affect quality of life, including pain, burning and pruritis (Woo et al, 2017; Fletcher et al, 2020b).

MASD is classified as an irritant-contact dermatitis (WHO, 2020). Common irritants can include urine, stool, perspiration, saliva, intestinal liquids from stomas and exudate from wounds. The wider term MASD can generally be subdivided into four key areas:

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

Incontinence-associated dermatitis

Incontinence-associated dermatitis (IAD), a form of MASD that may also be referred to as napkin-associated dermatitis (NAD), or nappy rash, generally describes inflammatory changes to the skin due to exposure to moisture or colonisation with Candida albicans, often under a nappy or incontinence pad (NICE, 2024). IAD is one of the most common skin complaints in infants, but can occur in patients of any age (Beeckman et al, 2015). Therefore, older children can be at risk and should be treated in an age-appropriate manner (Baharestani, 2007). If IAD is not managed appropriately, it can lead to pain and anxiety for the patient and parents or carers. Clinicians must know how to prevent and manage skin breakdown in this area, according to the severity of the damage [Figure 1].

Causes and risk factors

Infant skin pH levels are higher than those of adult skin, which is usually characterised by a pH value between 5 and 5.5 (Oranges et al, 2015). Additionally, the interaction of urine and faeces under a nappy increases ammonia production, which raises skin pH in the area. The higher skin pH reduces skin's barrier function, leaving it more susceptible to damage from the proteolytic and lipolytic enzymes present in faeces. Repeated or prolonged exposure to these irritants, combined with increased hydration, maceration and friction to the skin under the nappy will likely result in IAD (Stamatas et al, 2011; Rowe et al, 2008). The occurrence and severity can be influenced by age of the child, volume, consistency and frequency of stooling, concentration and pH of urine, diet, medication, underlying disease, existing skin conditions and poor hygiene (Oranges et al, 2015; Box 1).

Caring for IAD

Parents and carers must be educated on how to clean the skin and apply barrier preparations (Wondergem, 2010; Gupta and Skinner, 2004; Fletcher et al, 2020b). They should be discouraged from bringing in and applying their own preparations if IAD is present, particularly strongly perfumed products (e.g. lavender). However, if the preparation is not causing damage or preventing skin from healing, the regimen may be continued. Document the preparation being used to ensure there are no contraindications with other aspects of the care plan, which should follow good practice and aim for best patient outcomes.

Nappies and incontinence pads

Although a Cochrane review concluded there was insufficient evidence to support or refute the use of disposable nappies for preventing IAD, many researchers agree that their superabsorbent properties, in combination with frequent nappy changes, are helpful for preventing and managing IAD (Baer et al, 2006; Nield and Kamat, 2007; Heimall et al, 2012; Atherton, 2005; Gupta and Skinner, 2004).

