



Best Practice

Evidence based information sheets for health professionals

Topical skin care in aged care facilities

Implications for practice

- Disposable bodyworn absorbent products should be favoured for use to protect skin condition in incontinent older adults in long term care (**Grade B**)
- A no-rinse cleanser containing the ingredients described for Clinisan can be applied during daily care for at least 14 days to reduce the risk of pressure ulcer formation in patients in long term care (**Grade B**)
- Emollient soaps are more effective in prevention of skin tears than non-emollient soaps (**Grade B**)
- The zinc cream, Sudocrem, if used for at least 14 days can reduce skin redness caused by incontinence in older adult patients in long term care (**Grade B**)
- The no rinse cleansing product Bag Bath/Travel Bath can be used to reduce the overall dryness of skin and most specifically flaking and scaling when used for normal bathing practice over a period of at least 6 weeks (**Grade B**)

Information Source

This *Best Practice* information sheet is based on a systematic review¹ of research published by Blackwell Publishing Asia and conducted by the Australian Centre for Evidence Based Aged Care, previously a collaborating centre of the Joanna Briggs Institute. The primary references are available at www.blackwell-synergy.com and to members of the Joanna Briggs Institute via the website www.joannabriggs.edu.au

Background

Natural changes to skin with ageing, as well as increased predisposition to pressure sores and incontinence, mean that residents of aged care facilities or nursing homes need topical skin care. When skin ages, there is a decline in the turnover and replacement of epidermal skin cells, decreased production of protective oils and a thinning of the subcutaneous fat layer.

These changes result in a reduction in the ability of older people's skin to perform its normal functions, such as acting as a barrier to pathogens and irritants; and regulating water and temperature.

The most obvious change to the ageing epidermis is the flattening of the dermo-epidermal junction. This reduced connectivity between the two layers results in a reduction in communication and nutrient transfer between these two layers

and results in less resistance to shearing forces (skin tears). The individuals most at risk of skin tears are the very old, dependent for activities of daily living, nutritionally compromised and those with dementia.

Dermal thickness may also be reduced by up to 20% in elderly people, which may account for the paper-thin appearance of their skin. The resulting reduction of the vascular network in this skin layer could lead to the decreases seen in cell proliferation and repair.

The decreased turnover and replacement of epidermal skin cells of up to 30–50% between the ages of 30 and 80 years, a thinning subcutaneous fat layer and a reduced production of protective oils can impede the skin's role as a barrier. Normal skin provides a barrier that is resistant to irritants and pathogens and functions to regulate temperature and fluid transport. A surrogate measure of the level of barrier protection that the skin is providing is transepidermal water loss (TEWL).

Grades of Recommendation

These Grades of Recommendation have been based on the JBI-developed 2006 *Grades of Effectiveness*²

Grade A Strong support that merits application

Grade B Moderate support that warrants consideration of application

Grade C Not supported

Definition of terms

For the purposes of this information sheet the following definitions were used:

Bag Bath/Travel bath no rinse system –

Primary cleanser is Pluronic F-68 no-rinse surfactant combined with a humectant (a water absorbing substance) and an emollient (vitamin E)

Bodyworn - disposable absorbent underpants

Clinisan – aerosol mousse containing cleansing solution, deodorant and emollient with antiseptic properties

Dermatitis – ‘nappy rash’ or skin irritation

Sudocrem ingredients: 15.25% zinc oxide, 4% hydrous wool fat, 1.01% benzyl benzoate, 0.15% benzyl cinnamate, 0.39% benzyl alcohol

TEWL – transepidermal water loss

Triple Care – cleansing agent with aloe and glycerin, and a barrier cream containing olive oil, allantoin and aloe

Zinc cream ingredients: 32% zinc oxide, 32% arachis oil, 0.045% calcium hydroxide, 0.5% oleic acid, 8% wool fat

For residents in nursing homes, being incontinent of urine and/or faeces is a serious problem. With a reduction in the protective ability of ageing skin, incontinence can lead to changes in skin pH. Normal healthy skin has a pH of 4–6.8, which discourages the colonisation of bacteria and opportunistic infections. Incontinence increases the amount of moisture on the skin, resulting in higher levels of bacterial and enzymatic activity and reduced protecting leading to skin irritation and possible breakdown.

