




# Childhood eczema: improving adherence to treatment basics

Emollients form the basis of treatment for all patients with eczema. Emollients and topical corticosteroids are effective at preventing and treating flares of eczema and can reduce *Staphylococcus aureus* colonisation. Poor adherence, however, often reduces their effectiveness.

## KEY PRACTICE POINTS

- Regular use of emollients is likely to reduce the risk of eczema flares and the need for topical corticosteroids. Treatment adherence can be improved by prescribing simple regimens and ensuring patients and caregivers know how to follow them.
- For children with widespread eczema, prescribe at least 250 g of their preferred emollient per week for use as a leave-on product. Older children, e.g. those aged over ten years, with widespread eczema may need up to 500 g of emollient per week.
- The funded formulations of aqueous cream and emulsifying ointment do not contain sodium lauryl sulphate (SLS – a known skin irritant) and can be used as a leave-on emollient as well as a soap substitute
- Advise patients to keep fingernails trimmed, avoid irritants, e.g. soaps, and to wear cotton rather than woollen clothing next to their skin
- Use the lowest potency topical corticosteroid needed to control the patients symptoms; avoid the term “use sparingly” and encourage appropriate use
- For children with frequent flares, e.g. two flares per month, “weekend treatment” with topical corticosteroids may reduce the frequency of flares and overall corticosteroid use

 For information on the use of topical corticosteroids in childhood eczema, see the companion article: **“Topical corticosteroids for childhood eczema: clearing up the confusion”**.

This is a revision of a previously published article.  
What's new for this update:

- Content updates in line with the Eczema – primary care management guidelines (2019), Starship Child Health:
  - Following a skin infection, discard the current tub of emollient and replace with a new tub
  - The optimal frequency of bathing in children with eczema has been previously debated; the Starship guideline recommends that children bathe once or twice daily, with warm water for no more than 10 – 15 minutes
  - If antibiotic treatment is required, antibiotic choice should be guided by local antibiotic resistance patterns where available
  - Updated criteria on when to refer a child with eczema to secondary care services
- The funded brand of emulsifying ointment is now SLS-free which means it can be used as a leave-on emollient as well as a soap substitute
- Changes to calcineurin inhibitor funding status:
  - Topical pimecrolimus is now funded with Special Authority approval for treatment of eczema affecting the eyelid if topical corticosteroids cannot be used
  - Tacrolimus ointment is now an approved medicine in New Zealand for people aged ≥ 16 years and will be funded with Special Authority approval from October, 2021, for eczema affecting the face if topical corticosteroids cannot be used

## Childhood eczema is common and disproportionately affects Māori and Pacific children

Eczema is characterised by dry skin (xerosis), reduced skin barrier function, cutaneous inflammation with increased susceptibility to irritants, and higher rates of *Staphylococcus aureus* colonisation and skin and soft tissue infection.<sup>1, 2</sup> Recurrent flares of eczema can adversely affect a child's sleep, focus at school and social interactions.

Eczema affects approximately 15 – 20% of all children, but the prevalence and severity is generally worse among Māori and Pacific children.<sup>2-4</sup> Eczema typically improves as children move into their teens, although the prevalence in people aged up to 26 years is still between 5 – 15%.<sup>2</sup>

Emollients and topical corticosteroids are effective at preventing and treating flares of eczema and can reduce *S. aureus* skin colonisation. Poor adherence, however, often reduces their effectiveness.<sup>1, 5, 6</sup>

## Emollients are the cornerstone of treatment for all patients with eczema

Emollients (moisturisers) are topical formulations that reduce transepithelial water loss and hydrate the skin to improve barrier function.<sup>1</sup> These form the basis of treatment for patients with all degrees of eczema severity.<sup>5</sup> They are also used alongside topical corticosteroids to treat active inflammation.<sup>6</sup>

Appropriate use of emollients:<sup>5, 7</sup>

- Reduces the amount of topical corticosteroids required
- Improves symptoms
- Reduces flares or relapses
- Improves sleep and quality of life

## Types of emollient

A range of funded emollients are available (Table 1).

**Lotions** have a higher water content than creams or ointment and can evaporate quicker requiring more frequent application.<sup>8</sup> They are not generally recommended for use in children with eczema.<sup>6</sup>













**Creams** are more effective than lotions and are usually more cosmetically acceptable than ointments as they are absorbed faster into the skin.<sup>6</sup> Additives such as glycerol and urea attract and hold water. Creams are preferred to ointment if skin is weeping or oozing (see below).<sup>9</sup>

**Ointments** form an occlusive layer that prevents evaporation of water from the outer layers of the skin. Ointments are greasier and thicker and may be less cosmetically acceptable, but are more effective at preventing evaporation.<sup>6</sup> They are more difficult to wash off, with the exception of emulsifying ointment which can be used as a soap substitute. Ointments may be more suitable than creams for patients with more severe symptoms, e.g. dry, scaly areas of skin, but may cause a build-up of exudate if used on skin that is weeping or oozing.

