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SKIN TEARS AND INCONTINENCE- ASSOCIATED DERMATITIS: AN UPDATE ON THE EVIDENCE

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SKIN TEARS

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SKIN TEARS: DEFINITION

- **Traumatic wound** caused by **mechanical forces**, including removal of adhesives
- Severity varies by **depth** (not extending through the subcutaneous layer)
- Reported across **all healthcare settings** and are predominantly found in the elderly, neonates, and the critically and chronically ill populations
- Particularly common on **the upper (50-80%) and lower extremities (15-60%)**

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LeBlanc K et al. Best practice recommendations for the prevention and management of skin tears in aged skin. Wounds International 2018. Available to download from www.woundsinternational.com

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SIZE OF THE PROBLEM

- Varies across countries, healthcare settings and patient populations
- **Prevalence** between
  - 3,3% - 19,8% in acute care
  - 14,3% in palliative care
  - 5,5% - 19,5% in the community
  - 3,0% - 26,0% in long-term
- **Incidence** rates vary between 2,2% and 92,0%, with highest incidence in long-term care facilities

Despite their considerable impact, skin tears are often under-recognised and poorly reported in clinical practice, leading to suboptimal prevention and delayed or inappropriate management!

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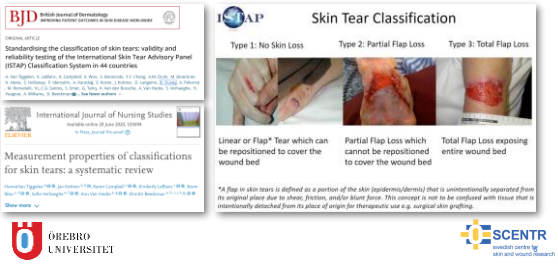
CLASSIFICATION



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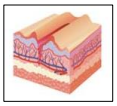
TYPE 1 SKIN TEAR



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TYPE 2 SKIN TEAR



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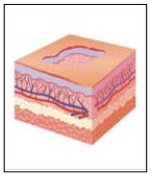
TYPE 3 SKIN TEAR

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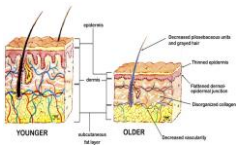
AETIOLOGY



- Caused by a variety of **mechanical forces**: shear and friction, including blunt trauma, falls, poor positioning/transferring techniques, equipment injury, and removal of adherent dressings
- **Epidermis** is separated from the **dermis** (partial-thickness wound) or both the epidermis and the dermis are separated from underlying structures (full-thickness wound)

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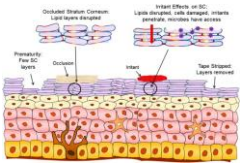
AETIOLOGY

Age-related physiological skin changes: neonates and older individuals are particularly susceptible

- **Neonates**: significantly fewer layers of stratum corneum, less collagen and elastic fibers, increased transepidermal water loss (TEWL), and a decreased cohesion between the epidermis and the dermis



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https://www.sciencedirect.com/science/article/pii/S1527336914000907?via%3Dihub

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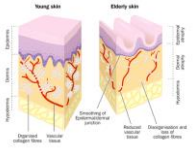
AETIOLOGY

Age-related physiological skin changes: neonates and older individuals are particularly susceptible

- **Older individuals:** loss of collagen and elastin, thinner epidermis, loss of dermal and subcutaneous tissue, reduced keratinocyte proliferation and turnover time in the epidermis, flattening of the dermo- epidermal junction, content of natural moisturising factors (NMF) and lipids in the stratum corneum decrease, and sweat and sebum production are decreased



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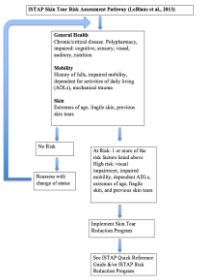
PREVENTION

- **Careful and timely** identification of risk
- Vital to **assess and reassess** on a regular basis
- Accurate, consistent and **comprehensive** documentation
- At risk?
  - **Tailored** preventive care
  - International **evidence-based guidelines**



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PREVENTION





- **A multidisciplinary team** approach
- **Empowering** patients, families, and caregivers to actively engage in prevention
- Skin-friendly **dressings** and **removal techniques** (e.g. non-adherent silicone mesh dressings)
- Hoists and **glide sheets**, protective **clothing**, **padding** on equipment and furniture (e.g. bed rails, wheelchair arm and leg supports), **fall prevention** (e.g. remove clutter, ensure proper lighting, wear sturdy shoes), avoiding **sharp fingernails** and **jewellery**, etc.

