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## MANAGEMENT OF ATOPIC ECZEMA

- ☞ Atopic eczema is a common condition responsible for 30% of general practice dermatological consultations.
- ☞ Patient education is an important aspect of the management of atopic eczema and may improve compliance.
- ☞ Emollient use should be liberal and should exceed topical corticosteroid (TCS) use by at least 10:1.
- ☞ The weakest effective potency of the TCS should be used and matched to the disease severity.

### INTRODUCTION

Atopic eczema is defined as a chronic relapsing skin condition associated with intense itching, dry skin, redness, inflammation and exudation <sup>(1)</sup>. The terms atopic eczema and atopic dermatitis are used synonymously <sup>(2,3)</sup>; “atopic” refers to the association with atopy and differentiates it from other forms of eczema such as irritant, allergic contact, discoid, venous, seborrhoeic and photosensitive eczema, all of which have different disease patterns and aetiologies <sup>(1)</sup>.

Atopic eczema is the commonest inflammatory skin condition affecting 15-20% of school children <sup>(1,4,5,6,7)</sup> and 2-10% of adults <sup>(1,4)</sup>. While >80% of people experience mild disease and only 2-4% of people have a severe form of the disease <sup>(1,8)</sup>, atopic eczema in the UK is responsible for 30% of general practitioners dermatological consultations <sup>(9)</sup>. Table 1 lists the criteria for the diagnosis of atopic eczema.

**Table 1: Criteria for the diagnosis of atopic eczema <sup>(4)</sup>**

**To diagnose atopic eczema an individual should have:**

**An itchy skin condition in the last 12 months**

**Plus three or more of the following:**

**Onset before 2 years of age (not applicable in child <4 yrs)**

**History of flexural involvement**

**History of generally dry skin**

**History of other atopic disease (or history in 1st degree relative if child <4 yrs)**

**Visible flexural dermatitis**

The overall prevalence of eczema appears to be increasing <sup>(10)</sup> and several reasons have been suggested for this, including - higher exposure to air pollution, smaller families with less exposure to infections, more pets, higher maternal age, housing, housing design and a wide range of foods <sup>(3)</sup>.

The disease and its treatment can interfere with patients' social, economic and psychological well-being, with time off from school, restriction of leisure activities and interference with relationships and work being well-recognised problems <sup>(9)</sup>.

Childhood atopic eczema also has a profound effect on the social, personal, emotional, and financial perspectives of families <sup>(11)</sup>. Apart from the direct financial costs, the disease has an effect on family life such as sleep deprivation (1-2hrs of sleep interrupted each night), time taken to care for a child (2-3hrs per day spent treating the child) and indirect financial costs (days taken off work) <sup>(11)</sup>. Severe atopic eczema in children can result in a huge loss of quality of life equivalent to that associated with juvenile rheumatoid arthritis <sup>(3)</sup>.

### PATHOPHYSIOLOGY OF ECZEMA

While the pathophysiology of atopic eczema is not fully understood, the aetiology is believed to be multifactorial with genetic, immunological and environmental factors being important <sup>(14)</sup>. Environmental factors such as house dust mites, pollen, tobacco, air pollution and low humidity may precipitate its onset and/or exacerbate existing symptoms <sup>(1)</sup>.

### CLINICAL PRESENTATION

Atopic eczema presents as dry skin with itchy, ill-defined erythema, often with excoriation and bleeding <sup>(9)</sup>. Itching is the major symptom and a vicious cycle can occur, where itching and scratching damage the skin leading to increased inflammation and subsequently increased itch <sup>(1)</sup>. Damage to the skin from scratching can cause bleeding, secondary infection and thickening of the skin (lichenification).