Emollients or soap substitutes that contain fragrances can cause irritant dermatitis. In addition, care should be taken when using topical applications that contain sodium lauryl sulphate (SLS) as this is a skin irritant and can worsen eczema symptoms.<sup>8</sup> Products containing SLS should not be used as leave-on emollients but can be used as soap substitutes.<sup>6</sup> The currently funded brands of aqueous cream and emulsifying ointment are SLS-free and can therefore be used as leave-on emollients. Some unfunded brands of aqueous cream and over-the-counter emollients contain SLS and should not be used as leave-on emollients for children with eczema.

**Table 1.** Fully funded emollients suitable for children with eczema as of July, 2021.<sup>10, 11</sup>

**N.B.** Some products have multiple brands currently listed due to supply issues and some of these brands will subsequently be delisted. Check the **PHARMAC medicines notices**, **Pharmaceutical schedule** or **the NZF** for up to date information on supply issues and funded brands of medicines. Lotions are not included in this table as they are not generally effective for children with eczema.<sup>5</sup>

	Product/ingredients	Funded product sizes	Funded brands
<b>Creams</b>	Aqueous cream (SLS free)	 500 g tub	<ul style="list-style-type: none"> <li>■ Boucher (to be delisted 1 April, 2022)</li> <li>■ Basic AquaCream (to be delisted 1 April, 2022)</li> <li>■ Medco (to be delisted 1 April, 2022)</li> <li>■ Topiderm (to be delisted 1 September, 2021)</li> <li>■ GEM* (to be listed 1 November, 2021)</li> </ul>
	Cetomacrogol aqueous cream + glycerol	 500 g tub	■ Boucher
		 500 mL bottle	■ ADE
		 500 mL pump bottle	<ul style="list-style-type: none"> <li>■ Kenkay</li> <li>■ Pharmacy Health</li> </ul>
		 1000 g tub	■ Boucher
		 1000 mL bottle	■ ADE
	Cetomacrogol	 500 g tub	<ul style="list-style-type: none"> <li>■ healthE (to be delisted 1 May, 2022)</li> <li>■ AFT* (to be listed 1 December, 2021)</li> </ul>
	Cetomacrogol wax-emulsifying + paraffin liquid + paraffin soft white + water purified <sup>†</sup>	 500 g tub	■ healthE
	Cetostearyl alcohol + paraffin liquid + paraffin soft white <sup>†</sup>	 500 g tub	■ Boucher & Muir
	Paraffin liquid + paraffin soft white <sup>†</sup>	 500 g tub	■ healthE
Urea cream 10%	 100 g tube	■ healthE	
<b>Ointments</b>	Emulsifying ointment (SLS-free) – paraffin liquid + paraffin soft white + wax-emulsifying	 500 g tub	■ ADE


\* Brand currently has Principal Supply Status or will have Principal Supply Status following the delisting of the other brands


† Paraffin-based emollients can represent a fire hazard, especially when used in large quantities.<sup>10</sup> See NZFC for further information: [www.nzfchildren.org.nz/nzf\\_6237](http://www.nzfchildren.org.nz/nzf_6237)

## A patient-centred approach should be taken when prescribing emollients

Large quantities of emollients are required to manage eczema effectively and therefore fully funded products are likely to be preferred by many families. There is no clear evidence as to which emollient is most effective, so patients should be prescribed their preferred option to improve treatment adherence.<sup>7</sup> Patients or caregivers may need to trial different products to find an emollient that is tolerated and effective. A different emollient may be required for specific body areas or during times of an acute flare.<sup>10</sup> For example, creams can assist with inflammation, as the evaporation of water cools the skin, whereas greasy ointments are more suitable for dry skin.<sup>9</sup>

To reduce wastage, a prescription for a limited period, e.g. one week can be given while trialling different products.

 For further information on how to write trial prescriptions, see: [www.bpac.org.nz/BPJ/2015/August/pills.aspx](http://www.bpac.org.nz/BPJ/2015/August/pills.aspx)

 Talk to your local pharmacist about having a selection of emollients available in the practice to demonstrate their consistency and application to patients.

