

ECZEMA

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Introduction

Eczema (also called atopic dermatitis) is characterised by dry itchy skin with areas of poorly demarcated erythema and scale. In the acute phase eczema may be vesicular and oozing, in the chronic phase it may become hyperpigmented and lichenified (thickened). Excoriations (scratch marks) are frequently seen.

Onset is usually after 3 months of age. In infancy, there is involvement of the face, scalp and extensor surfaces. In childhood, the flexures of the knees and elbows, and extensor surfaces of wrists and ankles are often involved.

Flares of eczema can be either localised (with intensely inflamed, weeping and infected skin), or generalised (called erythroderma when >90% of body surface is involved). Flares are almost always associated with infection, especially by *Staphylococcus aureus*.

Differential diagnoses

The following conditions should be considered:

- Seborrhoeic dermatitis – onset <3 months, not itchy, greasy scale on scalp, flexures and nappy area
- Contact dermatitis – to products such as sticking plasters, nickel, fragrances, hair dye
- Irritant dermatitis – especially with frequent handwashing
- Plant contact dermatitis – acute indurated vesicular weeping dermatitis in areas of contact with the specific plant e.g. Rhus tree
- Impetigo – Staphylococcal (or Streptococcal) skin infection. Highly contagious.
- Tinea capitis and corporis – fungal infection (tinea capitis) should be considered in scalp inflammation, particularly between 3 and 10 years of age. Tinea corporis typically causes annular plaques, but the appearance can be modified if corticosteroids have been applied. Diagnosis requires skin scrapings +/- hair to be taken for microscopy and culture. Topical corticosteroids should not be used.

Eczema-like eruptions in the newborn period can be the presenting feature of a number of rare and severe conditions (e.g. immunodeficiency, ichthyosis, Langerhans cell histiocytosis) and referral to a dermatologist should be considered.

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Indications for Admission to Hospital

The usual indications for admission to hospital include

- Control of infection
- Intensification of topical therapy
- Controlling the itch/scratch cycle

Usually all three are involved.

Treatment in hospital

Treatment of infection

Antibiotics

All children with flares of eczema requiring admission should be treated with antibiotics. It is preferable to give these orally unless there is severe infection or systemic illness. Treatment should be for 7-14days

Antibiotic choices include:

- Flucloxacillin IV 100mg/kg/day in 4 doses (max 1000mg/dose)
- PO 100mg/kg/day in 4 doses (max 500mg/dose)
- Cephalexin PO 50-75mg/kg/day in 3 doses if flucloxacillin not tolerated
- Erythromycin PO 40mg/kg/day in 4 doses (max 500mg/dose) if flucloxacillin not tolerated or penicillin-allergic
- Co-trimoxazole PO if flucloxacillin not tolerated

Skin swabs should be taken at admission.

Antivirals

Eczema herpeticum is caused by the herpes simplex virus. It causes multiple vesicles or punched-out erosions which may become confluent.

- Aciclovir IV 250mg/square metre/dose 8 hourly (max 500mg/dose) for 5 days.
For infants <3/12 discuss with Infectious Disease service.

Ophthalmology referral should be made for all lesions near the eye.

Viral swabs should be taken before commencing treatment.

Treatment with topical steroid is contraindicated in the region of herpes infection.

Wet wraps are contraindicated in eczema herpeticum.

If there is significant infection and crusting it may be necessary to delay wet wraps for the first 24 hours while the infection is brought under control using antibiotics and potassium permanganate baths.

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Baths

Baths serve the purpose of removing dead skin, crusts and old creams, and prepare the skin for application of new treatments.

- Potassium permanganate – astringent (drying) and antiseptic. Very useful for weeping, crusted and infected skin. Dissolved potassium permanganate crystals/tablets/solution should be added to the bath water so that the water becomes a rose-pink colour. It will stain finger and toe nails and the bath brown.
- Oily baths – moisturise the skin. These can be introduced once the weeping has settled (usually after 2 - 3 days). Examples Alpha Keri bath oil, Dermaveen bath solution, QV, Oilatum. Do not use fragranced products.

Aqueous cream or emulsifying ointment may be used as soap substitutes.

Wet wraps

These are useful for inpatient management of widespread eczema. Maximum benefit is achieved during the first week of treatment, and ongoing use more than 2 weeks has not been shown to provide benefit over creams alone. Limited trial data does not show benefit in outpatient settings compared with correct use of creams alone.

Wet wraps work by:

- keeping the skin hydrated
- promoting absorption of creams by occlusion
- cooling the skin by evaporation
- acting as a barrier to reduce damage from scratching

Advantages of wet wraps include rapid response to therapy, reduction in itch and sleep disturbance, and potential for reduction in usage of topical corticosteroids.

