








Basic emollients and moisturizers

<p>We recommend gentle cleansing and bathing procedures especially in acutely inflamed or superinfected skin in patients with AE.</p>	<p>↑↑</p>	<p>100%</p> <div style="text-align: center;">  <p>100 % Agreement</p> </div> <p>(18/18) Expert Consensus</p>
<p>We suggest bathing in moderately warm water over a short duration of time in patients with AE.</p>	<p>↑</p>	<p>>75%</p> <div style="text-align: center;">  </div> <p>(17/19) Expert Consensus</p>
<p>We suggest against the use of alkaline soaps in patients with AE.</p>	<p>↓</p>	<p>100%</p> <div style="text-align: center;">  <p>100 % Agreement</p> </div>
<p>We suggest that patients with AE use body care products, for example gentle cleansers that do not contain potent irritants or relevant allergens.</p>	<p>↑</p>	<p>(19/19) Expert Consensus</p>
<p>We recommend daily use of emollients, liberally and frequently for patients with AE, as basic treatment of the disturbed skin barrier function.</p>	<p>↑↑</p>	<p>>75%</p> <div style="text-align: center;">  </div> <p>(20/23) Expert Consensus</p>
<p>We suggest using moisturizers with a hydrophilic formula in the summer and moisturizers with a higher lipid content in the winter in patients with AE.</p>	<p>↑</p>	<p>>75%</p> <div style="text-align: center;">  </div> <p>(15/18)¹ Expert Consensus</p>

¹ Abstention

<p>We recommend to apply emollients immediately after bathing or showering and soft pat drying (“soak and seal technique”).</p>	↑↑	<p style="text-align: center;">100%</p> <div style="text-align: center;">  <p>100 % Agreement</p> </div> <p style="text-align: center;">(19/19) Expert Consensus</p>
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<p>We recommend the use of emollients as background treatment to prevent flares and to reduce the symptoms of AE.</p>	↑↑	<p style="text-align: center;">>75%</p> <div style="text-align: center;">  </div> <p style="text-align: center;">(18/19)¹ Expert Consensus</p>
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¹ Abstention

A disturbance of epidermal skin barrier function, clinically manifesting as dry skin, is one of the characteristic features of AE; there is evidence from animal experimental and human studies that the skin barrier anomaly is genetically driven and facilitates the penetration of allergens and other possible noxious substances into the upper skin at the same time leading to increased transepidermal water loss (TEWL).^{1,2}

Filaggrin mutation is the best known anomaly,³ but alterations in proteases and protease inhibitors as well as altered composition of intraepidermal epidermal lipids (cholesterol, ceramides, free fatty acids) are supposed to also play a role in the pathophysiology of this condition.⁴⁻⁷ All procedures to improve disturbed skin barrier function or maintain normal function are often called ‘skin care’; they also include measures to avoid irritant influences. It would be better to talk about ‘basic therapy of disturbed skin barrier function’ instead of ‘skin care’. For emollient treatment often the term ‘drug free vehicles’ is used in order to distinguish this from pharmacotherapeutic modalities;^{2,8,9} indeed only few emollients are registered as drugs but more often as cosmetics or medicinal products.¹⁰⁻¹³

The major principle of this basic therapy of disturbed skin barrier function is the introduction of lipids into the upper epidermis in order to restore the skin barrier.

Emollient therapy

Basic emollient therapy

Basic emollient therapy is the essence of every treatment of AE.^{14,15} Emollients usually contain a humectant or moisturizer (promoting stratum corneum hydration such as urea or glycerol) and an occludent (reducing evaporation such as lipids or petrolatum). Recently, marketing of non-medicated ‘emollients’ containing active ingredients has softened the delineation of pure emollients working through their physical properties from topical drugs.

