Managing ECZEMA

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Key concepts

- Identify and minimise exposure to factors that exacerbate eczema
- Maintain the barrier function of skin with emollients
- Use anti-inflammatory treatment to control exacerbations

Eczema, also referred to as atopic eczema or atopic dermatitis, is an itchy inflammatory skin condition that is often chronic or relapsing.[1]

There are two main theories about the pathogenesis of eczema. The more traditional view is that eczema is primarily an immune mediated response to environmental factors.[2] However recent research suggests that skin barrier defects play a key role. These defects arise from gene mutations and result in loss of function of structural proteins e.g. filaggrin.[3] It is most likely that eczema arises from a combination of both genetic and environmental factors.

Most cases of eczema first develop in children aged under five years and about one in six school children have some degree of eczema. However, in about two thirds of cases, by the mid teenage years, the flare-ups of eczema have either gone completely, or are much less of a problem. It is unusual to first develop eczema after the age of 20, although eczema may go into remission in childhood and reappear in adult life. There is no way of predicting which children will be affected as adults.

The impact of eczema on families is an important consideration. Studies have found that the care of a child with severe eczema can have a significantly greater impact on family functioning, than the care of children with other chronic conditions, such as diabetes.[4]

Eczema can impact on career choice. A teenager with eczema should be aware that hair dressing, nursing, cooking and cleaning jobs, for example, are associated with a high risk of chronic hand dermatitis. People with eczema who work in the food, hospitality and health industries may find that their occupation adversely influences their eczema, and that they may not be able to work if they have visible eczema, particularly if it is infected.

Diagnosis of eczema

The diagnosis of eczema is usually based on the presence of an itchy rash in addition to a history of atopy and dry skin (see Box 1).

Box 1: Diagnostic criteria for eczema in children and adults[5]

An itchy skin condition (or parental report of scratching) in the last 12 months, plus three or more of the following:

- A history of involvement of the skin creases (antecubital fossae, popliteal fossae, ankles, neck or periorbital skin)
- A personal history of asthma or allergic rhinitis (or history of atopic disease in a first degree relative if a child is less than four years of age)
- A history of a generally dry skin in the last year
- Visible flexural eczema (including eczema affecting cheeks or forehead and outer aspects of limbs in children less than four years of age)
- Onset under the age of two years (but this criteria does not apply until the child is more than four years of age)

A detailed history includes; age of onset, pattern and severity, response to treatments, possible trigger factors, diet, personal and family history of atopic disease and the impact of the condition on children and their parents or carers.[5]

Examination of the rash can reveal the extent, location and severity of eczema and determine whether it is clinically infected.[6]

The affected areas of skin may vary depending on age:[1,7]

- In infants eczema commonly affects the face, trunk and limbs
- In children and adults eczema commonly affects the flexures, however it may be most troublesome on the face and hands

Management of eczema

The main aims of eczema management are to:

- Identify and minimise exposure to factors that exacerbate eczema
- Maintain the barrier function of skin with emollients
- Use anti-inflammatory treatment to control exacerbations

Referral to a specialist may be required for severe eczema or eczema that fails to respond to appropriate treatment.

Urgent referral is required if eczema herpeticum is suspected. This is a severe form of herpes simplex virus infection in a patient with atopic eczema which presents as rapidly worsening, painful plaques, clustered vesicles or punched out erosions.[7] It is often associated with fever and malaise.

Minimise irritants where possible

Factors that exacerbate eczema include infections, heat and sweating, dry skin, low humidity, emotional stress and irritants such as soaps, detergents and some fabrics (e.g. wool).[6] Avoiding these triggers where possible is beneficial during acute flares of eczema as well as for long-term management.[8]