**Plant oils as emollients:** There are few studies evaluating whether plant oils are beneficial for people with eczema; although further investigation is required, some positive results have been reported for coconut oil and sunflower seed oil.<sup>12</sup> In contrast, there is evidence that olive oil may worsen eczema symptoms.<sup>12</sup>

### Most patients do not use enough emollients

Although the required amount of emollient varies according to the patient's body size, patients or caregivers generally apply too little emollient.<sup>13</sup> Starship guidelines recommend that:<sup>5,6</sup>


- Emollients should be used liberally and regularly; apply them several times per day to the entire body and continue even when the eczema has cleared, i.e. during both symptomatic and asymptomatic periods
- For widespread eczema prescribe at least 250 g per week, for application at least two to three times per day. Older children, e.g. those aged over ten years with widespread eczema, may need up to 500 g of emollient per week.
- An additional quantity of emollient should also be prescribed as a soap substitute for use when bathing (see: "Prescribe emollients as a soap substitute")

**Other factors to consider when handling and applying emollients.** Emollients ideally should be removed from tubs with a clean spoon or spatula to minimise the risk of bacterial contamination; following a skin infection, discard tub being used and replace with a new tub.<sup>5</sup> Pump bottle dispensing of

emollients also reduces risk.<sup>5</sup> Advise caregivers to check the expiry date, as contamination risk is increased when products are used beyond this date. When applying emollients, they should be smoothed (not rubbed) in the direction of hair growth and can be allowed to soak in.<sup>5</sup>

### Prescribe emollients as a soap substitute


Patients with eczema should avoid soaps and use emollients such as emulsifying ointment and aqueous cream as soap substitutes when bathing.<sup>5</sup> For a simple regimen, the same emollient can be prescribed as a soap substitute and leave on moisturiser. The use of an emollient bath oil (not funded – search for "bath oil" on NZFC for options) may help to moisturise skin,<sup>5</sup> but there is limited evidence of benefit. Care needs to be taken when bathing with soap substitutes and oils as these can make surfaces slippery.<sup>5</sup>

 **Best Practice Tip:** Emulsifying ointment can be made into a creamy soap consistency by mixing three to four large spoonfuls with a small amount of very hot water and allowing to cool before use. Instructions can be included on the prescription label.

### Recommend daily bathing

Starship guidelines recommend that children with eczema have a warm bath or shower once or twice daily for no more than 10 – 15 minutes.<sup>5,6</sup> It has been previously thought that bathing should be limited to a few times per week as it could worsen eczema, but this is now not considered to be the case as soaking in warm water followed by application of an emollient is the best way to replace moisture in the skin. When drying the skin after bathing, it should be patted rather than rubbed.<sup>5,6</sup>


Starship guidelines also recommend that adding dilute sodium hypochlorite (bleach) or triclosan bath oil (not funded) to the bath twice weekly may reduce Staphylococcal carriage and improve the control of eczema.<sup>5,6</sup> N.B. Do not use fragranced bleach. Although there is inconsistent evidence of benefit of this practice, many guidelines still recommend bleach baths in children with active flares of eczema as they are generally well tolerated; clinician discretion is advised.

 Information for caregivers on how to prepare a bleach bath is available from: <https://media.starship.org.nz/bleach-baths-2019/bleach-baths-2019.pdf>

### Escalate treatment during flares


**Topical corticosteroids** should be applied on all areas of active eczema, no matter how severely inflamed, and stopped once the eczema has cleared (unless following "weekend treatment", see below).<sup>5</sup> Once daily application may be

sufficient, especially if treatment is initiated when symptoms first develop.<sup>6</sup> The potency of the topical corticosteroid should be appropriate for the area of the body being treated, the age of the patient and their symptom severity, e.g. mildly inflamed eczema in infants aged less than 12 months or patients with eczema on the face and neck will typically require only a mild potency steroid.<sup>5</sup> Encourage caregivers to continue emollient use during flares; topical corticosteroids can be applied before or after emollients.<sup>5</sup>

 For further information on topical corticosteroids, see: <https://bpac.org.nz/2021/topical-corticosteroids.aspx>

**Topical pimecrolimus** (a calcineurin inhibitor) is a second-line treatment option for patients with eczema if the use of topical corticosteroids is contraindicated, e.g. periorificial dermatitis or a documented allergy to topical corticosteroids, or inappropriate, e.g. for long-term use on body areas such as the face, neck and groin.<sup>5</sup> Pimecrolimus is funded with Special Authority approval for treatment of eczema on the eyelids if a corticosteroid cannot be used; patients may choose to self-fund treatment for other indications. Pimecrolimus may be as effective as mild to moderate potency topical corticosteroids for the treatment of eczema, but is more likely to cause a burning sensation and pruritus.<sup>10, 14</sup> A possible association between topical calcineurin inhibitor use and increased risk of lymphoma has been examined in a recent systematic review and meta-analysis.<sup>15</sup> Analyses did find an association, however, the overall risk is very small.<sup>15</sup>


N.B. Tacrolimus ointment 0.1%, also a calcineurin inhibitor, is now approved in New Zealand for use in people aged 16 years and over, and will be funded (Special Authority criteria apply) from 1 October, 2021, for the treatment of facial eczema in people unable to use topical corticosteroids.<sup>16</sup>

 For further information on assessing the severity of eczema symptoms, see: [www.bpac.org.nz/BPJ/2015/April/eczema.aspx](http://www.bpac.org.nz/BPJ/2015/April/eczema.aspx)

## Maintenance treatment with topical corticosteroids can reduce the frequency of flares

Eczema is traditionally managed reactively, where topical corticosteroids are initiated during a flare and stopped when symptoms resolve.<sup>5</sup> This approach is still appropriate for many patients.