**Age of onset:** Sixty percent of patients present during the first year of life <sup>(9)</sup>. There are particular patterns of presentation in children at different ages. In infants the face is usually the first to be affected, while in crawling infants the extensor aspects of the knees and ankle flexures are mostly affected. Older children present with the flexor aspects of the elbows and knees

mostly affected<sup>(3)</sup>. Around 60% of childhood eczema may clear by adolescence but it can recur in later life<sup>(13)</sup>. Atopic eczema is associated with other atopic conditions and 25-50% of children develop asthma and 30% develop allergic rhinitis<sup>(14)</sup>. The severity of the disease varies enormously from an occasional dry, scaly patch to a debilitating disease with much of the body covered by excoriated, bleeding and infected lesions<sup>(1)</sup>. The course may be continuous for prolonged periods, or be of a relapsing-remitting nature, characterised by acute flare-ups. **More persistent disease is associated with early onset, severe widespread disease in early life, concomitant asthma or hay fever and a family history of atopic eczema<sup>(1)</sup>.**

**Complications** – infective complications are common particularly with *Staphylococcal aureus* infection. Staphylococcal infection may manifest as bullous impetigo or worsening of the eczema with pain rather than itch, increased redness and oozing<sup>(3)</sup>. Atopic children are particularly prone to severe widespread herpes simplex infections<sup>(3)</sup>. Streptococcal infection may manifest as increased redness and erosion of the skin or as pustular lesions<sup>(3)</sup>.

## MANAGEMENT OF ECZEMA

The management of atopic eczema takes place predominantly in primary care<sup>(1)</sup>, the aim of which is to relieve symptoms until remission occurs. It is important to recognise complications such as secondary bacterial infections, eczema herpeticum and skin atrophy induced by the use of TCS<sup>(2)</sup>. Table 2 outlines the cases where referral of patients to secondary care may be considered.

**Table 2: Recommendations for referral to secondary care<sup>(4)</sup>**

- **Urgent referral and prompt antiviral treatment if severe infection with herpes simplex is suspected**
- **The eczema has not responded to appropriate therapy in primary care especially if excessive amounts of potent TCS are being prescribed**
- **Eczema has become infected with bacteria and treatment with an oral antibiotic plus TCS has failed**
- **Eczema giving rise to severe social or psychological problems including sleeplessness and school absenteeism**
- **Contact dermatitis is suspected and confirmation requires patch testing**
- **The diagnosis is or has become uncertain**
- **Patient or family may benefit from additional advice on application of treatments**
- **Dietary factors are suspected and dietary control is a possibility**

## NON-PHARMACOLOGICAL MANAGEMENT

One of the most important aspects of atopic eczema management is patient education<sup>(15)</sup>. The patient/carer needs to be informed about the nature of the condition and fully advised on the use of topical treatments including the potencies of the different TCS<sup>(9)</sup>. Evidence suggests that patient education from a nurse practitioner may improve patient compliance and reduce under and over use of TCS<sup>(16)</sup>. Community pharmacists are also involved in patient education. Patients should be advised to avoid any exacerbating factors including extremes in temperature, irritating clothing and use of soaps and detergents<sup>(17)</sup>.

## PHARMACOLOGICAL MANAGEMENT

The role of pharmacological treatment is to suppress symptoms and to control or prevent complications.