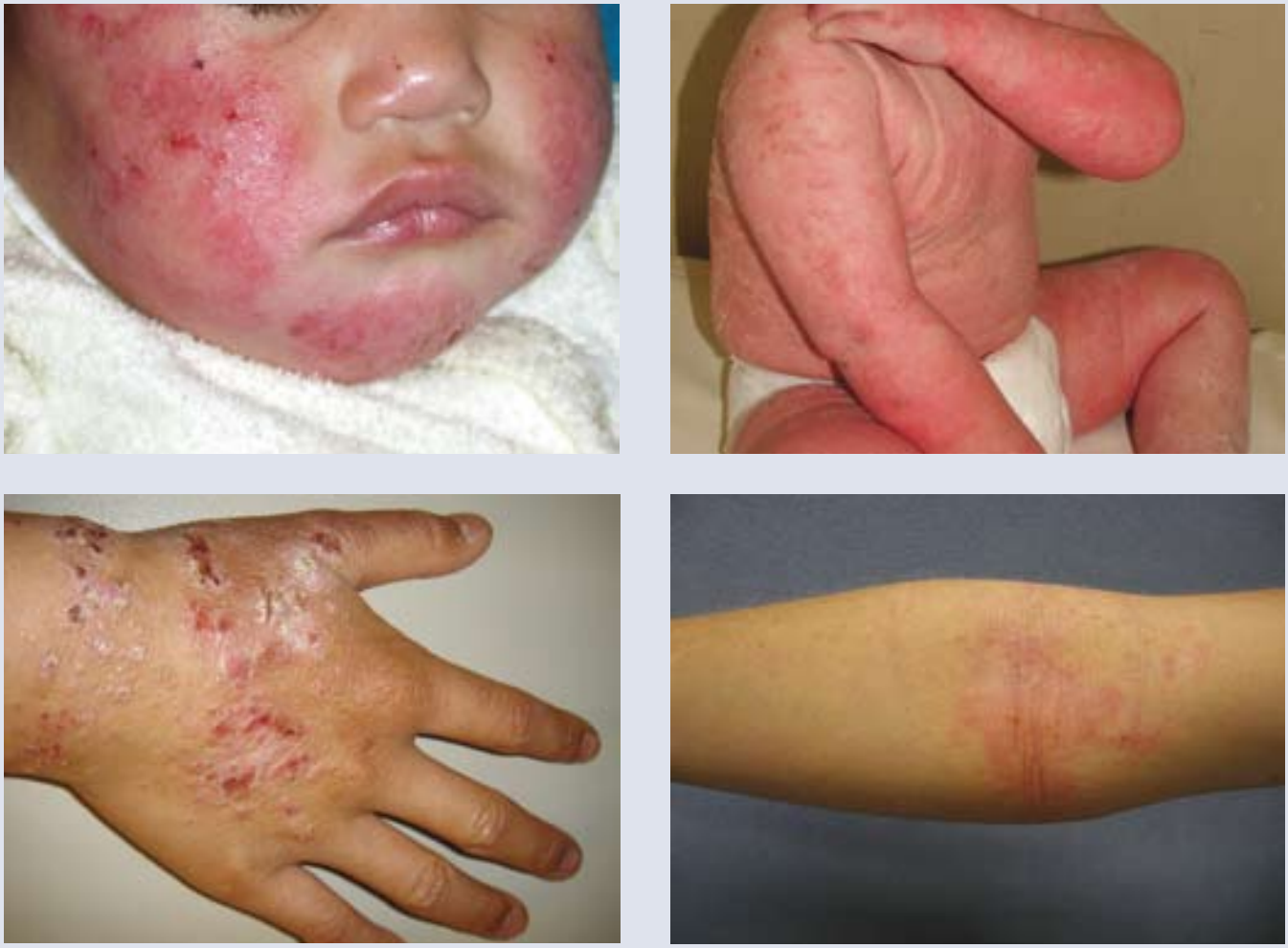


Figure 1: Examples of eczema (pictures suppled by DermNet NZ)

Eczema management algorithm adapted from NICE[5]

Clear:	Mild:	Moderate:	Severe:
■ Normal skin ■ No evidence of active eczema	■ Areas of dry skin ■ Infrequent itching (with or without small areas of redness)	■ Areas of dry skin ■ Frequent itching ■ Redness (with or without excoriation and localised skin thickening)	■ Widespread areas of dry skin ■ Incessant itching ■ Redness (with or without excoriation, extensive skin thickening, bleeding, oozing, cracking and alteration of skin pigment)
↓	↓	↓	↓
Emollients	Emollients	Emollients	Emollients
	Mild topical corticosteroids	**Moderate** potency topical corticosteroids*	**Potent** topical corticosteroids**
			Consider **wet wraps** (see page 30) and referral for systemic therapies

* Avoid use on face, neck, genitals or axillae for longer than 7–14 days

** Avoid use on face, neck, genitals or axillae

The role of airborne allergens such as house dust mites and animal dander in causing eczema is unclear and total elimination of these triggers can be difficult, time consuming and costly and may have limited benefit.[6] However, using mattress covers, low-pile carpet and minimising exposure to pets may be trialled, especially for children who also have asthma and/or rhinitis.[9] Cigarette smoke should be avoided.