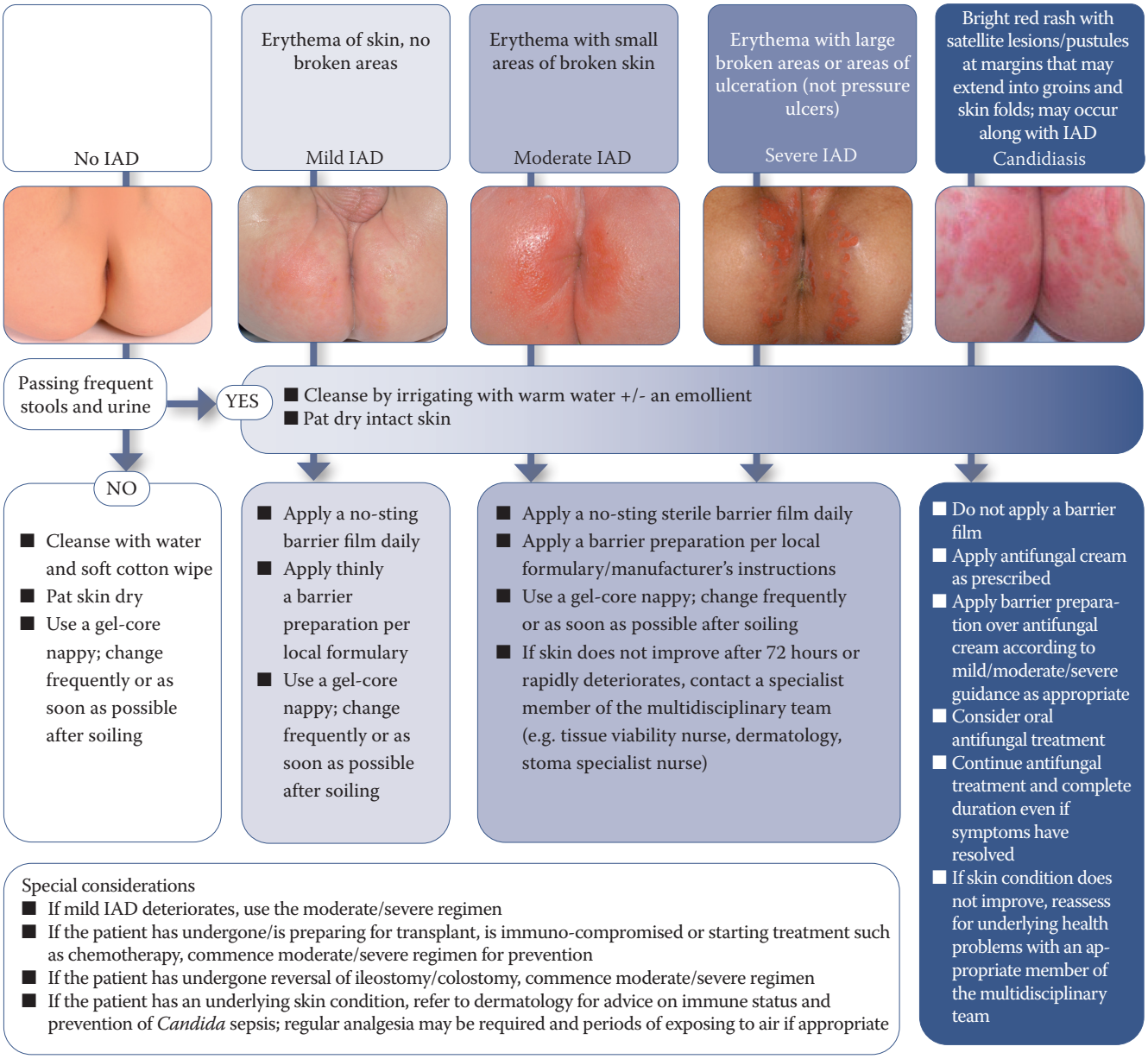
Key point:

1. Clinicians must know how to prevent IAD (informally known as nappy rash) and how to best manage it if skin does break down, depending on the severity of the damage

Box 1: Some risk factors for development of IAD

- Antibiotic therapy
- Chemotherapy
- Immunosuppression
- Diarrhoea (persistent)
- Reversal of stoma
- Short gut syndrome
- Underlying skin conditions (e.g. psoriasis, eczema, epidermolysis bullosa)
- Zinc deficiency

Figure 1: Guidelines for prevention and care of incontinence-associated dermatits (IAD)



Disposable nappies contain cellulose pulp and superabsorbent polymers that lock moisture away from the skin, keeping skin dry and clean and maintaining optimal pH. The fasteners, back sheets and stretch ability help reduce leakage. Disposable nappies also are non-toxic and biologically inert, and do not contain allergens (e.g. natural rubber latex, disperse dyes; Oakley, 2014). In addition, they are available in different shapes and sizes, depending on the age and gender of the child.

In a hospital setting, reusable nappies are not recommended (Oakley, 2014; Baer et al, 2006; Nield and Kamat, 2007; Heimall et al, 2012; Atherton 2005; Gupta and Skinner, 2004). It is also suggested they can contribute to IAD, in particular, papulonodular IAD (Maruani et al, 2013).