The cost of treating stage 4 pressure ulcers (defined as full thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, bone, or supporting structures) has been established as financially significant. While ‘less serious’ skin conditions may be less financially costly, they have a potentially high social cost to patients in terms of pain and discomfort, loss

of mobility, isolation and reduced independence.

The world population is rapidly ageing with a 2002 United Nations report³ stating that 10% of the world's population was over 60 years of age in 2000, projecting this to reach 21% in 2050. In 2007, the US Department of State⁴ estimated that by 2030 one in eight people worldwide would be over 65.

Correspondingly, the number of people living in aged care facilities, hostels or nursing homes is also expected to rise. In residential aged care, residents are less likely to be independent in terms of performing the activities of daily living such as skin care.

Therefore, nurses and carers should be aware of effective skin care protocols that are available to alleviate or reduce the likelihood of skin irritation and breakdown, and promote comfort for older people.

There are a range of interventions that aim to maintain or improve the integrity of skin of older adults. However, the effectiveness of topical skin interventions can be variable and depends on the skin condition being treated.

Objectives

The purpose of this information sheet is to present the best available evidence for the effectiveness and safety of topical skin care regimens for older adults residing in long-term aged care facilities.

Characteristics of studies

The studies comprised participants who were ≥65 years of age and living in aged care facilities, hospitals or long-term care in the community. Eleven studies, conducted in the United Kingdom and United States, were included in the review. These studies evaluated the effectiveness of non-pressure relieving topical skin care such as absorbent products, emollient soap, no-rinse cleaner, skin cream, and structured skin cleansing medications. Presence of urinary and/or faecal incontinence was considered a major factor in the disruption of healthy skin as many studies insisted on incontinence as an inclusion requirement. Therefore the majority

of studies examined the effectiveness of washing products (especially no-rinse) on skin irritated by incontinence. The most appropriate comparisons were: an existing practice/protocol related to maintaining skin integrity; or a non-standardised care protocol. Studies evaluating pressure-relieving techniques for the prevention of skin breakdown were excluded.

Interventions were grouped into one of five categories based on the skin irritation condition they were attempting to prevent:

1. Skin condition
2. Pressure sores or ulcers
3. Skin tears
4. Dermatitis
5. Skin dryness

Quality of the research

Assessing the quality of the included studies was performed using the checklist for dimensions of evidence developed by the National Health Service and Medical Research Centre (NHMRC).⁵ As the goal was to evaluate the effectiveness of topical skin care interventions, RCTs and controlled trials were the method of choice. However, other research designs had to be considered for inclusion in a narrative summary to record the range of approaches under investigation. Therefore the quality of the included studies was quite variable with some studies tightly controlled (eg. double blind randomised controlled trials) and others with high risk of bias (retrospective studies with no control group). Some of the studies suffered from poor data reporting (graphical or no standard deviations) or had small sample sizes (ie. low power). Further, the heterogeneous nature of the included studies precluded any form of data pooling and therefore the evidence is presented in a narrative summary.

Results

Skin condition

The most compelling evidence for maintaining overall quality of skin condition was the use of disposable bodyworn for controlling urinary and faecal incontinence.

In one study elderly patients who wore disposable bodyworn were 92% less likely to experience skin problems than wearing non-disposable bodyworn. In another study residents using disposable bodyworn were 60% less likely to develop skin irritation symptoms (ie. burning, itching, tingling, pain). In the same studies disposable underpads were not found to provide any protective effect when compared with non-disposable underpads.

