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Non-pharmacological treatment modalities for atopic dermatitis

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Non-pharmacological measures to improve the management of atopic dermatitis (AD) are as important as pharmacotherapy for true healing of the skin. Skin dryness (which contributes to inflammation, loss of suppleness (leading to fissuring), impaired barrier function, and increased adherence of *Staphylococcus aureus* organisms) can be overcome by the use of emollients. Ointments and creams provide better barrier function than lotions.

Bathing is an important part of the management of AD. Regular, once-daily bathing in warm (not hot) water to hydrate the skin and debride crusts is important. Scented soaps should be avoided and replaced with a moisturising cleanser. After bathing, patients should pat the skin dry and apply emollients immediately.

Routine use of topical or systemic antibacterial or antifungal agents is not recommended for AD, but during flares such agents may be invaluable.

There is no specific diet for the treatment of AD. Elimination diets are not routine treatment and are potentially harmful. Food elimination should be reserved for those children who have been proven to be allergic to the specific food.

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This article discusses the non-pharmacological interventions used in combination with standard treatments to prevent or improve control of atopic dermatitis (AD).

Emollients

Dry skin is a very common feature of AD and is a diagnostic criterion for the disease. The consequences of dry skin include:

- inflammation
- loss of suppleness, leading to fissuring
- impaired barrier function
- increased adherence of *Staphylococcus aureus* organisms.

Emollients (or moisturisers) act by occluding water loss from the outer layers of the skin and directly adding water to the dry outer layers, thereby providing a protective film to retain moisture and exclude irritants.

Ointments and creams provide better barrier function than lotions. Oily preparations are generally better emollients, but may be too messy for routine use. Different preparations may be needed for the face and body. Patients should be allowed to decide on the most suitable emollient for their skin, i.e. one that is effective and cosmetically acceptable. Emollients must be applied frequently,^[1] at least twice during the day, even if there are no symptoms, and after swimming or bathing. The best results are obtained if emollients and medications are applied within three

minutes of bathing to retain hydration.^[2] Sufficient quantities must be prescribed, e.g. 250 g/wk for children and 500 g/wk for adults for whole-body coverage.

Generally, emollients are safe to use, but may cause contact dermatitis. There is little basis for the use of one moisturiser as opposed to another, except personal preference.

Aqueous cream is not a suitable emollient, since the alkaline detergent (sodium lauryl sulphate) used as the emulsifier can aggravate the dermatitis. The alkaline pH created on the skin has been found to increase transepidermal water loss and disruption of the skin barrier function.^[3] Any product containing unbuffered sodium lauryl sulphate emulsifier should therefore not be used as a leave-on emollient.

There are currently many new emollients available in South Africa, some of which have ingredients that are conducive to restoring the skin barrier function.

Randomised controlled trials examining the effects of emollients containing evening primrose oil, oat extract or urea failed to demonstrate benefits of these products.^[4,5]

A study examining the role of ceramide-containing emollients showed some improvements; however, the results were not properly evaluated. The latest addition to these products contain, in addition to ceramides, filaggrin breakdown products to replace the 'missing' molecules in the atopic skin. Early results are promising and these products compare favourably to existing ceramide-containing moisturisers.^[6]

Table 1. National Institute for Health and Care Excellence (NICE) guideline recommendations for children^[9]

Healthcare professionals should provide the following advice in cases of atopic dermatitis (AD)

- Offer children a choice of unscented emollients for daily use for moisturising, washing and bathing. These should be suited to the child's needs and preferences, and may include a combination of products or one product for all purposes. Leave-on emollients should be prescribed in large quantities and available to use at nursery school, pre-school or school
- Inform children and their parents or carers that they should use emollients in larger amounts and more often than other treatments. Emollients should be used on the entire body when the AD is clear and while using other treatments
- Inform children and their parents or carers that they should use emollients and/or emollient wash products instead of soap and detergent-based wash products
- Advise parents or carers of children <12 months to use emollients and/or emollient wash products instead of shampoo for the child. If shampoo is used for older children, it should be unscented and ideally labelled as being suitable for eczema; washing hair in bath water should be avoided
- Show children and their parents or carers how to apply emollients and how to smooth emollients onto the skin rather than rubbing them in. Healthcare professionals should offer an alternative emollient if a particular one causes irritation or is not acceptable
- Review repeat prescriptions of individual products and combinations of products with children and their parents or carers at least once a year to ensure optimal therapy