### First-Line Therapy

**Emollients** – Even though there is little evidence of the efficacy of emollients from clinical trials, long-term clinical experience suggests that topical emollients are safe and effective in the treatment of atopic eczema<sup>(18)</sup>. Their benefit may be explained by the formation of an occlusive layer, which prevents water loss from the skin and also prevents irritants coming in contact with the skin. In addition to them being used as first-line therapy, it is considered that intensive use of emollients reduces the need for TCS<sup>(4,13,18)</sup> and it is suggested that **emollient use should exceed TCS use by at least 10:1<sup>(4)</sup>**. Guidelines recommend that emollients should be applied liberally, regularly and as frequently as possible up to 2-3 times daily, including after bathing<sup>(18)</sup>. An adult would require 400 g of emollients in a week and a child 400g every two weeks if the emollient is required all over the body<sup>(19)</sup>. There are many emollients available and there is little evidence to support the use of one over another<sup>(20)</sup>; in practice the emollient used depends on patient preference<sup>(13)</sup>. The most effective moisturiser is probably white soft paraffin or equal parts of white soft paraffin and liquid paraffin, however greasy preparations are often cosmetically unacceptable<sup>(21)</sup>. Creams need to be used more frequently than ointments to have the same effect. The use of bath emollients in atopic eczema is controversial, with some experts considering them important in the treatment, while others question their role<sup>(18)</sup>. Care is required when they are used as they make the bath slippery. For flare-ups, consideration should be given to changing the emollient to a higher lipid content formulation (e.g changing from a cream to an ointment) and increasing the frequency and quantity of emollient applied<sup>(20)</sup>. Reactions to emollients are most commonly due to preservatives, fragrances, lanolin or arachis oil, and when a reaction is suspected the patient should switch to a product with different constituents<sup>(20)</sup>. Emollients on their own are not useful during acute inflammatory flares and additional TCS are required<sup>(15)</sup>. Emollients containing antiseptics agents such as triclosan and benzalkonium chloride have failed to show that they improve clinical symptoms or reduce the occurrence of *Staphylococcus aureus*<sup>(20)</sup>.

The National Patient Safety Agency in the UK has recently issued an alert to all healthcare staff involved in the prescribing, dispensing or administration of paraffin based skin products (e.g white soft paraffin, white soft paraffin plus 50% liquid paraffin or emulsifying ointment) of a potential fire risk<sup>(22)</sup>. **Patients who have bandages, dressings and clothing in contact with paraffin based skin products should be advised of the potential fire risk and told to keep away from fire, flames or other potential causes of ignition and not to smoke when using these preparations.**

**Topical corticosteroids** – TCS have anti-inflammatory and immunosuppressive effects <sup>(1)</sup> and are the first line treatment in the management of an exacerbation of atopic eczema <sup>(1,9)</sup>. Ointments should be used in preference to creams as their emollient action and occlusive effect results in better penetration <sup>(9)</sup>. **Emollients should not be applied immediately after application of a TCS (a 30 minute wait is recommended)** <sup>(4)</sup>.

Guidelines from the British Association of Dermatologists (BAD) recommend that the weakest TCS which controls the disease effectively should be chosen, which may involve either a step-up approach (from less potent to more potent) or step-down approach (from more potent to less potent) <sup>(4)</sup>. For each approach **regular review of TCS use in terms of potency and quantity is essential** <sup>(4)</sup>. The potency of the TCS needs to be matched to the disease severity and the affected site and as a rough guide the BAD suggests that TCS use should be limited to a few days to a week for acute eczema and up to 4-6 weeks to gain initial remission for chronic eczema <sup>(4)</sup>. **Evidence suggests that once daily application of a potent TCS is as effective as more frequent application** <sup>(1,8,20)</sup>. The length of TCS cream or ointment squeezed from a tube may be used to specify the quantity to be spread over a given area of skin. This length can be measured in terms of a fingertip unit (the distance from the tip of the adult index finger to the first crease). **One fingertip unit (~0.5g) is sufficient to cover an area of 2 palm sizes** <sup>(23)</sup>.

Table 3 lists the different strengths of TCS.

**Table 3: Different strengths of topical corticosteroids** <sup>(20)</sup>

Mild	Moderate	Potent	Very Potent
Hydrocortisone	Aclometasone dipropionate Clobetasone butyrate	Betamethasone valerate 0.1% Betamethasone dipropionate Hydrocortisone butyrate Mometasone furoate	Clobetasol propionate

**Treatment of exacerbations:** **In adults:** the face, genitals and flexures should be treated with mildly potent TCS; the eyelids with mildly potent TCS for at most 14 days; the palms, soles of the feet and scalp with potent TCS and the trunk and limbs with the lowest potency of TCS likely to produce an effect within 7-14 days <sup>(20)</sup>. In many cases a 7-14 day course of a mild steroid is enough, however a stronger steroid may be required after 5-7 days. Rarely very potent steroids may be indicated in severe resistant eczema on the hands and feet of adults <sup>(4)</sup>.