Less convincing was the use of no-rinse washing products. Triple Care cleanser combined with Triple Care cream to maintain optimal measures of TEWL, erythema and skin pH was evaluated. One study suggested that the Triple Care cleanser combined with Triple Care cream was more effective at reducing TEWL and erythema, and in keeping pH significantly lower than when residents were returned to a soap and water regimen. However, the use of these surrogate indicators to assess skin health, small study size and poor reporting of data suggests that the results of this single study should be regarded with caution.

When Triple Care and another no-rinse washing product, Clinisan, were compared a trend emerged whereby Clinisan-treated patients experienced a greater improvement in skin condition. However, this improvement was not significant. Neither staff nor patients indicated a preference for either product.

Pressure sores

Three studies that focussed on topical skin care for imparting greater resistance to pressure sore formation gave promising results. When the no-rinse cleanser Clinisan was compared to soap and water treatment, significantly more Clinisan-treated patients were rated with healthy skin resulting in Clinisan treated patients being 80% more likely to retain healthy skin than those who used only soap and water. In a small study, the no-rinse cleaning system Triple Care, reduced the odds of having unhealthy skin by 50%, after 2 months of application. While nurses found that the Triple Care system was satisfactory for cleaning patients incontinent of urine, few nurses (19%) considered Triple

Care suitable for cleaning patients incontinent of faeces

Finally, the use of "Comfort Shield Perineal Care Washcloths" to reduce the incidence of pressure ulcers of the sacral/buttock area of incontinent residents of a nursing home was inconclusive.

Skin tears

The evidence for the effectiveness of topical skin care interventions to prevent skin tears is inconclusive, and of poor quality. Two retrospective studies (no control group) – one investigating a no-rinse cleanser (Nursing Care Personal Cleanser) and the other comparing two kinds of soap - involved small numbers of patients and had deficiencies in reporting results. The use of Nursing Care Personal Cleanser resulted in a continual decline in both skin tear prevalence and incidence over a 4-month intervention period but these reductions were not statistically significant. In the second study, the number of skin tears per month fell on months when emollient soap was used compared with months when non-emollient soap was used. However, the significance of these reductions could not be determined and it was not clarified whether only a few residents were responsible for the majority of skin tears.

Dermatitis

Research into the prevention of dermatitis in older persons in aged care is minimal. In a single study, Sudocrem cream and zinc oxide cream were compared to evaluate their effectiveness in preventing incontinence-associated dermatitis. By day 14 of treatment patients using Sudocrem were 70% more

likely to have reduced skin redness and bacterial counts compared to the zinc cream group. The results of this study, while encouraging should be regarded with caution as the measure used to determine the effectiveness of treatment on dermatitis is the surrogate outcome of skin redness measured by a sensitive, yet unvalidated instrument for this outcome.

A very small study investigated the impact of introducing a structured skin treatment protocol to prevent perineal dermatitis, measured over 3-week control and treatment periods. The structured skin regimen required nurses to apply a cleanser, moisturiser and moisture repellent to a resident's skin after each incontinent episode. This study did not show any improvement of the structured skin care regimen in preventing perineal dermatitis when compared with the control treatment.

Skin dryness

The effect of topical skin care regimens on skin dryness (a risk factor for breaches in skin integrity) has been poorly researched. A single study examined the effectiveness of a topic skin care program on dry skin. The Bag Bath/Travel Bath non-rinse system (treatment) was compared with traditional bathing practices over a period of 6 weeks. Dryness of skin was measured for four characteristics: redness; scaling; flaking; and cracking. The Bag Bath/Travel Bath regimen proved much more effective than the traditional soap and water method in preventing flaking and scaling and improving overall skin condition, but did not improve redness and cracking scores.