Throughout this guideline, ‘emollients’ are defined as ‘*topical formulations with vehicle-type substances without active ingredients*’, whereas ‘emollients plus’ refers to ‘*topical formulations with vehicle-type substances plus additional active, non-medicated substances*’.¹⁶

A Cochrane review compared moisturizer containing emollients versus no moisturizer and found a better effect in reducing investigator reported severity as well as leading to fewer flares and reduced use of corticosteroids.¹⁷ There were studies using glycerol-containing moisturizers versus vehicle or placebo.^{11, 14} More participants in the glycerol group noticed skin improvement but the MID (minimal important difference) was not met.¹⁸

Some studies investigated oil-containing moisturizer versus no treatment or vehicle and found no significant differences between the groups. In one study there were fewer flares in the oil group and reduced use of topical corticosteroids. Overall topical active treatment combined with moisturizers was more effective than emollient treatment alone with various outcomes measured.^{17, 19}

It is recommended to apply emollients immediately after bathing or showering and soft pat drying. A small study suggests that an emollient applied alone without bathing may have a longer duration as measured by capacitance.²⁰

Only emollient preparation devoid of proteinaceous allergens or haptens known to cause contact allergy (such as lanolin/wool wax alcohol or preservatives such as methylisothiazolinone)²¹ should be used, especially in children under the age of 2.

The long-term use of maintenance (e.g. twice weekly) emollient therapy after remission may prolong the duration of flare free intervals.^{19, 22, 23}

The direct, sole use of emollients on inflamed skin is often poorly tolerated, and it is better to treat the acute flare first with anti-inflammatory procedures including wet wraps (see chapter anti-inflammatory treatment). Emollients are the mainstay of management. Hydration of the skin is usually maintained by at least twice daily application of emollients with a hydrophilic basecontaining for instance 5 % urea or glycerol.⁹

Galenic aspects of the formula should be considered with regard to seasonal differences (more hydrophilic in summer, more lipid content preferably in winter time). Also regional aspects of body sites involved play a role (pastes for intertriginous areas, not too greasy for the face).

According to the acuity of the skin condition, also lipophilic bases may be helpful, especially in more chronic conditions. The use of barrier ointments, bath oils, shower gels, emulsions or micellar solutions enhancing the barrier effect is also recommended.

The applied amount of the topical is crucial, about 250g/week are recommended.^{24, 25} It may follow the finger-tip unit rule: a finger-tip unit (FTU) is the amount of ointment expressed from a tube with a 5 mm diameter nozzle and measured from the distal skin crease to the tip of the index finger (ca. 0.5 g); this is an adequate amount for application to two adult palm areas, which is approximately 2 % of an adult body surface area.⁸

The cost of quality emollient (low in contact allergens or hazardous substances) therapies often restricts their use because such therapies are considered to be non-prescription drugs (except for paediatric patients in some European countries).²⁶

The use of pure oil products such as coconut or olive oil instead of emulsions will dry out the skin and increase the transepidermal water loss and thus is not recommended.²⁷

Emollients with non-medicated, active ingredients (emollients plus)

Several non-medicated products for topical treatment of AE contain putative active ingredients, but are neither fulfilling the definition of nor needing a licence as a topical drug. These products, referred to as 'emollients plus' by the European guideline since 2018, may contain, for example, flavonoids such as licochalcone A, saponins and riboflavins from protein-free oat plantlet extracts²², bacterial lysates from *Aquaphilus dolomiae* or *Vitreoscilla filiformis* species²⁸⁻³⁰, or a synthetic derivative of menthol such as menthoxypropanediol.¹⁶

The oral supplementation with unsaturated fatty acids like gammalinolenic acid from evening primrose oil or eicosapentaenoic acid from fish oils have been studied as ingredients both improving barrier function as well as enhancing patient acceptance, showing conflicting results.^{31, 32} The efficacy of topical evening primerose oil-containing emollients is dependend on the choice of vehicle.

To improve the moisturizing effect of the emollient, several ingredients are used such as urea or glycerol or propylene glycol. Emollients can also be enriched by other ingredients like moisturizers or tannin, ammonium bituminosulfonate, flavonoids or unsaturated fatty acids like omega-3 or omega-6 compounds.

