# Evidence Summary:
# Skin care to reduce the risk of pressure injuries

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## QUESTION

What is the best available evidence on skin care to reduce the risk of pressure injuries?

## SUMMARY

Preventive skin care incorporates a range of strategies that reduce risk factors for PIs. Selection of appropriate interventions should be based on an individualised assessment, and include cleansing[1] and moisturising[2] (Levels 1c & 2d evidence), reducing moisture[3, 4] (Levels 1c & 3c evidence) and avoiding massage[5] (Level 1c evidence).

## CLINICAL PRACTICE RECOMMENDATIONS

- Use a pH balanced cleanser to promote healthy skin. (Grade B)
- Use a moisturiser to maintain moisture balance and reduce the risk of skin damage. (Grade B)
- Protect the skin from moisture sources (e.g. incontinence) to reduce the risk of skin damage. (Grade B)
- Avoid skin massage to reduce the risk of skin damage. (Grade B)

## EVIDENCE

A comprehensive skin regimen that includes best practice recommendations and preferences of the individual promotes the best clinical outcomes for people at risk of PIs.

A cohort with control group study reported on a comprehensive skin care regimen that included gentle skin cleansing, moisturiser applied after bathing, barrier cream, a faecal continence management device, continence pads, avoiding massage and regular skin assessment. Compared to a standard care group, the comprehensive skin regimen group had significant reduction in PIs (13.2% versus 50%, p=0.001)[6] (Level 3c evidence).

### Cleansing

Maintaining clean, dry skin is a foundation principle in skin care.[7] Consensus opinion is that skin should be cleansed with a pH balanced cleanser. A pH balanced cleanser reduces skin irritation and dryness, reducing the risk of impaired skin integrity[7, 8] (Level 5b and 5c evidence).

One randomised controlled trial (RCT)[1] has compared the impact of cleansers on PI incidence. In a small trial (n=93) a standard 1% aqueous soap solution with an alkaline pH was compared with a foam no-rinse, pH balanced, emollient-containing cleanser. After14 days of use, significantly more individuals with Category/Stage 2 PIs or greater experienced improvement in or maintenance of skin condition (p=0.05)[1] (Level 1c evidence).

### Moisturising

Maintaining hydrated skin is a foundation principle in skin care.[7] When skin is inadequately hydrated, the risk of PI increases[9] (Level 1b evidence).

A quality improvement study demonstrated that a comprehensive skin management plan that included a skin emollient was more effective than a similar management plan without a moisturiser or emollient component. After implementing the new skin care regimen in an in-patient wound centre there was a significant (p=0.008) reduction in PIs and a significant cost saving demonstrated[2] (Level 2.d evidence).

In one RCT, a moisturiser of hyper-oxygenated fatty acids applied every 12 hours for 14 days was not significantly different to a placebo cream for preventing PIs in individuals at high risk[10] (Level 1c evidence). Another study compared a hyper-oxygenated fatty acid moisturiser to olive oil and found no significant difference between the two products for reducing PIs[11] (Level 1c evidence). A third RCT (n=164) comparing a hyper-oxygenated fatty acid moisturiser to a perfumed glycerol-based product reported significant reduction in in sacral, trochanter and heel PIs when the fatty acid moisturiser was applied twice daily for 30 days[12] (Level

| SOURCES OF EVIDENCE | | | | |
|---|---|---|---|---|
| **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** |
| Experimental designs | Quasi-experimental designs | Observational – Analytic designs | Observational – descriptive studies | Expert opinion Bench research |
| Systematic review [9]<br><br>RCTs [1, 4, 5, 10-12, 14] | Pre-test, Post-test retrospective control group study[2] | Single group cohort study [3]<br>Cohort study with control group [6] | Case Series [15] | Expert opinion [7, 16]<br><br>Bench studies [8, 13] |

1c evidence). Although these findings are mixed, none of these trials provided a strong evaluation of the efficacy of moisturising versus not moisturising, and all had significant limitations.

### Reducing moisture exposure

There is a greater risk of PI when skin is exposed to moisture in conjunction with pressure and/or shear[9] (Level 1b evidence). The most common sources of moisture at the skin surface are incontinence, perspiration and wound exudate[13] (Level 5b evidence). Strategies to reduce exposure to excessive moisture that have been explored with respect to PI incidence include continence management and application of barrier creams.

*Continence management*

An RCT (n=200) that explored a positioning device that elevated the perianal area, thereby increasing ability to perform continence care and reducing skin exposure to faecal incontinence, was associated with a significant reduction in skin breakdown compared with regular continence care (11% versus 39%, p<0.001). Although the use of such a suspension device may not be possible in most clinical areas, the findings demonstrated that maintaining strict perianal hygiene in individuals with faecal incontinence can reduce PIs[4] (Level 1c evidence).

A small RCT (n=59) compared two different faecal management systems to usual care for reducing PIs. A zinc-based barrier cream was used for the usual care group and the intervention groups received either a bowel management catheter or a rectal trumpet. Pressure injury rates were not significantly different between either faecal bowel management system and using a barrier cream,[14] although the researchers acknowledge numerous methodological limitations (Level 1c evidence).