Conclusion

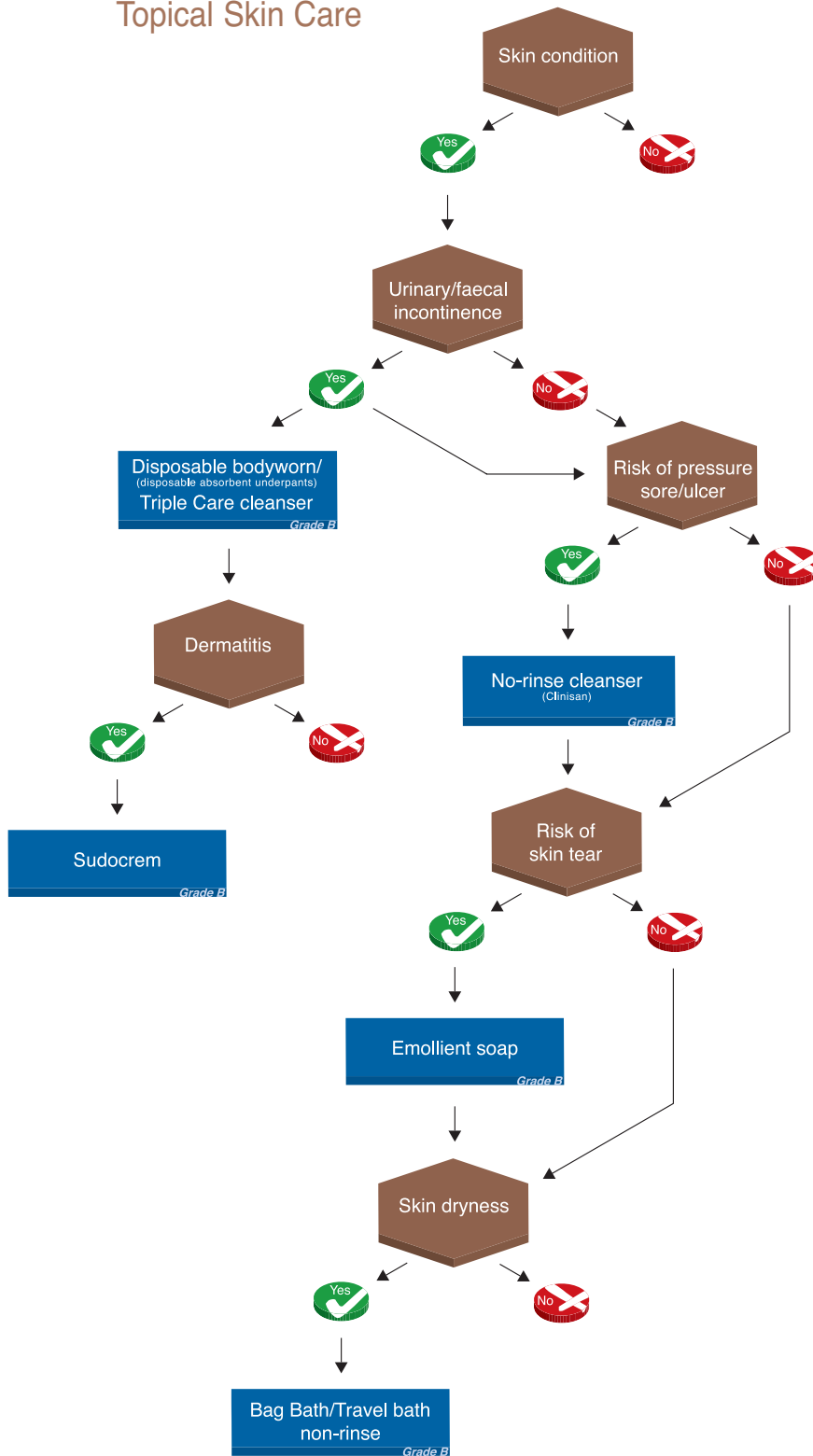
Research into topical skin care interventions is limited and consisting predominantly of single small studies that make confident recommendation for wider application difficult.