Peristomal dermatitis

The term 'stoma' refers to any surgically created opening made into a hollow organ, especially one on the surface of the body

Box 2: Practical tips for managing IAD

Good practice:

- Whenever possible bathe or shower the child once or twice daily, especially in moderate to severe cases (Atherton, 2001)
- Use of emollients to cleanse and further protect the skin (Blume-Peytavi et al, 2009)
- Encourage consistency in care between staff and parents/carers
- Always change a nappy as soon after soiling as possible
- Use disposable gel-core nappies
- At home, reusable nappies can be used but are not advised in cases of moderate to severe/recurrent IAD

Things to avoid:

- Strongly perfumed soaps, moisturisers and wipes (Sarkar et al, 2010)
- Re-usable nappies
- Stopping/changing a regimen before 48 hours unless skin condition is deteriorating

leading to the gut or trachea, but may also refer to bowel or urinary stomas.

Peristomal dermatitis refers to skin damage where there is a clear interaction between the skin and the stoma effluent/fluids/secretion/output. Peristomal dermatitis results in inflammation or erosion of the skin due to moisture from faecal, urinary, and chemical irritants beginning at the mucocutaneous junction, which can then spread outwards to affect the surrounding skin. More than 50% of individuals with ostomies experience leakage (Woo et al, 2017).

Causes and risk factors of peristomal dermatitis or skin damage may include: the location of stoma, excessive secretions, poor application of dressing/appliance, patient removing dressing/appliance, appliance leaking due to excess movement (which may be an issue in active children).

Prevention and treatment of peristomal dermatitis should include factors such as: assessment and identification of those at risk, regular review/evaluations, cleaning and drying of area, application of barrier films/pastes (preventative), correct appliance/dressing usage and removal. Where necessary, medical adhesive removers should be used in stoma care (to prevent MARSI and subsequent damage). Education and training may be needed for staff working with patients at risk of peristomal dermatitis, as well as the patient and their family/carers.

Intertrigo

Intertriginous dermatitis (or intertrigo) is a common condition, which falls under the umbrella of MASD. It is a common inflammatory skin condition that can occur when moisture (i.e. sweat) is trapped in skin folds with minimal air circulation.
If left unmanaged, the skin surfaces become subject to skin-on-skin friction (Sibbald, 2013), which in turn leads to painful, localised inflammation and erosion of the skin, thus, making the area more prone to secondary infection (bacterial/fungal).
Intertrigo may affect individuals of all ages and is commonly seen in the neck creases of infants and babies (Janniger et al, 2005), due to their short neck, flexed posture and drooling; in older/obese patients, intertrigo may be in skin folds. Intertrigo, like other forms of MASD, may present clinically in a range from mild erythema to extensive skin breakdown, (Young, 2017).

Early recognition of patients 'at risk' of MASD is an essential component of prevention, along with good skin hygiene. Beeckman et al (2015) suggested that the fundamental aspects of MASD management should be based on skin cleansing to remove contaminants and microorganisms, with the application of a skin moisturiser and use of barrier products that provide skin protection. Skin should be patted dry to reduce moisture build-up and potential maceration.

Periwound maceration

While the production of exudate is vital to the wound healing process, if not managed effectively, exudate can cause damage to the periwound (surrounding) skin (WUWHS, 2019). Fragile skin in paediatric patients can be at increased risk of damage due to maceration.

In paediatric patients, risk factors for periwound maceration can be exacerbated due to concordance issues; for example, patients pulling off their dressings as they don't like them on their skin, so the wound not having an appropriate dressing for fluid/exudate management in situ. This can also increase the risk of MARSI, causing further damage.

Management of exuding wounds can be challenging because many dressing sizes of superabsorbent dressings are too big for paediatric/neonatal wounds and are unable to be cut to size without compromising the dressing's fluid-handling properties.

Use of sterile barrier products may be required to protect the periwound skin. There may also be a need to 'think outside the box'; for example, use of a drainable stoma appliance, to collect higher levels of wound exudate until exudate levels reduce.