Prevention aspect

Use of emollients has a definite place in secondary and tertiary prevention in patients with AE. There is controversial evidence on primary preventive effects of emollients: Newborns with high risk for atopy/AE, who were treated daily with emollients developed less atopic dermatitis and/or allergic sensitisations in the first year of life.^{33, 34} Two larger and longer randomized controlled trials with a less stringent intervention did not confirm these effects.^{35, 36} Some experienced clinicians still feel comfortable using emollients in individuals at risk for AE early in life.

Safety

The use of emollients is safe, except for occasional cases of contact allergy. Using emollients may be associated with irritative and allergic side effects. In patients for whom topical anti-inflammatory treatment is indicated, the use of emollients alone involves a considerable risk of disseminating bacterial or viral infections typical for AE.³⁷

Emollients may contain ingredients eliciting contact sensitisation such as emulsifiers, preservatives or fragrances.^{21, 38, 39} Depending upon the body site also local irritation such stinging or burning sensations may occur in individuals with "sensitive skin".⁴⁰ There is a high inter-individual variability in skin tolerability of topical preparations, which has to be considered in the management of AE patients.

Urea may cause irritation in infants and should be avoided in this age group, while toddlers should be treated with lower concentrations than adults. Glycerol seems to be better tolerated than urea plus sodium chloride.¹⁴

Propylene glycol is easily irritating in young children under two years of age.

Bath oils should not contain strong protein allergens. Peanut or coconut oil preparations may increase the risk of developing skin sensitisation. However, in refined products no protein allergens are present.⁴¹

Cleansing and bathing

Skin hygiene procedures play an important role in the management of AE, especially in infants and small children. Some authors consider alkaline soaps as disadvantageous compared to liquid cleansers with adequate skin surface pH and lipid content.⁴² Bathing is regarded generally superior to washing or showering – especially in young children - also with regard to emotional and psychological interactions between infants and parents.^{43, 44} The water temperature should also not be too high.⁴⁵ A recent systematic review has shown that daily bathing or showering is not associated with changes in disease severity, but 3 studies with qualitative analysis found an improvement of itch and IGA by bathing. Showering may be permitted.⁴⁶

The skin must be cleansed thoroughly, but gently and carefully, in order to get rid of crusts and mechanically eliminate bacterial contaminants in case of superinfection. Cleansers with or without antiseptics can be used. The duration of action of antiseptics is rather short, mechanical cleansing is probably more important. Cleansing agents are available in various galenic forms (syndets, aqueous solutions) and should not be too irritant and should not contain strong allergens.^{21, 47} The pH values should be between 5 – 6. A small randomized study regarding the frequency of bathing procedures did not show any difference between twice weekly versus every day.⁴⁸

In infants, it is easier to perform the first stage of gentle cleansing on the nappy mattress rather than directly in the bathtub. The mechanical component of cleaning helps removing bacteria from the stratum corneum. A further cleansing is followed by a rapid rinse performed in the bath (27 – 30 °C). The short duration of the bath (ca. 5 minutes) and the use of bath oils (added for the last 2 minutes of bathing) are aimed at avoiding epidermal dehydration. Topical emollients are preferentially applied directly after a bath or a shower following gentle drying when the skin is still slightly moist.²⁰ It should be emphasized that most bath oils commercially available in Europe are practically free of proteinaceous allergens.⁴¹ A recent study has found no evidence for a benefit of adding bath additives in addition to standard treatment regimens.⁴⁹, while another study found that some bathing additives such as dead sea salt, oatmeal or natural oils may augment the benefit and reduce the need for or side-effects of pharmacological treatments.⁵⁰

The addition of antiseptics such as sodium hypochlorite (bleach bath) has been proven helpful and is discussed in the chapter antimicrobial therapy.

Adding sodium chloride to bathing water containing oil has been recommended, because of its keratolytic and skin moisturizing effect in concentrations up to 5%.⁵¹ In adults higher salt concentrations with the addition of magnesium have been used to mimic the effect of balneotherapy in the dead sea, also together with UV therapy⁵² (see chapter phototherapy).

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