Children with frequent flares, e.g. two per month, may benefit from a proactive approach, where topical corticosteroids are applied twice per week during periods of remission, i.e. between flares.<sup>5</sup> This is often referred to as “weekend treatment”, however, treatment can occur on any two consecutive days in the week.<sup>5</sup>

 For further information on weekend treatment, see: **“Topical corticosteroids for childhood eczema: clearing up the confusion”**.

## Use oral rather than topical antibiotics for infected eczema


Antibiotic treatment of infected eczema is not always necessary. If antibiotic treatment is needed, oral antibiotics are preferred over topical antibiotics due to increasing rates of fusidic acid resistance in New Zealand.

A watch and wait approach may be appropriate for patients with mild to moderately infected eczema; oral antibiotics can be reserved for patients with worsening or severe infection.<sup>6</sup> A double-blind randomised controlled trial in primary care in the United Kingdom found that for children with mild to moderately infected eczema, the use of topical or oral antibiotics had no effect on symptom severity or made eczema symptoms worse.<sup>17</sup> Children with severe infection were excluded from this study.

If antibiotic treatment is required, the antibiotic choice should be guided by local antibiotic resistance patterns if available, and ideally be active against *S. aureus* and *Streptococcus* bacteria.<sup>5</sup> In general, a suitable first-line oral regimen for a child is:<sup>6</sup>

- Flucloxacillin 12.5 mg/kg/dose, four times daily, for five to seven days (maximum 500 mg/dose)

Flucloxacillin capsules can be prescribed for older children who are able to swallow them. Alternative oral antibiotic choices include erythromycin, trimethoprim + sulfamethoxazole or cefalexin depending on local antibiotic resistance patterns where available.

 Dosing regimens are available from: [https://www.nzfchildren.org.nz/nzfc\\_2893](https://www.nzfchildren.org.nz/nzfc_2893)

For patients with recurrent infected eczema, the focus should be on managing the eczema effectively. Appropriate use of topical corticosteroids and emollients can improve the skin microbiota of people with eczema and reduce *S. aureus* skin colonisation.<sup>6</sup>


There is little evidence to suggest topical corticosteroids worsen the course of bacterial or viral skin infection, and they may improve skin barrier function.<sup>18</sup> Topical corticosteroids can continue to be used on excoriated skin and eczema with bacterial or viral infection. However, topical corticosteroids should be stopped in patients with fungal infections as they may exacerbate the infection.<sup>6, 18</sup>



## Antihistamines may benefit children with severe symptoms

Although not routinely recommended, a sedating antihistamine may be trialled to aid sleep during an acute eczema flare in children aged over six months if other sleep optimisation methods have not been successful.<sup>6</sup>


N.B. Use of sedating antihistamines in children aged under two years is unapproved and Medsafe has issued a recommendation against the use of oral sedating antihistamines for sedation of children.<sup>19</sup>

 For choices and dosing recommendations, see: [www.nzfchildren.org.nz/nzf\\_1826](http://www.nzfchildren.org.nz/nzf_1826)

## When to refer

Children should be discussed with or referred to a paediatric dermatologist or other relevant specialist if they:<sup>5</sup>

- Have ongoing symptoms despite optimal topical corticosteroid use
- Have infected eczema which does not resolve with antibiotic treatment
- Have recurrent skin infections and/or require repeated hospital admissions
- Show symptoms and signs of eczema herpeticum, e.g. fever and small, grouped, circular blisters with a central depression which become crusted and eroded
- Have significant psychosocial issues, e.g. missing school, bullying

 For further information on when to refer, see: <https://www.starship.org.nz/guidelines/outpatient-primary-care-management-of-childhood-eczema/>


## Reduce barriers to adherence

Reducing obstacles to treatment adherence is a priority in eczema management. Caring for a child with eczema can be challenging for parents and caregivers as it requires daily attention to manage effectively.

Strategies to support whānau/families caring for a child with eczema include:<sup>20</sup>

### Simple treatment regimens

Prescribe the simplest effective treatment regimen.<sup>20</sup> Provide caregivers and older children with written instructions, so they know what treatments to use when, on which parts of the body and in what quantities.

 For an example of an eczema care plan, see: [media.starship.org.nz/eczema-pictorial-care-plan/Eczema\\_Action\\_Plan\\_March\\_2020.pdf](http://media.starship.org.nz/eczema-pictorial-care-plan/Eczema_Action_Plan_March_2020.pdf)

## Improving understanding about the causes of eczema and treatment options


- Re-enforce the need for proactive management.