**In children:** all skin areas should be treated with a mildly potent TCS, while moderately potent TCS can occasionally be used on areas other than the face, genitals or flexures as an alternative treatment <sup>(20)</sup>. **Potent steroids should not be used in infants without specialist advice** <sup>(4)</sup>. Table 4 gives an indication of the quantities of TCS, which should be prescribed for an adult for a single daily application for a 2 week period.

**Table 4: Appropriate quantities of corticosteroid preparations for specific areas of the body for an adult for a two week period** <sup>(23)</sup>

Area of Body	Creams and ointments
Face and neck	15 – 30 g
Both hands	15 – 30 g
Scalp	15 – 30 g
Both arms	30 – 60 g
Both legs	100g
Trunk	100g
Groins and genitalia	15 – 30 g

**Adverse effects** - Patients using moderate and potent TCS must be reviewed for both local and systemic adverse effects. The most widespread adverse effect of TCS treatment is skin atrophy, where the skin becomes thin and easily bruised, and is most likely to occur on the face or flexures, where absorption is greatest <sup>(1)</sup>. Other adverse effects include striae, burning, stinging, folliculitis, perioral dermatitis, acne, rosacea and hypertrichosis <sup>(9)</sup>. In children, suppression of the hypothalamic pituitary adrenal (HPA) axis and stunting of growth is a concern, but long-term use of mild and moderate topical steroids does not usually affect pituitary-adrenal function <sup>(9)</sup>. The use of growth charts is advised in children on long-term TCS. Children, especially babies, are particularly susceptible to adverse effects.

Corticosteroid-antibiotic combinations appear to be clinically effective in localised infection of atopic eczema; however they should only be used in short courses (no longer than two weeks) to reduce the risk of bacterial resistance and skin sensitivity <sup>(4)</sup>.

### Additional Therapies

**Topical calcineurin inhibitors** – act by reducing inflammation through the suppression of T-lymphocyte responses <sup>(24)</sup>. They should be initiated only by physicians with experience in the diagnosis and treatment of atopic eczema <sup>(4,24,25)</sup>. The long-term effects of these medications are unknown <sup>(4)</sup>.

**Topical tacrolimus** has been shown to be at least as effective as potent TCS in trials in patients with moderate to severe atopic eczema and is available in two concentrations: 0.03% for adults and **children ≥ 2 years** and 0.1% for adults <sup>(21,24-28)</sup>. **It is indicated for use in moderate to severe atopic eczema in patients who fail to respond, or in those unresponsive to**

**conventional treatment** <sup>(25)</sup>. NICE recommends that it should not be recommended for mild atopic eczema or as first-line treatment of any severity <sup>(26)</sup>. Any clinical infections at the treatment sites should be cleared before commencing treatment <sup>(9,24)</sup>. Tacrolimus is applied as a thin layer to affected areas of the skin twice daily. It should not be used with occlusive dressings and emollients should not be applied to the same area within 2 hours of application <sup>(24,25)</sup>.

**Adverse effects** - include burning or tingling sensation, pruritus, erythema, folliculitis, herpes simplex infection and alcohol intolerance <sup>(24)</sup>. Tacrolimus should not be used in patients with congenital or acquired immunodeficiencies <sup>(25)</sup>. Cases of malignancies including cutaneous and other types of lymphoma have been reported with use of tacrolimus <sup>(25)</sup>. Causality has not been proven or disproven, and long-term safety continues to be evaluated <sup>(29)</sup>. Please see the Summary of Product Characteristics (SPC) for full prescribing details.

**Wet Wrap treatment (WWT)** – The use of dampened bandages to reduce inflamed eczema is an old remedy <sup>(30)</sup>, which generally requires hospital admission but has also been used in primary care <sup>(9)</sup>. Experts agree that WWT is effective for the treatment of **severe atopic eczema** <sup>(30)</sup> but should be reserved for second-line intervention treatment in patients with severe disease who have failed to respond to conventional treatment <sup>(31)</sup>. The use of WWT requires detailed explanation and education and should only be used by practitioners trained in its use <sup>(30)</sup>. It is less easy to apply than conventional treatment and may be associated with more skin infections than conventional treatment <sup>(32)</sup>.