Food allergies occasionally play a role in exacerbating eczema, however parents should be cautioned against adopting very restrictive diets because they may be of limited benefit, and may cause serious nutritional deficiencies.[9] In most cases, advise the patient or parent to continue a normal diet. Approximately 10% of children with eczema have a food allergy that aggravates their eczema, but this is much less common in adults. Common allergens include; milk, eggs, nuts, soya and wheat. Food allergy may be suspected if other symptoms such as gastrointestinal upset, vomiting or diarrhoea are present

Box 2: Emollients available in New Zealand

In New Zealand, funded options include aqueous cream, fatty cream,* emulsifying ointment and cetomacrogol cream.

Partially funded options include oily cream, glycerol with paraffin and cetyl alcohol (QV lotion) and wool fat with mineral oil (Alpha-Keri, Hydroderm BK and DP lotions). Urea cream (Nutraplus) is very effective at moisturising dry skin, but may sting if there is active eczema.

* Lemnis Fatty Cream has been discontinued. healthE Fatty Cream has the same formulation as Lemnis Fatty Cream and is now fully funded. N.B. Lemnis Fatty Cream HC (hydrocortisone) is still available.

concurrently.[10] Food allergy is less likely if eczema has developed after age two years, as sensitisation to dietary allergens decreases with age.[5]

Apply emollients liberally, frequently and continuously

The aim of using emollients is to maintain the skin's barrier function to keep moisture in and irritants, allergens and pathogens out.[6]

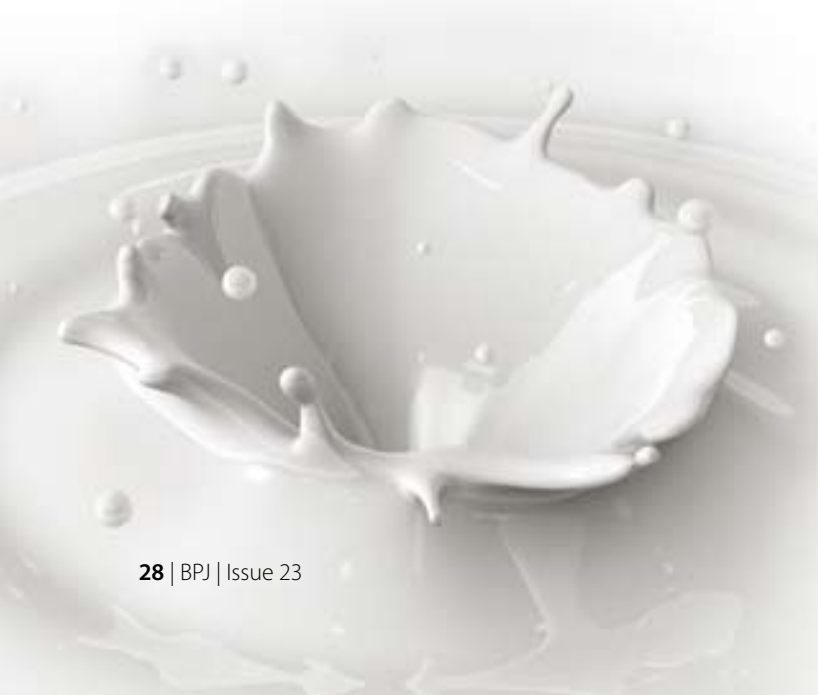
Most people with atopic eczema have dry skin. Dry skin causes pruritus and also contributes to eczema morbidity by creating microfissures and cracks in the skin, through which irritants and pathogens can enter.[11]

While emollients are universally recommended as the core treatment for eczema, there is limited evidence about their efficacy. One study in infants with moderate to severe eczema found that using emollients significantly decreased the requirement for topical steroids.[12]

Apply emollients three to four times daily

Application of emollients three to four times daily (or more) is ideal, however this may be difficult. For most people regular once a day application is achievable and can still lead to improved outcomes. Emollients are best applied after bathing or showering while the skin is hydrated.