Many families want to find a cause of the child's eczema, e.g. a food intolerance, with the expectation that once identified, the condition could be cured. This belief can lead families to focus on exclusion of potential triggers at the expense of controlling symptoms through frequent emollient and appropriate topical corticosteroid use.<sup>13</sup> To reduce the risk of flares, patients with eczema require ongoing maintenance treatment even during asymptomatic phases; while avoiding triggers can help, proactive management with frequent emollient use is key.
- Consider an education session for parents and caregivers. Education sessions delivered by a general practitioner, nurse or pharmacist that cover the causes of eczema, application of emollients, and the appropriate use of topical corticosteroids can improve parents' or caregiver's knowledge and confidence about treating their child's eczema.<sup>5</sup> Some DHBs have dedicated eczema nurses who can offer educational support; improved adherence and treatment efficacy has been shown following education from an eczema nurse.<sup>5</sup>
- Discuss that dietary modifications are typically unnecessary.

Allergy is not recognised as a major cause of childhood eczema and there is no evidence to support widespread use of dietary modifications or food exclusions.<sup>21</sup> However, children with eczema are at higher risk of developing immediate hypersensitivity reactions to foods; if a child has suspected immediate food hypersensitivity, refer to a paediatrician.<sup>6</sup> The possibility of food allergy should be considered where young children have immediate reactions to a food, particularly if accompanied by urticaria, angioedema, colic or vomiting. The exclusion of foods is often complicated, does not result in significant symptom improvements and can lead to a loss of tolerance which could exacerbate eczema when re-introduced.<sup>6, 8</sup> Discussions about the role of food allergy can also be used as a prompt to reinforce healthy eating messages.

Further education and information for patients and caregivers:

- Instructional videos on the use of moisturisers, bathing and topical corticosteroids: [www.kidshealth.org.nz/eczema-children](http://www.kidshealth.org.nz/eczema-children)
- Printable information sheets: [www.starship.org.nz/health-professionals/child-and-youth-eczema-clinical-network/](http://www.starship.org.nz/health-professionals/child-and-youth-eczema-clinical-network/)
- Information on introducing solids for children with eczema: [www.kidshealth.org.nz/eczema-food-allergy-fast-facts](http://www.kidshealth.org.nz/eczema-food-allergy-fast-facts)

 To read the full guideline, see: [www.starship.org.nz/guidelines/outpatient-primary-care-management-of-childhood-eczema](http://www.starship.org.nz/guidelines/outpatient-primary-care-management-of-childhood-eczema)

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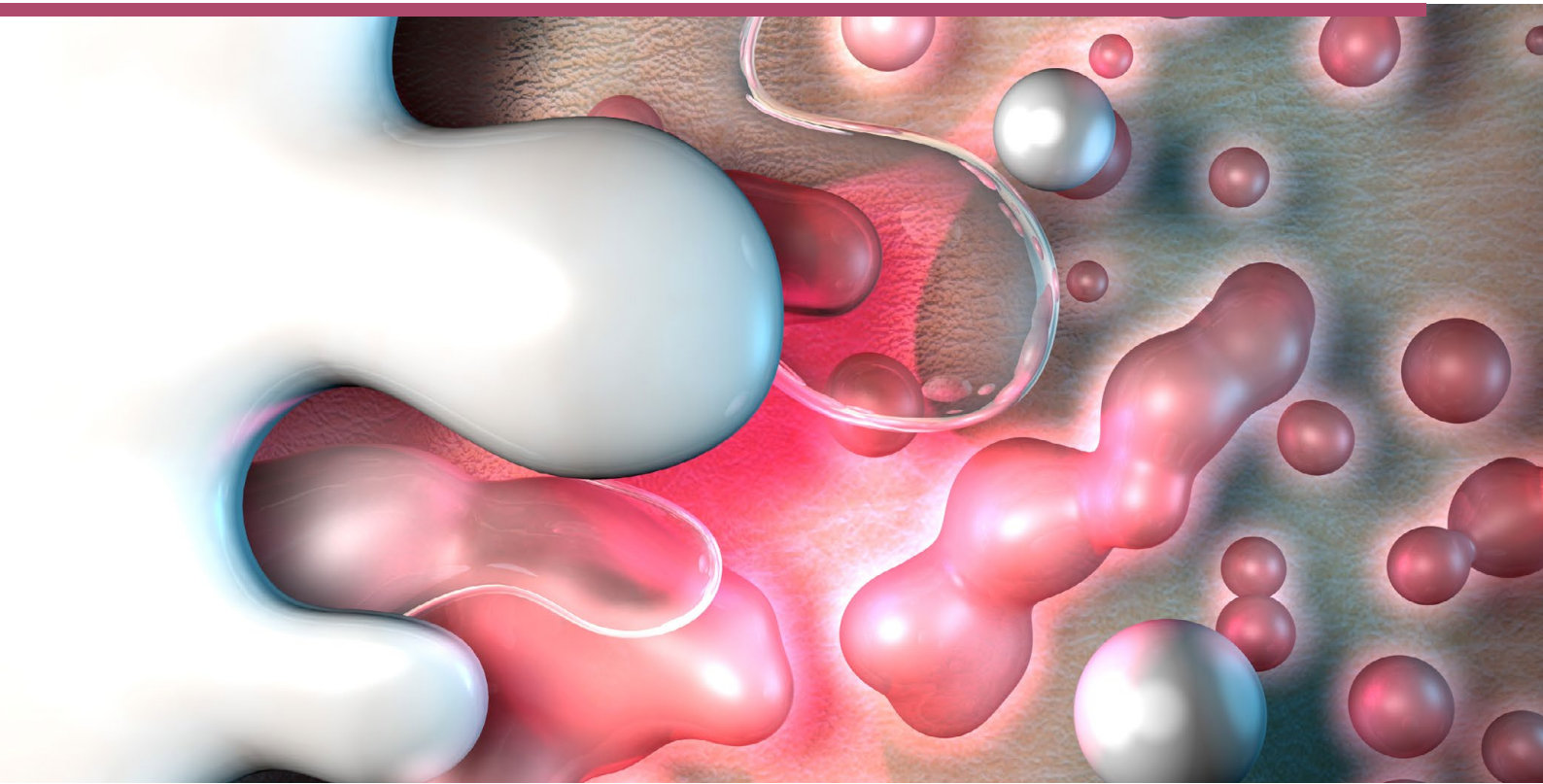
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This article is available online at:  
[www.bpac.org.nz/2021/childhood-eczema.aspx](http://www.bpac.org.nz/2021/childhood-eczema.aspx)