Disadvantages include high cost for families of outpatient use, the necessity for special training in usage, potential for increased corticosteroid absorption, increased cutaneous infections and folliculitis, and poor tolerance by some children.

Wet wraps with corticosteroids will result in systemic absorption. It is recommended that in children mild corticosteroids or dilute preparations of more potent corticosteroids are used for short periods only. Outpatient use requires close supervision.

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Wet wraps with tubular bandages or garments

These are usually applied and left on for 12 hours. For inpatients they should be applied twice a day.

Application Method:

- Prepare lengths of Tubigrip tubular bandages, two lengths for each arm and leg and two lengths for the vest
- One length of each is soaked in warm water
- Bath and wash child as above
- Apply the prescribed moisturiser/steroid to front and back of body liberally
 - Infants <1 year use 1% hydrocortisone (use at least 15-20g per total body application with generous emollient on top)
 - Children >1 year use 10% beta in cetomacrogol (use approx 200g per application, this contains emollient already). This needs to be ordered and mixed by the hospital pharmacy.
 - The creams must be applied generously so that the child is covered with a thick layer before the wrap is applied
- Put on the moist vest first and then the dry one on top
- Do the same for the arms and legs
- Secure lengths of Tubifast on arms and legs to the vest, by using a small piece as a tie
- If the under layer dries out the cooling evaporative effect is lost and the child will become uncomfortable. If this occurs, the top layer of bandaging should be taken down and the under layer made wet again using a wet flannel or a water spray.

With properly applied twice daily wet wraps most children will become clear of eczema in less than 5 days. Ideally the child should be nearly clear of eczema and have 24hours of treatment without wraps on their discharge regimen before they go home

30 minute wraps – for older children / adolescents

These are often better tolerated than wet wraps in older age groups.

You can wrap the entire body, or just troublesome areas e.g. the lower legs.

Equipment:

A bath (shower only if a bath is not available)

Bath oil or potassium permanganate

Clean old towels or "cuddly"

Hot water

Large waterproof sheet (e.g. rubber or plastic sheeting, mattress protector, plastic table cloth)

Beta cream

Moisturiser

Instructions:

1. Place the waterproof sheet down on the bed.
2. Bath with potassium permanganate or bath oil for about 15 minutes.
3. Get out of the bath, pat dry and apply beta cream generously to all the areas affected by eczema. Don't be sparing, expect to use 50g (10y) to 100g (adult size) per total body application. If there are large areas without eczema just apply moisturiser to these.
4. Wet the towels with hot water in a bucket or sink.

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5. Wring the towels out so they are damp. When the towels are cool enough to apply to the skin (but still hot) place the damp towels down on the waterproof sheet and lie on top of them. Wrap the towels around the body. Legs can be held together with one towel around them both, or wrapped separately. Arms can be held against the body, or wrapped separately.
6. Then wrap the waterproof sheet around the towels. Initially this will make it quite hot and steamy in the wrap. Place a blanket over the top.
7. Leave the wrap in place until the towels have cooled down (usually 15-20 minutes).
8. Remove the wrap and apply generous moisturiser to the entire body.

This should be repeated twice daily until eczema has cleared (usually 3-5days).

After inpatient treatment with wet wraps, parents should be encouraged to be proactive with use of topical corticosteroids to try to maintain the skin free from eczema and prevent rebound. Follow up should be arranged in the next few weeks to review topical management.

Facial eczema

Use compresses of potassium permanganate to reduce weeping.
1% hydrocortisone twice daily is standard treatment for most children. In severe cases eumovate may be used, but not on eyelids and for a maximum of 10 days.

Emollients

These may be applied to any exposed areas of skin as often as possible during the day. For inpatients use a greasy preparation such as duoleum (50:50 liquid:white soft paraffin), emulsifying ointment, fatty cream, or the patients preferred emollient as long as this is fragrance-free.

Antihistamines

Antihistamines may be helpful in reducing itch and aiding sleep. Usually requires a sedative dose.