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PREVENTION

- Hoists and **glide sheets!**

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PREVENTION

- Structured, **individualised** skin care regimen
- Avoid **traditional water** and alkaline **soap** washing
- Avoid excessive washing (**skin dryness** and irritation)
- **Minimise** frequency of bathing, water temperature **lukewarm**, pat the dry with a **soft towel**
- Cleansing to be followed by the application of **leave-on products** with **moisturising** properties such as lotions, creams or ointments
- Emollient therapy = vital for individuals with **dry, frail skin**

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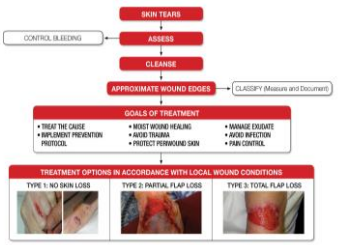
TREATMENT



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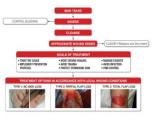
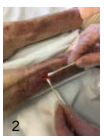
TREATMENT





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TREATMENT


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TREATMENT

- Do not add new risks for trauma
- Assess co-morbidities (Venous disease, arterial disease, pressure)

Choose a dressing that will:

- Decrease trauma
- Provide moist wound healing
- Manage pain
- Allow wound observation (transparent)

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TREATMENT

- If the skin flap is present but not viable, it may need to be debrided
- Care should be taken during debridement to ensure that viable skin flaps are left intact and fragile skin is protected

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TREATMENT

- Wound inflammation from trauma should be distinguished from wound infection
- Wound infection can result in pain and delayed wound healing. Diagnosis of infection should be based on clinical assessment

Inflamed

Infected

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TREATMENT

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ISTAP Skin Tear Product Selection recommendations

Product Categories	Indications	Skin Tear Type	Considerations
Non-Adherent Mesh Dressings (e.g. impregnated gauze, silicone, petrolatum, lipidocolloid) 	• Dry or exudative wound	1,2,3	• Maintains moisture balance for multiple levels of wound exudate, • Atraumatic removal • May need secondary cover dressing
Foam dressing	• Moderate exudate • Longer wear time (2-7 days depending on exudate levels)	2,3	• Caution with adhesive border foams, use non-adhesive versions when possible to avoid peri-wound trauma

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ISTAP Skin Tear Product Selection recommendations

Product Categories	Indications	Skin Tear Type	Considerations
Hydrogels	• Donates moisture for dry wounds	2,3	• Caution: may result in peri wound maceration if wound is exudative • For autolytic debridement in wounds with low exudate • Secondary cover dressing required

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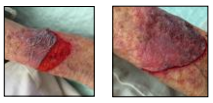
ISTAP Skin Tear Product Selection recommendations

Product Categories	Indications	Skin Tear Type	Considerations
2-octyl cyanoacrylate topical bandage (skin glue)	• To approximate wound edges	1	• Use in a similar fashion as sutures within first 24 hours post injury, relatively expensive, medical directive/ protocol may be required
Acrylic dressing	• Mild to moderate exudate without any evidence of bleeding, may remain in place for an extended period of time	1,2,3	• Care on removal • Should only be used as directed and left on for extended wear time
Calcium Alginates	• Moderate to heavy exudate Hemostatic	1,2,3	• May dry out wound bed if inadequate exudate • Secondary cover dressing required
Gelling fibre	• Moderate to heavy exudate	2,3	• No hemostatic properties • May dry out wound bed if inadequate exudate • Secondary cover dressing required

TREATMENT

84 year old female, Type 2 skin tear



Day 0 before application



Day 0 after application Day 3 Day 10

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TREATMENT

Iodine based dressings:

- Iodine has been used in various forms in wound care since 1882 for the prevention treatment of infected wounds with great success (Sibbald, Leaper, Queen, 2011)
- Iodine based dressings did not receive 80%.
- Iodine causes drying of the wound and peri-wound skin. The international review group maintained that as a major risk factor for skin tear development is listed to be dry skin, iodine-based products should not be used for the management of skin tears or for those who are deemed at risk for skin tears (LeBlanc et al., 2016)

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TREATMENT

Hydrocolloid dressings:

- Hydrocolloids have traditionally been used for partial thickness wounds and as secondary dressings; however they did not receive 80% agreement and were not included as a result in the ISTAP product guide (LeBlanc et al., 2016)
- Hydrocolloid dressings have a strong adhesive component and have been reported to contribute to medical adhesive related skin tears (McNichol, Lund, Rosen & Gray, 2013)
- Hydrocolloid dressings are not recommended for use in those who are at high risk for or who have a skin tear.