Barrier preparations for MASD

Barrier preparations are used to prevent

urine and faeces coming into contact with the skin, reduce humidity and maceration, and minimise transepidermal water loss (Ratliff and Dixon, 2007). A no-sting occlusive barrier spray, film, cream or ointment should be applied according to manufacturer instructions in line with the local formulary. For patients at higher risk or those with moderate to severe MASD, ointments, pastes and advanced polymer-based products should be considered, containing a water-impermeable substance, to better protect the underlying skin from moisture (Heimall et al, 2012; Neild and Kamat, 2007). Barrier preparations should not contain perfumes and should have a low paraben content.

Special considerations

Commence a moderate to severe regimen if the patient is:

- Passing frequent loose/watery stools
- Receiving chemotherapy
- Undergoing or undergone/preparing for transplant of any kind
- Immunosuppressed
- Undergoing or undergone reversal of ileostomy/colostomy.

Whenever possible, manage the cause of loose stools (e.g. alter diet, refer to dietician for assessment if required, limit/change antibiotics). If the patient has an underlying skin condition, refer to dermatology.

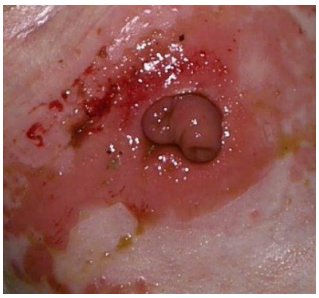


Figure 2: Peri-stomal moisture breakdown

SECTION 4: PRESSURE ULCER PREVENTION AND MANAGEMENT

Pressure ulcer (PU) development has traditionally been viewed as uncommon among neonatal and paediatric populations, given the presumed relative ease of repositioning and frequency of movement. However, as gestational age limit of survival decreases and survival rates among critically and chronically ill premature neonates and children increase through technological advances, so too does the risk for PU formation. Medical device-related PUs are a particularly common skin condition seen in neonatal intensive care units, especially in extreme preterm babies.

Paediatric patients with complex and long-term needs often require permanent medical devices (e.g. tracheostomies, feeding tubes, non-invasive ventilation devices) that all pose a risk to their skin integrity, particularly in patients who may already have fragile skin. Paediatric patients are prone to developing pressure damage just as much as adults, but the incidence, mechanics and location of where damage occurs on their body can differ depending on their age, medical condition/need, and whether they require medical devices to be applied/used.

Pressure damage in paediatric patients may have a variety of causes, including:

- Pressure: lack of repositioning or use of medical devices; older children/teenagers may be reluctant to move
- Physiology: weight ratio, less subcutaneous fat and more prominent bones may affect pressure; head/weight ratio differs in babies, with the head heavier (due to size) than the rest of body, which can increase the risk of occipital pressure damage
- Friction: from devices as well as involuntary movements such as seizure activity
- Shear: poor moving and handling, lack of appropriate equipment
- Combination: such as moisture and pressure (e.g through device use).

The prevalence of PUs in paediatric patients ranges from 1.72% to 18.6% in different countries and ages, and is higher in paediatric intensive care units than in general paediatric wards. The paediatric population are more susceptible to damage at their occiput, face, sacrum or heels, or anywhere a medical device is placed (Luo et al, 2021).

It is important to remember that paediatric patients are not 'mini adults' and should not be treated as such. Children are unique due to the following factors:

- Stages of development – not just physically but emotionally, mentally and intellectually
- Possibility of rare diseases and life-limiting conditions not seen in adults due to poor prognosis
- Communication differences between ages, and stages of cognitive awareness (you wouldn't talk to a 2-year-old as you would a 13-year-old)
- Working in partnership with parents and carers – they know their children and their cues: provide them with information, involve them in decision-making processes and negotiate care plans, which leads to informed choices and therefore better patient outcomes.

Presentation of pressure damage may also differ, with different stagesof pressure damage that may range from non-blanching to exposure of underlying structures (e.g. bone, tendon, muscle). Erythema may also present differently across a range of skin tones, so it is important to check for any changes in skin colour and to use touch to assess whether the skin feels hard/spongy/cooler/hotter than the surrounding skin (Dhoonmoon et al, 2021).