People with eczema should avoid using soaps, detergents or bubble bath. Instead, a soap substitute such as emulsifying ointment or aqueous cream, can be used.[7]



To use emulsifying ointment as a soap substitute, mix it with warm water in the palm of the hand or in a cup (which could be stored for one or two days) to form a lather. Apply this to skin in the same way as soap. While bath oils may be used, there is limited evidence of their effectiveness and patients should be advised that their regular emollient regimen still needs to continue.[13] N.B. Emollients will make the bath/shower greasy and slippery. A bath mat should be used for safety purposes

Prescribe sufficient quantities of a patients preferred emollient

Emollients are available as both creams and ointments. Creams are suitable for red, inflamed skin while ointments are suitable for very dry skin. Ointments are often not well tolerated because some people find them too greasy. It may be more convenient for patients to apply a cream or lotion during the day and an ointment at night.[7]

The best emollient is the one preferred by the patient because it is more likely to be used regularly. It is important to prescribe sufficient quantities of emollient. Approximately 250 – 500 g of emollient per week is required for someone with extensive areas of dry skin.[7]

Best practice tip: Initially prescribe a selection of emollients to allow the patient to choose the one that suits them best.

Topical corticosteroids are used to treat eczema flares

Despite efforts to avoid irritants and the best use of emollients, flares are characteristic of eczema. Topical corticosteroids are the main agents used to control flares. As the intention is to use them short-term, they should be applied in appropriate amounts (see page 10) to all affected areas to gain rapid control.

See page 8 for information on the use of topical corticosteroids including their indications, potencies, adverse effects and precautions.

In general the potency of steroid should be matched to the severity of the flare.[5] For mild flares use a mild steroid, for a moderate flare use a moderately potent steroid and for a severe flare use a potent steroid. Treatment should continue until the flare has resolved.

Avoid using a potent corticosteroid on flares affecting the face, neck, genitals or axillae because the risk of local adverse effects is greater in these areas.[7]

In most cases, once control of a flare is achieved, corticosteroids can be stopped. However, for those who experience frequent flares (i.e. two or three per month) it may be useful to continue topical corticosteroids between flares. There are two ways to do this - either step-down to the lowest potency that controls the eczema or use the same potency but apply less frequently (e.g. two consecutive days per week).[5]

Emollients need to be continued during flares and for maintenance.

Other pharmacological treatments for eczema

Pimecrolimus (Elidel) - is there a place for this?

Yes: For use on sensitive areas e.g. eyelids, groin if hydrocortisone is being used continuously, or is not effective, on these areas.

No: if cheaper low potency topical corticosteroids are proving effective or where it is safe to use more potent topical corticosteroids.

Pimecrolimus is classified as a calcineurin inhibitor. It works by inhibiting T cell cytokine production and prevents the release of inflammatory mediators from mast cells.[10] Pimecrolimus is less effective than 0.1% betamethasone valerate (potent topical corticosteroid).[14] However, unlike topical corticosteroids, pimecrolimus does not cause skin atrophy which may be an advantage on sensitive areas such as the face, eyelids and groin.[8]

Pimecrolimus may cause local irritation (a short-lasting burning sensation) which can be particularly problematic in children who have low tolerance for stinging preparations.[15] The long term safety profile of pimecrolimus is unknown and while the link is uncertain, there is concern that there may be an increased risk of skin cancer and lymphoma.[16]

For these reasons, topical corticosteroids are still considered the first line treatment for eczema.

Pimecrolimus is not currently subsidised – a 15 g tube costs approximately $50.

Antihistamines may be useful to aid sleep for those with severe pruritus

Evidence supporting the use of antihistamines for eczema is weak.[8] However pruritus associated with eczema can cause scratching, leading to excoriation, bleeding and infection. During a flare the itch can result in significant sleep loss for which a short course of sedating antihistamine such as promethazine hydrochloride (Phenergan) may be useful.[9]

A trial of non-sedating antihistamines (e.g. cetirizine) may be of benefit for patients with allergic triggers as they may reduce atopic disease with use over several months.[9]

Secondary infection may require topical or oral antibiotics

Eczema lesions are commonly colonised with *Staphylococcus aureus*.[9] Signs that eczema is clinically infected include; crusting, weeping, pustules or failure to improve with treatment.[7]

If there are extensive areas of infected eczema an oral antibiotic such as flucloxacillin is recommended. For localised areas of infection a topical antibiotic may be used either in conjunction with a corticosteroid or as a combined product. Limit the use of topical antibiotics to one to two weeks as resistance or sensitisation may occur.[7]