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TREATMENT

Skin Closure Strips:

- Expert opinion suggest that adhesive strips are no longer a preferred treatment option of choice for skin tears (LeBlanc et al., 2016; (Rayner, Carville, Leslie, & Roberts, 2015; Holmes, Davidson, Thompson, & Kelechi, 2013; Ellis & Gittins, 2015)
- Quinn et al, (1993) reported that topical skin glue was a faster and less painful method with better scar management compared to sutures or skin closure strips for managing skin tears and lacerations in children.

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TREATMENT

- Lower leg edema is well documented to contribute to delayed wound healing, regardless of the wound etiology

  (Lindsay & White, 2007)

- When skin tears occur on the lower limb, the risk and cause of potential peripheral edema should be assessed

  (LeBlanc et al., 2016; Ellis & Gittins, 2015)

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INCONTINENCE-ASSOCIATED DERMATITIS

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DEFINING AND CODING

- IAD = part of a broader group of skin conditions, referred to as **Moisture-Associated Skin Damage** (MASD).
- IAD = skin **inflammation** manifested as **redness** with or without **blistering**, erosion, or loss of the **skin barrier function** that occurs as a consequence of chronic or **repeated exposure** of the skin to urine or faeces.
- IAD = different levels of **severity** (associated with selection of interventions and outcomes)

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DEFINING AND CODING

- **WHO International Classification of Diseases** (ICD-10): coding for diaper dermatitis but no separate coding for IAD
- 2017: Index term for *irritant contact dermatitis due to incontinence* (EQ72.83) in the **ICD-11 coding**

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Ericson M et al. Interventions for preventing and treating incontinence-associated dermatitis in adults. Cochrane Database Syst Rev. 2016 Nov 10;11:CD011627.

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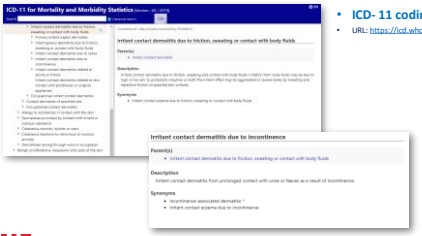
DEFINING AND CODING



- **ICD- 11 coding**
- URL: https://icd.who.int/browse11/l-m/en

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CONFUSION!

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LOCATIONS

- perineum
- labial folds (in women)
- groin (in men)
- buttocks
- gluteal cleft
- upper thighs
- lower abdomen

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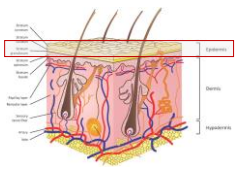
PATHOGENESIS



- An important function of the skin is to protect the body against pathogens.
- The **stratum corneum** (outermost layer of the epidermis) provides this critical barrier by prohibiting the invasion of micro-organisms
- Stratum corneum = 70% **protein**, 15% **lipids**, 15% **water**
- Lipids and water are important components in the skin's barrier function
- In older patients, the volume of water decreases to less than 10%.

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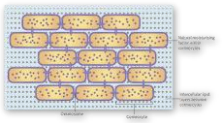
PATHOGENESIS



- Incontinence: water is pulled into and held in the **corneocytes**.
- Overhydration: **swelling and disruption** of the structure of the stratum corneum, and leads to an increase of the stratum corneum thickness and visible skin changes
- Excessive hydration: **irritants** may more easily penetrate the stratum corneum to exacerbate **inflammation**.
- Overhydrated skin: epidermis more prone to injury from **friction**.

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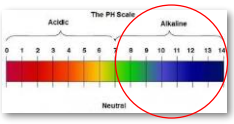
PATHOGENESIS



- Urease transforms urea into ammonium thus **increasing the skin surface pH**
- Increased **skin surface pH**: decreased stratum corneum cohesion and decreased recovery capacity of skin barrier function, micro-organisms to thrive and increase the risk of **skin infection**
- Impaired skin barrier and occlusive skin conditions: facilitate the **infiltration** of the stratum corneum by the Candida Albicans, from the gastrointestinal tract, and Staphylococcus, from the perineal skin
- **Lipases and proteases** attack the the stratum corneum proteins and lipids.