Challenges in paediatric care

It is widely recognised that paediatric patients are particularly susceptible to device-related PUs (DRPUs; Gefen et al, 2022). Medical devices are often designed for adults and have to be adapted for use in

Key points:

1. PUs occur in the paediatric population, which can be severe and cause life-long damage
2. With wide variation in patient ages and needs, clinicians need to enhance their knowledge of different sized surfaces and PU prevention products available
3. Research is limited in this field and more work is required to support and guide practice

paediatric patients. Considering that PUs occur under a plethora of medical devices, it is imperative that frequent, comprehensive skin inspection occurs under all removable devices unless medically contraindicated.

It is particularly important to assess skin under devices when a patient is developmentally unable to communicate discomfort. This is particularly a concern in paediatrics, as young active patients or those with developmental impairment do not cognitively understand not to touch or play with equipment; therefore, devices may be securely adhered to prevent and avoid inadvertent dislodgement.

Applying interface layers such as foam dressings, hydrocolloids and gel pad products between devices and skin to protect the skin and redistribute pressure should routinely be incorporated into a patients care when medical devices are in use (Gefen et al, 2022). Collaboration between all members of the multidisciplinary team is imperative for complex patients such as occupational therapists, physiotherapists and other specialist nursing teams to ensure the best outcomes for these patients.

It is important to note that paediatrics is a branch of medicine caring not only for infants and children but for adolescents as well. This can pose additional challenges for clinicians to maintain clinical expertise in a diversity of support surfaces and products to manage neonates, up to adult-sized and bariatric.

There are currently limited risk assessments for paediatric or neonate patient populations used across the UK, so in practice these are often adapted from adult risk assessments (e.g. PUDRA, Purpose T; Gefen et al, 2022).

The risk factors for paediatric patients may vary depending on the patient's age and clinical presentation, which may include a wide range of issues such as:

- Being unable to reposition neonates frequently due to skin fragility and burning of much-needed calories
- Extreme preterm babies managed in a humidified environment to decrease transepidermal water loss
- Preterm babies with very dry skin due to reduced sebum and sweat production are prone to skin damage if handled too much
- Use of medical devices in conditions where face/head is not symmetrical, causing pressure to one side of head that requires padding
- Limited selection of equipment sizes
- Older patients at risk of pressure damage to sacrum and heels – patients may need to be encouraged/motivated to move/reposition
- Concordance issues (e.g. patients removing pressure-relieving boots, or devices causing friction through physical activity), or due to reduced cognitive awareness (e.g. age, medical condition)
- Children with complex needs spending prolonged time in wheelchairs, leading to pressure damage to sacral/buttock area, especially if incontinence is an issue
- Children with complex needs may be non-verbal and unable to communicate pain
- Spinal injuries/conditions that may result in impaired or absent sensation and circulation
- Due to continual growth and development, medical equipment may require constant review to prevent pressure damage (e.g. splints, wheelchairs, postural positioning equipment).

Historically, infants and children were placed on support surfaces designed for adults; however, with patients of lower weights and smaller stature, the clinical efficacy of many of these products is unclear. Because children are not 'mini-adults', they should be placed on pressure redistribution products specifically designed for their specialised loading needs. We are now starting to see innovation in surface design, with specialist surfaces for neonates and specialised paediatric mattresses with no minimum weight limit available.

Figure 1: Nasal pressure ulcer caused by a nasal NIV mask

Best practice and the future

To reduce the risk of pressure damage, it is important to use appropriate mattress/aids to relieve pressure, in combination with frequent repositioning where possible, including appropriate use of positioning aids/hoists/slide sheets. The skin should be well moisturised and protected, working with dietician if necessary to ensure patients are well nourished and hydrated. Padding and protective dressings should be used where necessary to reduce pressure and friction from devices.

Staff need to be educated and informed on PU prevention and management, and the challenges specific to the paediatric population. It is also important to work in partnership with the patient (where possible) and their parents or carers, to devise appropriate care plans and negotiate packages of care to ensure best outcomes for patients; patients and families are more likely to engage with treatment if they have been involved in the decision-making process and been encouraged to make informed choices (WUWHS, 2020).

There may be a need to 'think outside the box': adapting existing tools and products, while maintaining safety at all times (i.e. cutting protective dressings, wrapping foam dressings round tapes/tubes). Clinicians need to work with industry partners regarding equipment sizes and materials used.