Antiseptic use

Evidence of effectiveness of topical antiseptics (e.g. chlorhexidine) for eczema is limited. However they can be used to reduce bacterial load in infection-prone areas.[5]

Routine use of emollients containing antiseptics is not recommended because they may cause sensitisation.[7]

The "swimming pool water" method – sodium hypochlorite, as half a cup of household bleach in bathwater, may reduce the severity of eczema.[17] Patients should be advised to soak for five to ten minutes, and then thoroughly rinse the skin with lukewarm, fresh water to prevent dryness and irritation. Pat dry and apply any prescribed medications and/or emollients. Bleach baths can be used two to three times a week. Do not use if there are extensive areas of broken skin.[9]

Potassium permanganate is an antiseptic that is sometimes used to treat eczema that is weeping or has become infected. Potassium permanganate crystals can be added to bath water at a concentration of 1:10000 (dissolve a few crystals in a container of water until a light purple solution is formed and then add to bath water, which should turn light pink). However the solution may cause brown staining to the skin and nails not to mention the bath so this method has fallen out of favour.

Wet wraps may be useful for severe or extensive eczema

Wet wraps are used to hydrate the skin and prevent scratching. They also enhance penetration of topical steroids into the skin. They are effective for severe or extensive eczema.[9, 18]

Adverse effects that may occur, especially with incorrect or excessive use, include maceration of the skin or secondary infection.

Wet wraps are typically used overnight and removed in the morning. Emollients should continue to be applied frequently throughout the day to the affected areas. Wet wraps may be used for a few nights (maximum five to seven consecutive nights)[9] until the redness, swelling and weeping has settled down (see opposite page for instructions).[19]

The role of oral corticosteroids for treating eczema is limited

Oral corticosteroids may be used to quickly control an eczema flare however there is an associated risk of rebound flares.[18] Frequent or prolonged use can also increase the risk of adverse effects such as growth retardation in children, osteoporosis or elevated blood pressure.[1, 7, 8]

Do skin prick tests, RAST tests or patch tests have a role in diagnosing allergies?

People with mild eczema rarely require investigation for allergies.[5]

Referral to a dermatologist for allergy tests may be appropriate for eczema that has a poor response or failed to respond to conventional topical treatment, or where dietary precipitants are suspected.[20] Commonly used tests for allergies include patch test, skin prick test and radioallergosorbent test (RAST).

Patch testing

Patch testing is used in the investigation of suspected allergic contact dermatitis. It is mainly indicated where eczema is confined to a specific site e.g. only the hands or face. Patches containing standardised allergens are applied to the upper back and tape is used to keep them in place for 48 hours. It is then "read" at various time intervals looking for evidence of an eczema-like rash, that might indicate sensitivity to a particular allergen.

Skin prick testing

Skin prick testing is used to detect the presence of allergen specific IgE to food, aeroallergens, some venoms, antibiotics and latex.[20] Drops of commercially produced

allergen are placed onto a marked area of skin on the forearm or upper back. Using a sterile lancet, a small prick to the skin through the drop is made. If the patient is allergic a small lump will appear at the site of testing over 15 – 20 minutes. This is not an eczematous response, so its relevance to eczema is unclear.

Atopic individuals may get false positive results with skin prick testing because of the sensitivity of eczematous skin to any trauma. In people with eczema or dermographism, scratching the skin may cause a raised mark and be read as a positive test result, even without any allergen. For this reason, skin prick testing is unreliable for diagnosing allergies in people with eczema.[21]

RAST testing

RAST testing is a blood test that measures the level of specific IgE to different allergens and is used to investigate increased sensitivity to a variety of food groups (e.g. eggs, cow's milk and nuts), house dust mite and animal dander.

In atopic eczema the results of RAST testing may be misleading. It is often used in the investigation of patients with atopic eczema however, a patient can have a degree of sensitivity to many allergens but not all will have a clinically significant effect on their eczema.

Specialist care

Children and adults with severe or persistent eczema should be referred to a dermatologist and may also require paediatric and/or immunology assessment.

Other second line treatments used in specialist practice include narrowband ultraviolet-B (UVB) phototherapy and immunosuppressive agents, especially methotrexate, azathioprine and ciclosporin. These agents necessitate regular review and careful monitoring.