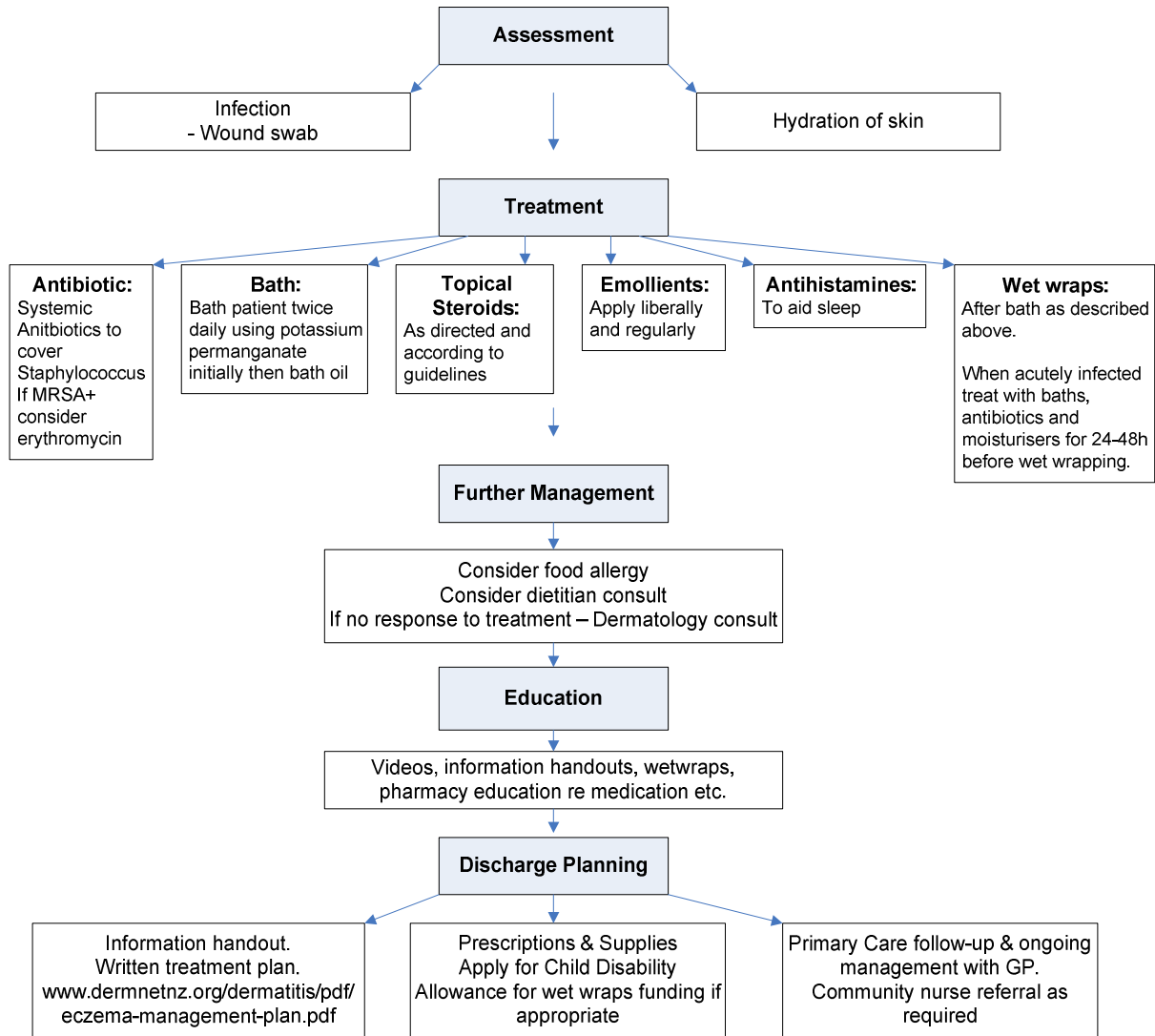
- Promethazine 0.5mg/kg/dose at night (max 50mg) and 0.25mg/kg/dose mane
- Vallergran forte 1 – 2 mg/kg at night

Paediatric Dermatology Referral

This should be considered for cases refractory to standard treatment, requiring repeated hospital admission, with significant psychosocial impact (e.g. missing school, bullying) or where systemic treatments need to be considered.

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Inpatient Management Flow Chart



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Outpatient management of eczema

Baths

When eczema is active, children should ideally be given a bath containing bath oil twice daily. The frequency of baths can be reduced as eczema improves.

Soap should be avoided. Aqueous cream or emulsifying ointment or other non-subsidised soap-free washes (e.g. Cetaphil, Dermsoft, QV wash) can be used as a soap substitute. Bathing should last no more than 20 minutes to ensure adequate skin hydration but not long enough to cause wrinkling. The skin should be pat dried.

Corticosteroids (if needed) should be applied immediately after the bath to maximise absorption and emollients afterward (ideally at least half an hour later if this is practical).

Infection

If the eczema becomes weepy with pus, it is probably infected with *Staphylococcus aureus* and systemic antibiotics should be used (as described in Inpatient section above).