# Topical corticosteroids for childhood eczema: clearing up the confusion

Topical corticosteroids are one of the key medicines used in the management of childhood eczema. However, adherence is typically poor, often due to “corticosteroid phobia”.

## KEY PRACTICE POINTS

- Use the lowest potency topical corticosteroid needed to control the patient’s symptoms
- Be clear when prescribing where each product should, and should not, be used; avoid the term “use sparingly”
- Check that patients and caregivers can identify a flare and are able to respond with appropriate treatment
- For patients with persistent eczema, short treatment “bursts”, e.g. three to five days, with higher potency corticosteroids may be preferable to longer courses of treatment with less potent corticosteroids; topical corticosteroids should be stepped down, e.g. from potent or moderate potency to mild potency, as the patient’s symptoms resolve
- Include descriptions of potency in the prescription so that it is printed on the medicine label to avoid confusion

 For general information on the treatment of childhood eczema, see the companion article: **“Childhood eczema: improving adherence to treatment basics”**

This is a revision of a previously published article. What’s new for this update:

- Changes to topical calcineurin inhibitor funding status:
  - Topical pimecrolimus is now funded with Special Authority approval for treatment of eczema affecting the eyelid if topical corticosteroids cannot be used
  - Tacrolimus ointment is now an approved medicine in New Zealand for people aged  $\geq 16$  years and will be funded with Special Authority approval from October, 2021, for eczema affecting the face if topical corticosteroids cannot be used
- Table of topical corticosteroids has been updated to reflect currently funded brands



## Navigating common questions and concerns

Topical corticosteroids are one of the key medicines used in the management of childhood eczema. However, adherence is typically poor, often due to “corticosteroid phobia”. Common themes contribute to the reluctance of caregivers to use topical corticosteroids (Table 1). Addressing these concerns may improve treatment adherence and patient outcomes.<sup>2</sup>

## Provide clear information when prescribing and dispensing topical corticosteroids

### Avoid “use sparingly”: encourage appropriate use

Advising patients to “use topical corticosteroids sparingly” creates confusion; patients and caregivers are prescribed a medicine but simultaneously warned against using it.<sup>5</sup>

**Table 1:** Caregiver misconceptions and concerns associated with the use of topical corticosteroids for eczema in children and evidence-based responses.<sup>3-6</sup>