A single group cohort study evaluated the use of high absorbency continence pads for improving health-related quality of life for incontinent individuals in rehabilitation. Although no significant difference in PIs was observed after two weeks, there was a 67% decrease in facility-acquired PIs after ten intervention weeks (95% confidence interval [CI] 16% to 78%)[3] (Level 3e evidence)

*Barrier cream*

In a small case series (n=20), not all of whom had PIs), strategies to protect the skin from moisture, including use of a spray-on barrier cream and a faecal management system for individuals with loose stools were associated with 85% of moisture lesions with and without erythema/PIs being classified as healed after 3 to 28 days. Some individuals also received a prophylactic dressing, which may have contributed to the results[15] (Level 4e evidence).

### Massage

Consensus opinion is that massage and vigorous rubbing of the skin is more likely to cause skin/cellular/blood vessel damage and tissue inflammation than to promote beneficial outcomes associated with massage (such as increased tissue blood flow)[8, 16] (Level 5b evidence).

One RCT[5] specifically explored the relationship between massage and PI development. The three randomised study groups received a placebo cream, massage with a topical antioxidant cream, or position change with no massage. There was no benefit in reducing PIs associated with massage, with those individuals who received no massage having a non-significant superior outcome (odds ratio [OR] 0.636 versus 1.136 for massage with placebo)[5] (Level 1c evidence).

## METHDOLOGY

This evidence summary is based on a structured database search combining search terms that describe pressure injuries with search terms related to massage, cleansing, moisturising, and preventive skin practices. Searches were conducted in EMBASE, Pubmed, Medline, Scopus and the Cochrane Library. Evidence published up to June 2017 in English was considered for inclusion. Retrieved studies were appraised for relevance and rigour using Joanna Briggs Institute appraisal tools.[17]

## RELATED EVIDENCE SUMMARIES

JBI 18874 Pressure injuries: Preventing heel pressure injuries with positioning

JBI 18875 Pressure Injuries: Preventing heel pressure injuries with prophylactic dressings

JBI 18873 Pressure injuries: Preventing medical device related pressure injuries


## KEYWORDS

Pressure injury, pressure ulcer, decubitus ulcer, skin care, massage, cleansing, moisturising


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# Evidence Summary: Moisture Associated Skin Damage: Classification and Assessment

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## QUESTION

What is the best available evidence on strategies to assess moisture associated skin damage?

## SUMMARY

Moisture associated skin damage (MASD) is caused by exposure of the skin to moisture, especially when in conjunction with damage to the skin from shear, friction or chemical sources (Level 5 evidence). Moisture associated skin damage should be categorised according to the location and severity of skin damage. Assessment should consider the visual appearance of the skin and characteristics of the individual that could be contributing to skin damage (Level 5 evidence). Assessment tools for MASD that have had psychometric properties evaluated (e.g. *Incontinence-Associated Dermatitis Intervention Tool [IADIT] and* The *IAD Skin Condition Assessment Tool*) report good interrater reliability (Level 3e evidence).

## BEST PRACTICE RECOMMENDATIONS

When assessing skin damage, evaluate the location, skin appearance and characteristics of the individual to determine an underlying cause. **(Grade B recommendation)**

Consider using a formal tool to assess moisture associated skin damage. **(Grade B recommendation)**

## BACKGROUND

Moisture associated skin damage is an overarching term that describes damage to the skin as a result of exposure to moisture. The moisture causing skin damage can arise from different sources, including (but not limited to):[1-3]

- urinary incontinence
- faecal incontinence
- wound exudate
- perspiration
- stomal effluent
- saliva or mucous

Skin that is exposed to moisture becomes soft, wrinkled and inflamed, increasing the risk of erosion and a break to the skin. Damage occurs in the presence of friction and/or shear and/or chemical forces.[1, 4, 5] The precise mechanism by which moisture damages the skin is not fully understood,[6] but is thought to occur due to physical changes in the stratus corneum (horny layer)[7, 8] as the corneocytes absorb excess fluid and become over-hydrated.[4] The inflammatory response to moisture exposure increases transepidermal water loss, decreasing the skin's moisture barrier effect and increasing skin pH.[5, 6]

Once the skin becomes inflamed, the disruption to natural skin barrier defences, often together with potential breaks to the skin barrier caused by mechanical forces (e.g. shear or friction) or chemical sources (e.g. alkaline pH of moisture source), increases the risk of skin infection.[1, 4, 5]

## CLINICAL BOTTOM LINE

### Aetiology and classification of MASD

Moisture associated skin damage is categorised according to the anatomical location and type of moisture associated with skin damage. Expert consensus[1, 9] and single expert opinion[3,7,8] describe four types of MASD: periwound dermatitis, peristomal dermatitis, intertrigo/intertriginous dermatitis and incontinence associated dermatitis (Level 5 evidence).