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PATHOGENESIS

– **ABOUT WHAT DO EXPERTS AGREE WHEN THEY OBSERVE IAD?**

- **Erythema** and **edema** of the skin
- Sometimes accompanied by **bullae** with serous **exudate**, **erosion**, and **infection**
- **No common language**

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OBSERVATION

Step 1: Separate and inspect skin folds

- Opposing skin surfaces trap and harbour moisture.
- Inflammation typically most pronounced at deepest crease of skin fold.
- Allows secondary evaluation of hygiene/access to skin fold.

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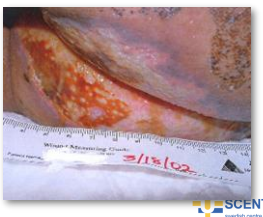
OBSERVATION

Step 2: Assess for skin erosion

- May present initially as islands of partial thickness erosion.
- Often see multiple areas of erosion closely spaced.
- Entire dermis may be eroded in severe cases.
- Natural history not well defined.



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OBSERVATION

Step 3: Inspect for secondary cutaneous infection, especially candidiasis

- Opportunistic infection with Candida Albicans.
- Thrives in warm, moist environment and damages stratum corneum.
- Seen in 18% of one group of 608 acute care inpatients (Junkin & Selekof, 2007).

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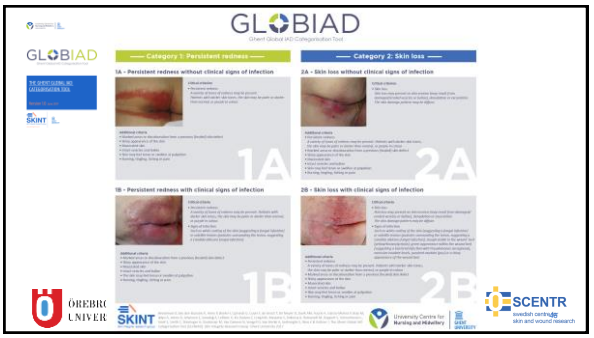
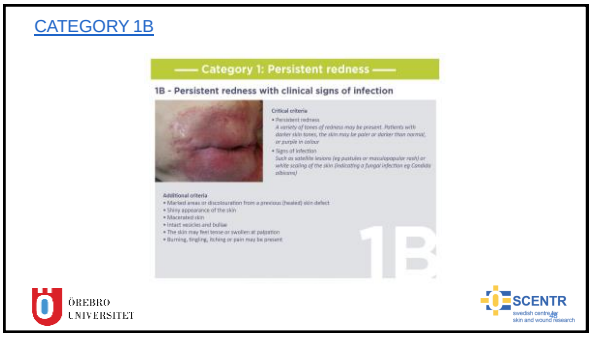


CATEGORY 1A

CATEGORY 1B



CATEGORY 2A

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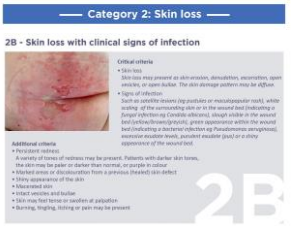
CATEGORY 2B



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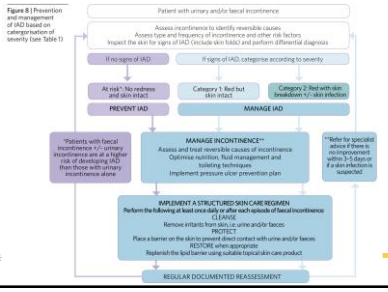
MANAGEMENT OF IAD



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PROPERTIES OF SKIN BARRIER PRODUCTS

Main active ingredient	Properties
Petrolatum-based products	• Forms a seal, thereby reducing transdermal water loss. • Protects against mechanical damage and forms a physical barrier against corrosive bodily fluids • Transparent when applied quickly • Is greasy, so can leave a residue, reducing the absorbency of continence pads and adherence of primary wound dressing • Can clog pores and attract dirt/bacteria, with risk of folliculitis • Can be difficultto apply and remove
Petrolatum products thickened with zinc oxide	• Repels irritants • Anti-inflammatory • White coating can impair assessment • Can be difficultto apply and remove • Can impair dressing adherence and absorbency • Risk that it can interfere with antimicrobials applied to the wound
Silicone-based ointments	• Vapour permeable and conformable • As it is non-occlusive, when applied correctly does not affect absorbency of continence pads • Less greasy and easier to apply and remove than petrolatum/zinc oxide barriers • Might not be indicated for open wounds
Film-forming polymer	• Forms a thin, semi-permeable polymer film • Does not affect dressing adherence and protects against skin stripping • Some films contain alcohol or ethyl acetate, which can cause stinging solvent
Cyanoacrylate	• Solvent-free • Forms a strong bond with the skin and is only shed by natural desquamation within 72 hours • Forms a transparent barrier and protects against friction • Can be spread over a large area