Misconception or concern	What does the evidence say?
Topical corticosteroids should only be used for severe symptoms	<p>Topical corticosteroids can and should be used for all severities of eczema, including mild symptoms.</p> <p>Products have a range of potencies to treat patients with differing symptom severity. Treatment should be with the mildest topical corticosteroid which is able to resolve the inflammation within a short period of time so that the patient is able to have days without using topical corticosteroids. Different potencies are required for different parts of the body depending on the thickness of the stratum corneum.</p>
Regular use of topical corticosteroids causes adverse effects such as skin thinning	<p>Topical corticosteroids are unlikely to cause skin thinning or other long-term harm to children if used appropriately.</p> <p>Skin thinning is one of the most frequently cited concerns reported by patients and caregivers, however, is very unlikely to occur if patients and caregivers use topical corticosteroids appropriately.<sup>2,7,8</sup> This consensus is based on research and clinical experience from Australia and New Zealand, including evaluations of children treated with potent corticosteroids.<sup>7</sup> Skin thinning is more likely to occur in adults, or in areas with a thinner stratum corneum, such as the face and groin.<sup>2</sup></p>
The percentage of a topical corticosteroid is its strength	<p>The percentage value of different formulations of topical corticosteroids does not indicate their potency, e.g. hydrocortisone 1% is a weaker formulation than hydrocortisone butyrate 0.1%.</p>
Corticosteroids are confused with anabolic steroids	<p>Clarify the meaning of the word “steroid”.</p> <p>Inform patients and caregivers that the label “steroids” is a classification used for a wide group of hormones and medicines with different functions, including corticosteroids and anabolic steroids.</p>
Topical corticosteroids should not be applied to broken skin	<p>The consensus of paediatric dermatologists in Australia and New Zealand is that topical corticosteroids can be applied to areas of eczema with broken skin.<sup>7</sup></p> <p>This recommendation possibly arose as topical corticosteroid absorption will be greater through broken skin. However, this can prevent patients having topical corticosteroids applied to areas of active eczema particularly when severely inflamed or excoriated. All skin with an active eczema flare will have reduced barrier function, and the best way to address this is through appropriate use of topical corticosteroids.<sup>9</sup></p>
Topical corticosteroids are not “natural”	<p>Corticosteroids mimic the effects of hormones produced by the adrenal glands, despite being “man-made”.</p>

\* For further information on symptom severity and recommended treatment escalation, see: <https://bpac.org.nz/BPJ/2015/April/eczema.aspx>

This advice may result in corticosteroids only being used when symptoms are severe, leading to inadequate use and poor symptom control. Caregivers should instead be encouraged to “use corticosteroids appropriately”, which will maximise the benefits of use and minimise adverse effects.

Patients/caregivers should know:<sup>9</sup>

1. **Which** corticosteroid to apply, i.e. using the right potency and formulation
2. **Where** on the body to apply it
3. **When** to apply it, i.e. when to start treatment and how long to use it for
4. **How** much to apply

 Arrange to review the patient within two to four weeks of prescribing topical corticosteroids. This gives an opportunity to assess their response to treatment and reinforce education as well as allowing the patient and caregiver to focus on treating the eczema rather than watching for adverse effects.

## Which corticosteroid and formulation to apply

There are a range of fully funded or partly funded topical corticosteroids available to prescribe for children with eczema (Table 2).<sup>10, 11</sup> In addition, some topical corticosteroids are available over-the-counter without a prescription, including:<sup>10</sup>

- Pharmacy only medicine – hydrocortisone 0.5%
- Pharmacist only medicines – hydrocortisone 1% and clobetasone butyrate 0.05%, which are also available fully funded or partly funded on prescription, respectively


**Consider the consistency of the product required:**<sup>1, 12</sup>

- Creams, lotions or gels are useful for large areas of skin
- Lotions, solutions or gels are useful for the scalp or other areas with hair
- Ointments are useful for very dry skin and skin with thick scale

**Key points when selecting the potency of topical corticosteroids include:**<sup>2, 5, 7–9, 13</sup>

- Use the lowest potency corticosteroid needed to control symptoms, e.g. hydrocortisone 1% daily or twice daily for mild eczema. However, be prepared to increase potency, particularly for eczema on the trunk and limbs, if a mild topical corticosteroid is not working.

- For patients with persistent eczema, short “bursts” with higher potency corticosteroids, e.g. betamethasone valerate 0.1% twice daily for three to five days, may be preferable to longer courses of treatment with less potent corticosteroids. Betamethasone valerate 0.1% twice daily for three days is as effective as hydrocortisone 1% twice daily for seven days. Patients can be treated with a higher potency corticosteroid initially to gain control of symptoms and then stepped down to a less potent formulation, e.g. hydrocortisone 1%.
  - This results in quicker resolution of symptoms and shorter treatment duration
  - If patients are switched to higher potency corticosteroids ensure they understand that the treatment period is shorter
- If a lower potency of corticosteroid is needed, prescribe a weaker corticosteroid rather than diluting a more potent formulation
  - Diluting topical corticosteroids with emollients does not result in a less potent medicine. Potency is related to the affinity of the particular corticosteroid molecule to the receptor.
- Include corticosteroid potency on medicine labels
  - Patients and caregivers may believe that the percentage of a topical corticosteroid determines its strength, e.g. that hydrocortisone 1% is stronger than hydrocortisone butyrate 0.1%, without realising that different corticosteroids have differing potencies.<sup>4</sup> Labelling a topical corticosteroid as mild, moderate, potent or very potent (Table 2) or similar terms that will be clear to patients, e.g. low, medium, strong, very strong, on medicine labels, avoids confusion and the risk of inappropriate use.
- Very potent topical corticosteroids, i.e. betamethasone dipropionate 0.05% (in propylene glycol base) and clobetasol propionate 0.05%, should not be initiated in children without prior discussion with a dermatologist