WWT involves the application of a mild TCS or emollient alone under an inner wet and outer dry layer of cotton tubular bandages <sup>(13,30)</sup>. It should not be used on weepy, infected eczema until the infection has cleared <sup>(13)</sup>. WWT supports the rehydration of the skin and the gradual cooling has an anti-inflammatory effect and reduces itching. The hydration and occlusion provided by the WWT also **increases the absorption of topical medications** <sup>(30)</sup>. If wet wrapping is used in primary care it is best limited to short-term use for exacerbations, intense itching or sleep loss in well-motivated trained parents <sup>(13)</sup>.

**Adverse effects** - skin infections and the development of striae is a particular concern in pubertal children <sup>(30)</sup>. The systemic absorption of TCS can be increased using WWT and temporary suppression of the HPA axis has been reported in patients. Patients using WWT should be monitored by measuring morning serum cortisol, and consideration given to using greater dilutions of the TCS (1:20 and 1:30) <sup>(30)</sup>.

**Oral antibiotics** - a 7 day course of oral flucloxacillin is appropriate if *Staphylococcus aureus* is suspected (erythromycin or another macrolide if there is a history of penicillin allergy). If beta-haemolytic streptococci is suspected phenoxymethylpenicillin and flucloxacillin should be given <sup>(4)</sup>.

**Antihistamines** – sedating antihistamines may be used to reduce itch and scratch <sup>(4)</sup>. Non-sedating antihistamines are of no value in the management of atopic eczema <sup>(9)</sup>.

**Oral corticosteroids** – these should be avoided because of the severe rebound eczema, which occurs on withdrawal. However they may be considered if there is a delay before specialist review <sup>(20)</sup>.

**Complementary therapies** - There is little evidence that systemic traditional Chinese medicine compared with placebo can improve atopic eczema, and clinical trials on other complementary therapies including homeopathic remedies, acupuncture, hypnotherapy and aromatherapy have not shown any clear benefit <sup>(15)</sup>. The use of gamma linoleic acid supplements in borage oil or evening primrose oil have also been shown to be ineffective <sup>(33)</sup>.

## AGENTS USED IN SECONDARY CARE

**UV phototherapy** – Psoralens plus ultraviolet A (PUVA) and ultraviolet B (UVB) have been used to treat atopic eczema in some adults and children <sup>(13)</sup>. Short-term effects include skin burning or itching and in the long-term there are potential risks of skin ageing and skin cancer, especially with PUVA. Narrow band UVB therapy has also been shown to be an effective adjunctive treatment for patients with moderate to severe disease <sup>(34)</sup>.

**Ciclosporin** – has been used in adults and children with severe refractory disease <sup>(2,13)</sup>. Careful monitoring is required and documented adverse effects include nephrotoxicity, immunosuppression and predisposition to cancer.

**Azathioprine** - has been used off-licence to treat severe eczema in adults and rarely children <sup>(13)</sup>. Evidence suggests that it may be effective in moderate to severe atopic eczema <sup>(35-37)</sup>. Careful monitoring is required as adverse effects include myelosuppression and hepatotoxicity <sup>(13)</sup>.

## SUMMARY

Atopic eczema is a common skin condition, that can have a great impact on patients and their families. The majority of patients are managed in primary care. First-line treatment consists of patient education, emollients and TCS. The potency of the TCS needs to be matched to the disease severity and regular review of their use in terms of potency and quantity is essential. Children, especially babies, are particularly susceptible to adverse effects of TCS.

*List of references available on request. Date of preparation: November 2007*

*Every effort has been made to ensure that this information is correct and is prepared from the best available resources at our disposal at the time of issue. Prescribers are recommended to refer to the individual Summary of Product Characteristics for specific information on a drug.*

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