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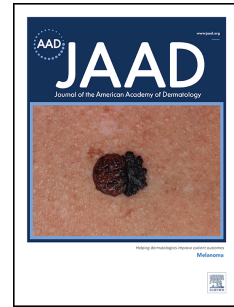
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From the Cochrane Library: Hygiene and emollient interventions for maintaining skin integrity in older people in hospital and residential care settings

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1 Given the rapidly growing aging population utilizing hospital and residential care settings, which
2 is expected to quadruple over the next 40 years,¹ interventions for maintaining skin integrity among older
3 people are of increasing importance. Loss of collagen and elastin throughout aging cause increased rates
4 of xerosis, skin fissuring, and pruritus which diminish quality of life and morbidity;² maintaining skin
5 integrity in older people is therefore essential for ensuring health and wellbeing, while preventing
6 conditions such as pressure ulcers and avoiding extended wound care.³

7 A 2020 Cochrane systematic review evaluated randomized controlled trials assessing hygiene and
8 emollient interventions versus placebo (i.e. non-moisturizing hygiene products), no intervention, or
9 standard skin practices in people aged 60 or older in hospital and residential care settings.⁴ Study
10 endpoints included frequency of skin damage, treatment side effects, transepidermal water loss (TEWL),
11 stratum corneum hydration (SCH), and clinical scores assessing dryness.

12 The review included 6 trials totaling 1598 care home residents (e.g. in nursing homes, aged care
13 settings). The majority of participants were >80 years old and female. Treatment duration ranged from
14 single application of the study intervention to 6 months, encompassing a variety of intervention types and
15 frequencies (**Table 1**). A summary of results is provided in **Table 2**. The largest included study (N=984)
16 found reduced frequency of skin tears when moisturizer was added to usual skin care versus usual care
17 alone (defined as ad hoc or no standardized skin-moisturizing regimen). Three studies measured skin
18 dryness via independent, non-validated reporting scores; all three found evidence of decreased dryness
19 when using emollient inventions (e.g. moisturizing lotions or body wash, water or oil soaks) compared to
20 no treatment or usual care. Another group of three studies (N=266) found largely no differences in
21 stratum corneum hydration in intervention versus control groups. Neither moisturizing body washes nor
22 hot towel application were shown to improve TEWL in two studies. Assessment of side effects in one
23 study (N=133) showed increased risk of itch, redness, irritation, and mild skin dryness within two
24 intervention groups utilizing emollient regimens compared to a control group. All studies demonstrated
25 low or very low certainty of evidence scores per the Grading of Recommendations, Assessment,
26 Development and Evaluations methodology.

27 This Cochrane review highlights the dearth of clinically significant evidence regarding the
28 effectiveness of hygiene and emollient interventions for maintaining skin integrity among older adults.
29 Interventions, study design, and measured outcomes varied extensively across studies, prohibiting meta-
30 analysis and data pooling due to high heterogeneity. Core outcome measures including both patient-
31 reported outcomes and standardized clinical assessments should be developed to guide future randomized
32 controlled studies, such as the recently developed SCORAD scratch score for itch.⁵ 5/6 of included
33 studies were from nursing and podiatric journals, but their findings are still highly relevant to
34 dermatologists who may regularly provide counseling and oversight of these interventions to patients and
35 caretakers. Given the rapidly increasing older population that may benefit from studies in this field,
36 continued dermatologist contribution to this area of research will lead to great future clinical benefit for
37 residents and patients.

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Table 1. Characteristics of studies included in the Cochrane systematic review.

Study ID	Study Year	Country of Study ^a	Outcomes Measured	Number of Participants	Comparison of Intervention Groups	Time of Assessment
1	1978	United States	Clinical Score of Skin Dryness	52	Intervention: Moisturizing soap containing 'special protein,' lanolin derivative, and glycerin applied to leg Control: Soap bar without above ingredients (split body)	After 6 and 10 applications
2	2014	Australia	Frequency of skin damage (skin tears)	984	Intervention: Usual (ad hoc or no standardized skin-moisturizing regimen) care and twice-daily application to extremities of commercially available, neutral pH, perfume-free moisturizer Control: No pre-existing standard skin-moisturizing protocol	Monthly incidence of skin tears over 6 month study period
3	2016	Belgium	Stratum corneum hydration	150	Intervention: Usual (traditional bed bath) care using 'wash gloves' ^b Control: Bath with traditional cotton wash cloth, warm water, and non-specific soap	Pre- and post-12 week intervention
4	2017	Germany	Clinical Score of Skin Dryness Stratum corneum hydration Transepidermal Water Loss Side effects of intervention	133	Group 1: Moisturizing body wash containing Shea butter and glycerin daily, moisturizing leave-on hydrophilic water-in-oil emulsion lotion twice daily Group 2: Glycerin-containing body wash daily, water-in-oil emulsion containing emollients and 4% urea twice daily Control: Usual care	Day 56 (end of study) ± 4 days
5	1974	United States	Clinical Score of Skin Dryness	60	Group 1: Control (No intervention) Group 2: Lotion Group 3: Water soak Group 4: Water soak + lotion Group 5: Oil soak Group 6: Oil soak + lotion ^c All treatments applied to feet daily for 12 days.	8 days after conclusion of intervention
6	2017	Japan	Stratum corneum hydration Transepidermal Water Loss	21	Intervention: Hot towel used for 10 seconds after bed bath Control: Bed bath without 10 second application of hot towel	Timepoint (T) 1: Before bed bath T2: Immediately after applying hot towel to skin T3: Immediately after wiping skin 3 times T4: Immediately after wiping skin with dry towel T5: 15 minutes after T4

^a Defined as country where study populations were based.