Antiseptic baths two to three times per week to reduce staphylococcal skin colonisation can aid with overall eczema control and reduce infective flares.

- Add bleach (Janola) to the bath water at a concentration of 1/1000 (half a cup of 3-5% bleach to 15cm deep full-sized bath)
- Alternatively use antiseptic bath oils Oilatum Plus or QV flare up (these are not subsidised)

Varicella vaccination should be considered.

Emollients

Emollients are essential and frequently underused. They should be applied liberally and as often as is required to keep the skin well-hydrated to help maintain its barrier function, even when the eczema is well-controlled.

- Ointments (e.g. emulsifying ointment, duoleum) are greasier and more effective.
- Creams (e.g. aqueous and cetomacrogol) are less greasy but may be cosmetically more acceptable.
- Oily creams (e.g. healthE fatty cream, lipobase) are midway between creams and ointments in effectiveness and are usually cosmetically acceptable.
- Lotions are lighter still and generally not effective in eczema.

Ensure adequate quantities are prescribed (at least 500g per fortnight).

Topical steroids

In general:

- Lowest strength required to clear eczema should be used
- Steroids should be used to affected areas in adequate amounts (*not* sparingly)
- Steroids should be applied no more than twice a day
- Steroids should not be used continuously for weeks/months without adequate supervision
- If applied under occlusion steroids have significantly increased absorption

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The potency of steroids:

	RELATIVE POTENCY	
• 1% Hydrocortisone	1	Mild
• Eumovate	25	Moderate
• Advantan	100	Potent
•		
• Locoid® (Hydrocortisone butyrate 0.1%)	100	Potent
• Beta® (Betamethasone valerate 0.1%)	100	Potent
• Elocon® (Mometasone furoate 0.1%)	175	Potent
• Dermal® (Clobetasol proprionate 0.05%)	600	Very Potent

Always check whether the cream or ointment you are prescribing is fully funded by Pharmac (can be checked via the Pharmac website). <http://www.pharmac.govt.nz/Schedule>

In general 1% hydrocortisone is sufficient for facial eczema and for eczema on infants under 1 year.

For school age children, eczema on the body (excluding face, neck, groin) *usually* requires a potent steroid.

Dermal is rarely needed for childhood eczema and should only be used with caution.

Steroid side effects on the skin are rarely seen in children. They are more likely to be seen with use of very potent preparations, use under occlusion (including in the flexures) or with continuous use for months at a time (even of mild preparations).

Use of a stronger preparation for short bursts is generally preferable to ongoing use of a milder preparation.

Ensure that sufficient quantities of steroid cream are prescribed. For example:

Weight of cream required for twice daily application of steroid cream to the entire body:

Requirement for topical steroids	6 months old	12 months old	5 years old	12 years old
Daily (g)	9.5g	12g	20g	36.5g
Weekly (g)	67g	84g	140g	255g

A practical guide to topical therapy in children. Long et al. Br J of Dermatol 1998;138:293-296

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Avoidance of irritants/allergens

This includes soap or bubbles in the bath, perfumes or grass. Nails should be cut short and cotton clothes should be worn. Reduction of house dust mite exposure can be achieved by encasing mattress, base and pillows in special covers and by hot water (>55°C) washing of top bedding each fortnight.

Diet

Food *may* be one of many triggers for eczema in children. Food allergy being a factor is more likely in young infants with severe generalised eczema. Evaluation of food allergy in children with eczema is fraught as these children are usually atopic, and allergy tests can reflect sensitisation rather than clinically relevant allergy. RAST testing will give many false positive results – consider immunology referral to assist with management.

Investigation of possible food allergy is recommended:

- If there is a history of an immediate food allergic reaction (this can occur via maternal ingestion in a breast fed baby)
- In young children with severe problematic eczema not responsive to adequate topical treatment

Food exclusion diets for eczema have the risk of loss of tolerance (i.e. developing anaphylactic reaction on future exposure) and failure to thrive, as well as being expensive and complicated for families. They should be initiated as a trial and continued only when of clear benefit. If more than two major food groups are excluded dietitian involvement is advised.

Other Treatments

- Oral Steroids are associated with rebound and although they can be useful in some circumstances, should be used with caution. If oral corticosteroids are used, they need to be replaced with another systemic agent or weaned slowly, usually over months.
- UV therapy, cyclosporine, methotrexate and azathioprine require referral to a dermatologist
- Pimecrolimus - Not funded in NZ but is effective in mild to moderate facial eczema and is available as Elidel. Need to discuss side effects and contraindications.
- Long term antibiotics may be helpful in some cases with recurrent infection, but have the risk of inducing bacterial resistance.

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