Table 2. Recommendations for bathing

- Regular bathing to hydrate the skin and debride crusts – useful for most patients for both cleansing and hydrating of the skin
- Bathe once daily for several minutes in warm (not hot) water
- Use a moisturising cleanser
- Avoid antibacterial cleansers (may lead to bacterial resistance)
- After bathing, pat the skin dry
- Emollients should be applied immediately after bathing

Studies of preparations containing antimicrobials did not reveal significant improvement in AD.^[7,8] However, topical irritant reactions were common in patients who used these products.

The National Institute for Health and Care Excellence (NICE) guidelines make significant recommendations with regard to emollient use (Table 1).^[9]

When emollients (excluding bath emollients) and other topical products are used at the same time of day to treat AD in children, the different products should ideally be applied one at a time with several minutes between applications, when practical. The preferences of the child and parents or carers should determine which product should be applied first.

Bathing practices

Bathing is an important part of the management of AD and should be done carefully. Clear recommendations are given in Table 2.^[9]

Antiseptics and antimicrobials

Routine use of topical or systemic antibacterial or antifungal agents is not recommended for AD,^[9] but during flares such agents may be invaluable.

Laundry practices

There is limited evidence suggesting that laundry practices have an effect on AD control. Logic would support methods that are simple and reduce undue exposure to potential allergens and irritants in patients with impaired skin barrier function. The benefit of fabric softeners that reduce fabric roughness is indirectly supported by evidence relating to clothing choices. The development of perfume-free fabric softeners would be in keeping with the simple approach alluded to above.

Clothing

Wool intolerance is a minor criterion for diagnosis in AD. Itching and discomfort caused by garments are reported to be related to fibre weight and roughness only. Fabric roughness, not the type of textile, determines skin irritation. Sweating increased discomfort for all tested fibres.^[10] Avoidance of any textile reported by the patient as irritating is advised.

Allergen avoidance

Inhalant allergy

House dust mite, seasonal pollens and pets may trigger AD, but there is little evidence that routine avoidance contributes towards managing AD. Consider avoidance measures in severe therapy-resistant disease.

Ingestant allergy

There is no specific diet for the treatment of AD.^[11] Elimination diets are not a routine treatment modality and are potentially harmful.^[9] Patients should not be routinely placed on exclusion diets. Food allergy should only be considered in specific cases. Elimination diets should be reserved for children who have been proven to be allergic. These diets should then be tailored to the individual after appropriate investigations have been performed to assess possible food triggers, must be followed under the supervision of a dietician and always be combined with atopic skin care.

Contact allergy

There is increasing evidence for the role of contact allergens in atopic patients. It is well known that AD is a risk factor for developing contact allergies, but the precise role of both irritant and allergic contact reactions in the pathogenesis of AD is not clear.^[9]

A systematic review and meta-analysis of allergens responsible for allergic contact dermatitis found that the top five allergens in children and adolescents included nickel, ammonium persulphate, gold sodium thiosulphate, thimerosal and p-toluenediamine.^[12]

Occlusive dressings

Findings suggest that wet wraps (cream or ointment applied to the skin, covered by a double layer of cotton bandages, with a moist first layer and a dry second layer, and kept in place for 24 hours) are safe short-term interventions. The wraps are more efficacious when used together with topical steroids and reduce the absolute amount of topical steroid

required. This procedure can be recommended as a second-line short-term (14-day) intervention to limit systemic absorption. A recent review on the use of occlusive dressings (wet or dry) found little beneficial evidence for their use, but noted that the studies were of poor quality.^[13] An increase in infections with use is a documented side effect.^[9]

Psychosocial factors

Although stress and psychological factors appear to influence AD, evidence of their impact is limited.^[14]

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