Keeping eczema under wraps– recommendations for applying wet wraps:[9, 18]

- Prepare lengths of tubular bandage. Cut two lengths for each arm and leg and two lengths for the torso
- One length of each is soaked in warm water and then wrung out until it is slightly damp
- Bath and wash as usual
- Apply steroid to affected areas (if required) and then emollient to the rest of the skin
- Cover with the damp dressing and then cover this with the dry dressing. Plastic is not a suitable alternative to the dry dressing as it is too occlusive and may be a choking hazard.
- The wrap may be left on overnight but make sure the patient remains in a warm environment

N.B: Tubular bandages (e.g. Tubigrip, Tubifast) are available in a range of sizes from pharmacies. Tubifast bandages and garments are available from the following websites:

Allergy Pharmacy :
www.allergypharmacy.co.nz

Kumfy Kids:
www.kumfykids.co.nz

References:

1. Ross T, Ross G, Varigos G. Eczema. Practical management issues. Aust Fam Physician 2005;34(5):319-24.
2. Weston WL, Howe W. Epidemiology, clinical manifestations, and diagnosis of atopic eczema. UpToDate 2008. Available from: www.uptodate.com (Accessed July 2009).
3. Cork MJ, Danby SG, Vasilopoulos Y, et al. Epidermal Barrier Dysfunction in Atopic Dermatitis. J Invest Dermatol 2009; Epub ahead of print.
4. Faught J, Bierl C, Barton B, Kemp A. Stress in mothers of young children with eczema. Arch Dis Child 2007;92:683-6.
5. National Institute for Clinical Excellence (NICE). Atopic eczema in children: management of atopic eczema in children from birth up to the age of 12 years. 2007. Available from: www.nice.org.uk (Accessed July 2009).
6. National Prescribing Centre. Atopic eczema in primary care. MeReC Bulletin 2003;14(1).
7. Clinical Knowledge Summaries. Eczema - atopic 2008. Available from: http://cks.library.nhs.uk/eczema_atopic (Accessed July 2009).
8. Weston WL, Howe W. Treatment of atopic dermatitis (eczema). UpToDate 2009. Available from: www.uptodate.com (Accessed July 2009).
9. Krakowski AC, Eichenfield LF, Dohil MA. Management of atopic dermatitis in the pediatric population. Pediatrics 2008;122:812-24.
10. Anderson PC, Dinulos JG. Atopic dermatitis and alternative management strategies. Curr Opin Pediatr 2009;21:131-8.
11. Australasian Society of Clinical Immunology and Allergy. Atopic dermatitis, 2007. Available from: www.allergy.org.au/content/view/158/300/ (Accessed July 2009).
12. Grimalt R, Menheaud V, Cambazard F. The steroid-sparing effect of an emollient therapy in infants with atopic dermatitis. Dermatology 2007;214:61.
13. Drug and Therapeutics Bulletin. Bath emollients for atopic eczema: why use them? Drug Ther Bull 2007;45(10):73-5.
14. Bath-Hextall F, Williams H. Eczema (atopic). Clin Evid 2006;07:1716.
15. National Prescribing Service. Pimecrolimus cream (Elidel) for facial atopic dermatitis. NPS Radar, 2006. Available from: www.nps.org.au/health_professionals/publications/nps_radar (Accessed July 2009).
16. Brown S, Reynolds NJ. Atopic and non-atopic eczema. BMJ 2006;332:584-8.
17. Huang JT, Abrams M, Tlougan B, et al. Treatment of Staphylococcus aureus Colonization in Atopic Dermatitis Decreases Disease Severity. Pediatrics 2009;123:e808–e814
18. Stewart D. Eczema. Starship Children's Health Clinical Guideline 2005. Available from: www.starship.org.nz/Clinical%20Guideline%20PDFs/Eczema.pdf (Accessed July 2009).
19. Ngan V. Wet wraps. DermNet NZ 2009. Available from: www.dermnetnz.org/procedures/wet-wraps.html (Accessed July 2009).
20. Robinson M. Allergy testing and referral in children. Aust Fam Physician 2008;37(4):210-3.
21. Stanway A. The causes of atopic dermatitis (eczema). DermNet NZ 2004. Available from: www.dermnetnz.org/dermatitis/atopic-causes.html (Accessed July 2009).