^b Wash gloves containing aqua, propylene glycol, coco-glucoside, phenoxyethanol, parfum, benzoic acid, polyaminopropyl biguanide, octyldodecanol, aloe barbadensis, glycine soja oil, dehydroacetic acid, sodium lauroamphoacetate, *Calendula officinalis* extract, *Tilia cordata* extract, *Melissa officinalis* extract, *Hamamelis virginiana* extract, *Echinacea purpurea* extract, *Chamomilla recutita* extract, *Centella asiatica* extract, aloe barbadensis gel, and tocopherol.

^c Oil and lotion contained combination of dewaxed, oil-soluble, keratin-moisturizing fraction of lanolin, mineral oil, and non-ionic emulsifiers.

Table 2. Results of studies included in the Cochrane systematic review, with assessments of Risk of Bias and Certainty of Evidence.

Outcome	Cochrane Study ID	Outcome Reporting Measure	Results	Risk of Bias [†]	Certainty of Evidence [‡]
Clinical Score of Skin Dryness	4	Overall Dry Skin Score	<ul style="list-style-type: none"> •Group 1 vs. C^a: less dryness in right FA^b (MD^c -0.60, 95% CI -1.02 to -0.18), left LL^d (MD -0.60, 95% CI -1.08 to -0.12), and trunk (MD -0.40, 95% CI -0.70 to -0.10); no significant difference in left FA (MD -0.30, 95% CI -0.94 to 0.34) or right LL (MD -0.20, 95% CI -0.87 to 0.47). •Group 2 vs. C: less dryness in left LL (MD -0.50, 95% CI -0.96 to -0.04), right FA (MD -0.60, 95% CI -1.05- -0.15), left FA (MD -0.60, 95% CI -1.05 to -0.15), trunk (MD -0.30, 95% CI -0.60 to -0.00); no significant difference in right LL (MD -0.40, 95% CI -0.86-0.06). •Groups 1 and 2 combined significantly better than C in all body areas (right FA P=0.006, left FA P= 0.011, trunk P=0.013) except LLs (right LL P=0.121, left LL P= 0.073) 	LLUHLLL	Low
	1	General Good Condition Questionnaire (non-validated)	Significant improvement noted in <i>I</i> vs. <i>C</i> after 10 applications (P<0.05) Skin flaking reduced in both groups	UULLLLL	Low
	5	Xerosis Severity Score (non-validated)	C: 0.20149 Group 2: 1.0054 Group 4: 1.3656 Group 5: 0.88388 Group 6: 1.1181 Groups 2-6 significantly effective in reducing dryness vs. control (P<0.0001)*	UULULLL	Low
Stratum corneum hydration	4	Corneometer CM 825	<ul style="list-style-type: none"> •Group 1 vs C: no significant difference in FA (MD 0.90, 95% CI -2.76, 4.56) or LL (MD 3.50, 95% CI -0.65, 7.65) •Group 2 vs C: no significant difference in FA (MD 1.00, 95% CI -3.03, 5.03) or LL (MD -1.10, 95% CI -5.13, 2.93) 	LLUHLLL	Very low
	3	MoistureMeter SC	<i>I</i> vs. <i>C</i> : No significant difference between leg, hand, or cheek (P=0.412)	UUHHLLL	Very low
	6	Corneometer CM 825	T3: <i>I</i> vs. <i>C</i> : MD 9.50 (95% CI 1.94, 17.06) T4: <i>I</i> vs. <i>C</i> : MD 7.60 (95% CI 0.48, 14.72) T5: <i>I</i> vs. <i>C</i> : MD -0.40 (95% CI -4.76, 3.96)	UUHHLLH	Very low
Transepidermal Water Loss	4	Tewameter TM 300	Group 1 vs. <i>C</i> : FA (MD -2.70, 95% CI -7.67, 2.27); LL (MD 0.10, 95% CI -3.55, 3.76) Group 2 vs. <i>C</i> : FA (MD 0.70, 95% CI -5.81-7.21); LL (MD 0.00, 95% CI -3.62, 3.62) No significant difference in TEWL between 3 groups (FA P=0.267 , LL P=0.773)	LLUHLLL	Very low
	6		<i>I</i> : Mean 8.6 g/m ² /h (SD 3.2) <i>C</i> : Mean 8.9 g/m ² /h (SD 4.1); MD: -0.30 g/m ² /h (95% CI -2.52, 1.92)	UUHHLLH	Very low
Frequency of skin damage	2	STAR Skin Tear Classification	<i>I</i> vs. <i>C</i> .: 5.76 vs. 10.57 (P=0.004)	UHHHLLL	Very low
Side effects of intervention	4	Side effects from intervention	Group 1: itch, redness, irritation Group 2: mild skin dryness <i>C</i> : None	LLUHLLL	Very low

C, control group; FA, forearm; MD, mead difference; LL, lower leg; *I*, intervention group

[†]The risk of bias was assessed using the assessment tool provided in the *Cochrane Handbook for Systematic Reviews of Intervention* using the following domains: random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), selective reporting (reporting bias), and other bias. The tool assesses risk of bias as high risk (H), low risk (L), or unclear (U) risk. Within the table, risk is listed in domain order.

[‡]The certainty of evidence was assessed using the Grading of Recommendations, Assessment, Development and Evaluations methodology. High certainty: very confident that true effect is close to the estimate; moderate certainty: moderately confident that true effect is close to the estimate, but possibility of substantial difference; low certainty: limited confidence in effect estimate, true effect may be substantially different; very low certainty: very little confidence in effect estimate, true effect is likely to be substantially different.