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BEST PRACTICE

Regional Wounds Victoria group of wound CNCs

Permission from:

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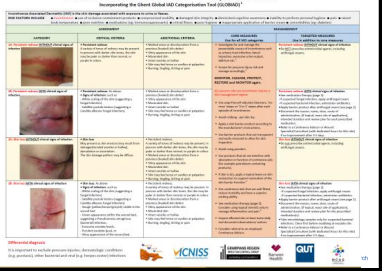

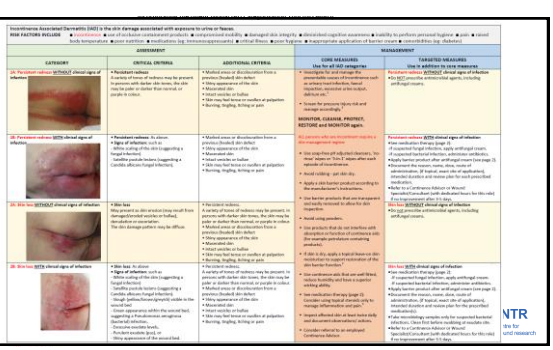

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BEST PRACTICE

Regional Wounds Victoria group of wound CNCs

Australia

Targeted medication therapy[4,5,6]

To treat cutaneous (skin) candidiasis:

- Bifonazole 1% cream topically, once daily for 2 weeks, or
- Clotrimazole 1% cream topically, twice daily for 2 weeks, or
- Econazole 1% cream topically, twice daily for 2 weeks, or
- Miconazole 2% cream topically, twice daily for 2 weeks, or
- Nystatin 100 000 units/g cream topically, twice daily for 2 weeks.

- Although cream must be well applied it should not be visible, avoid vigorous rubbing
- Do not discontinue cream application when fungal infection signs w/v symptomic resolve, continue to apply as prescribed.

Consider using topical steroid for short term management of severe inflammation (and pain):

- Hydrocortisone 1% cream topically, twice daily.

- If using a combined antifungal and steroid agent, when inflammation subsides continue treatment with an antifungal agent alone.[5]
- Use the least potent topical corticosteroid product required to control the skin disorder for the shortest time possible.[5]

If the response to a topical antifungal drug is poor, or topical treatment is impractical, oral therapy is appropriate:

- Fluconazole 150 mg orally, as a single dose.

To treat mild cellulitis or erysipelas:

- Flucloxacillin 500 mg orally 6 hourly for 5 to 10 days.

If *S.pyogenes* is isolated from cultures, or suspected based on clinical presentation or local epidemiology use

- Phenoxymethylpenicillin 500mg orally 6 hourly for 5 to 10 days, or
- Procaine penicillin 3.5g IM daily for at least 3 days.

Using skin barrier products and topical medication concurrently Personal communication with Dr Jill Campbell - jill.campbell@qut.edu.au

No empirical evidence is available to guide the concurrent use of skin barrier products and topical medications for persons with IAD. It is possible that the use of ointment or cream based medications may affect the efficacy of the skin barrier product, or the efficacy of the topical medication may be adversely affected by the skin barrier product.

Use clinical judgement to assess individual circumstances when considering use of these products alone or concurrently. Anecdotal and expert opinion suggests that topical medication should be applied immediately following continence chair up, and waiting 30 minutes before applying the barrier product to allow for absorption of the medication. Ongoing clinical assessment is required to evaluate the response to treatment. Referral to a continence advisor or wound consultant is recommended if combination therapy with skin barrier products and topical medication is considered.

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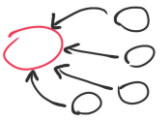
CONCLUSION



- With an ageing population and increased prevalence of chronic diseases, skin tears and IAD are expected to remain a common health problem that poses a significant burden on the healthcare system and individual patients
- More patients will benefit from early and accurate identification and classification, comprehensive documentation, appropriate treatment, and effective prevention.
- Although there has been an increased focus on the issue of skin tears and IAD in recent years, there are still gaps in knowledge and awareness, and areas that require further research

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SKIN TEARS AND INCONTINENCE- ASSOCIATED DERMATITIS: AN UPDATE ON THE EVIDENCE

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