Topical skin care regimens would be expected to be effective, particularly skin creams to prevent skin dryness, but these studies have largely not been performed. From the research that does exist, the 'best' evidence for practical clinical care suggests that:

- 1 Disposable bodyworn will guard against skin deterioration,
- 2 No-rinse cleansers are preferable to soap and water for reduction in pressure sores and skin dryness, but no evidence exists for their use for prevention of skin tears, and
- 3 Sudocrem may reduce skin redness over zinc cream alone.

Finally, no recommendation on the safety of any intervention is included here because safety of these interventions was not evaluated in any included study.

Topical Skin Care



This *Best Practice* information sheet presents the best available evidence on this topic. Implications for practice are made with an expectation that health professionals will utilise this evidence with consideration of their context, their client's preference and their clinical judgement.⁶

Acknowledgments

This *Best Practice* information sheet was developed by the Joanna Briggs Institute with the review authors and the assistance of an expert review panel:

- Brent Hodgkinson, Research Fellow, Research and Practice Development Centre University of Queensland and Blue Care, Milton, Queensland.
- Jo Agnew, OPH, Auckland, New Zealand.
- Christina Godfrey, Review Coordinator, Queen's Joanna Briggs Collaboration Centre, Queen's University School of Nursing, Ontario, Canada.
- Brenda Goldie, Mater Adult Hospital, South Brisbane, Australia.
- Prof Carole Kenner, University of Oklahoma, College of Nursing, Oklahoma, USA.
- Raquel Luengo González, Beatriz Alvarez Ramirez, and Esther González María, The Spanish Centre for Evidence Based Nursing, Institute of Health Carlos III Centre for Coordination and Development of Nursing Research, Madrid, Spain.
- Dr Patricia McInerney, The South African Centre for Evidence Based Nursing and Midwifery, Durban, South Africa.
- Dr Suzi Robertson-Malt, National & Gulf Centre for Evidence Based Medicine, Riyadh, Kingdom of Saudi Arabia.

References

1. Hodgkinson B, Nay R, Effectiveness of topical skin care provided in aged care facilities. *Int J Evid Based Healthc* 2005; 3(4):65-101.
2. The Joanna Briggs Institute. Systematic reviews - the review process, Levels of evidence. Accessed on-line 2006 <http://www.joannabriggs.edu.au/pubs/approach.php#B>
3. United Nations, Population Division, Department of Economics and Social Affairs, World Population Ageing 1950-2050. 2002. URL: <http://www.un.org/esa/population/publications/worldageing19502050/> Accessed May 2007
4. Department of State and the Department of Health and Human Services. National Institute on Aging, National Institutes of Health. Why Population Aging Matters: A Global Perspective. Washington, DC. March 13, 2007. URL <http://www.state.gov/goes/rls/or/81537.htm> Accessed May 2007.
5. NHMRC, How to use the evidence: assessment and application of scientific evidence. Canberra. 2000. http://www.nhmrc.gov.au/publications/synopses/_files/cp69.pdf
6. Pearson A, Wiechula R, Court A, Lockwood C. The JBI model of evidence-based healthcare. *Int J Evid Based Healthc* 2005; 3(8):207-215.



• The Joanna Briggs Institute
Royal Adelaide Hospital
North Terrace, South Australia, 5000

www.joannabriggs.edu.au

ph: +61 8 8303 4880

fax: +61 8 8303 4881

email: jbi@adelaide.edu.au



• Published by
Blackwell Publishing

**Blackwell
Publishing**

"The procedures described in *Best Practice* must only be used by people who have appropriate expertise in the field to which the procedure relates. The applicability of any information must be established before relying on it. While care has been taken to ensure that this edition of *Best Practice* summarises available research and expert consensus, any loss, damage, cost, expense or liability suffered or incurred as a result of reliance on these procedures (whether arising in contract, negligence or otherwise) is, to the extent permitted by law, excluded".