There is a need to develop an updated PU risk assessment tool for the paediatric population, which can be used nationwide, as their needs and risks may be different from adult patients.

APPENDIX 1: BPS APPLICATION TO PRACTICE: PRINCIPLES FOR THE CARE AND TREATMENT OF PAEDIATRIC WOUNDS

Best practice statement	Reason for best practice statement	How to demonstrate best practice
The approach to wound management in children must differ from that in adults	The causes of wounds in children may differ from those in adults, and there are important differences in the physiology and skin of children	Create a guide for wound management in paediatric patients that accounts for the physiologic and aetiologic differences
Record baseline data as part of a holistic assessment of both the patient and wound, and reassess and monitor treatment on a regular, ongoing basis	To create a historical record that will guide treatment decisions and provide clinical rationale for changes in the plan of care. To ensure the patient is concordant with treatment and the wound is responding to treatment	Clearly document the assessment and reassessment processes, including factors that could delay healing, tissue and wound characteristics, whether the wound is progressing towards healing and whether a change in treatment is required
Consult a specialist member of the multidisciplinary team in line with local guidelines the event of suspected/confirmed infection or if the wound fails to heal	To confirm infection status and to prevent inappropriate product or medication use, and to determine why the wound has failed to progress towards healing	Clearly document the rationale, date and team member to whom the patient was referred
All reasonable steps should be taken to prevent and manage pain and anxiety in paediatric patients	Pain is whatever the child says it is, and needs to be taken seriously. Anxiety can increase the perception of pain, which can have negative psychological effects on the child and the child's reaction to treatment	Assess pain using an age-appropriate scale. Select analgesia and dosage in consultation with a suitably qualified healthcare professional. Employ non-pharmacologic pain/anxiety management
Prevent epidermal blistering/stripping by carrying out good skin hygiene (including alcohol-free liquid skin barrier under adhesive dressings), using silicone tapes and non-adhesive dressings where possible, and removing adhesive tapes and dressings using a sterile silicone adhesive remover	Paediatric patients have immature and more fragile skin than adults, which puts them at risk. Epidermal stripping and blistering are a preventable complication that can cause pain and anxiety related to wound management	Enact a plan for skin hygiene, and dressing and tape application and removal that incorporates best practices
Cleanse only after thorough assessment of patient and wound	To ensure wound cleansing is carried out only when appropriate, using the appropriate method	Clearly document the assessment and cleansing process using a clinical decision-making pathway such as that in Section 2, Figure 1
Adapt dressing selection and use to the needs of paediatric patients with wounds. Dressings may have to be adapted to reduce risk of surrounding skin damage by avoiding covering more body surface than necessary	Some dressing types are contraindicated or should be used with precaution in children, infants and neonates. Dressings may not be available in sizes small enough for paediatric patient	Enact a guide for dressing selection that incorporates the special physiological needs of paediatric patients while addressing factors associated with the wound type and clinical indications, such as in Section 2, Table 2
Clinicians must know how to prevent MASD and how to best manage it if skin does break down, depending on the severity of the damage	MASD in paediatric patients can pose many challenges for healthcare providers and parents/guardians and, if not managed appropriately, can increase infection risk and lead to pain and anxiety for the patient and parents/guardians	Enact a protocol that incorporates assessment of skin status, prevention efforts and treatment with appropriate barrier preparations using a clinical decision-making pathway such as that in Section 3, Figure 1
Clinicians must know how to prevent pressure damage and how to best manage it if skin does break down, depending on the severity of the damage	Paediatric patients may be at increased risk of pressure damage, due to a combination of physiology and clinical factors	Incorporate regular skin checks, offloading the skin, use of age-related risk assessments, care plans, use of appropriate pressure relieving/redistributing equipment, and use of interface layers between medical devices; care being carried out must be documented
Ensure the special needs of paediatric patients and their parents/carers are accommodated	Paediatric patients have special psychosocial needs, and their parents/carers may react differently to the child's care than they would their own	Consider the whole child, not simply the wound being treated, as well as the experience of the child and family when integrating and coordinating services

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