 Provide a written plan for the patient and caregiver to take home. This can help to remind them which topical corticosteroid to apply where. For an example, see: [www.starship.org.nz/for-health-professionals/new-zealand-child-and-youth-clinical-networks/child-and-youth-eczema-clinical-network/family-information-and-handouts/](http://www.starship.org.nz/for-health-professionals/new-zealand-child-and-youth-clinical-networks/child-and-youth-eczema-clinical-network/family-information-and-handouts/)

**Table 2:** Prescription only topical corticosteroid potency and currently funded formulations, sizes and brands, as of July, 2021.<sup>10,11</sup> Check the **NZF** or **Pharmaceutical Schedule** for up to date information on funding status.

Potency	Active ingredient		Formulations available		
			Lotions or liquids Useful for large areas of skin, the scalp or areas with hair	Cream Useful for large areas of skin	Ointment Useful for skin with thick scale
<b>Prescription only medicines</b>					
<b>Mild</b>	Hydrocortisone 1%	●		100 g, 500 g Hydrocortisone PSM	
<b>Moderate</b> (2 – 25 × as potent as hydrocortisone)	Clobetasone butyrate 0.05%	◐		30 g Eumovate	
	Triamcinolone acetonide 0.02%	●		100 g Aristocort	100 g Aristocort
<b>Potent</b> <sup>‡</sup> (100 – 150 × as potent as hydrocortisone)	Betamethasone dipropionate 0.05%* †	●		15 g, 50 g Diprosone	15 g, 50 g Diprosone
	Betamethasone valerate 0.1% <sup>†</sup>	●	Lotion 50 mL Betnovate Application 100 mL Beta Scalp Application	50 g Beta	50 g Beta
	Diflucortolone valerate 0.1%	◐			50 g Nerisone
	Hydrocortisone butyrate 0.1%	●	Scalp Lotion 100 mL Locoid Topical emulsion 100 mL Locoid Crelo	100 g Locoid Lipocream	100 g Locoid
	Methylprednisolone aceponate 0.1%	●		15 g Advantan	15 g Advantan
	Mometasone furoate 0.1%	●	Lotion 30 mL Elocon	15 g, 50 g Elocon Alcohol free	15 g, 50 g Elocon
	<b>Very potent</b> <sup>‡</sup> (up to 600 × as potent as hydrocortisone)	Betamethasone dipropionate 0.05%* <sup>†</sup>	●		
Clobetasol propionate 0.05% <sup>†</sup>		●	Application 30 mL Dermol	30 g Dermol	30 g Dermol

● Fully funded; ◐ Partly funded;

\* Betamethasone dipropionate is available as a potent formulation (Diprosone) or modified formulation with increased potency (Diprosone OV; very potent), both containing 0.05% active ingredient

† Not approved for use in children aged under 12 months<sup>10</sup>

‡ Note that the face, flexural areas, genitals and the groin are more prone to irritation and skin atrophy than other sites; treatment of these areas is usually limited to mild or moderate potency topical corticosteroids<sup>8,13</sup>

## Recommendations for topical corticosteroid use

### Where on the body should they be applied?

Topical corticosteroids should only be applied on actively affected areas of eczema in an appropriate amount (see: "How much should be used?").<sup>10</sup> When prescribing, be clear where each product should be used, e.g. lower potency topical corticosteroids for the face, and specify the treatment duration and any areas of the body where use of the corticosteroid would be inappropriate (Figure 1). For example:<sup>7,9</sup>

*Methylprednisolone aceponate 0.1% cream*

*Potent (strong) corticosteroid – apply once daily to eczema on the limbs and trunk until the flare has cleared. Seek medical attention if symptoms persist after seven days.*

*Mitte 15 g and 2 repeats*

### Caution is required when applying topical corticosteroids to the face, periorbital or perioral regions and flexural or groin areas

**The face, flexural and groin areas** are more susceptible to adverse effects such as striae or skin atrophy and systemic absorption is increased in these areas compared to other sites.<sup>2</sup> For children with eczema affecting the face, use mild potency or short courses of moderate potency topical corticosteroids.<sup>13</sup> In flexural or groin areas moderate or potent topical corticosteroids should be used only for short periods, e.g. up to seven days.<sup>13</sup>

**In periorbital regions** potent or very potent topical corticosteroids should not be used.

**In perioral regions** the use of even mild topical formulations has been associated with the development of periorificial dermatitis or "steroid rosacea".<sup>7</sup> Ongoing use of topical corticosteroids may aggravate these conditions.<sup>7</sup>

**Topical calcineurin inhibitors** are an alternative treatment if the use of topical corticosteroids is contraindicated or not appropriate.<sup>13, 14</sup> There are two topical calcineurin inhibitors approved for use in New Zealand:<sup>11, 14</sup>

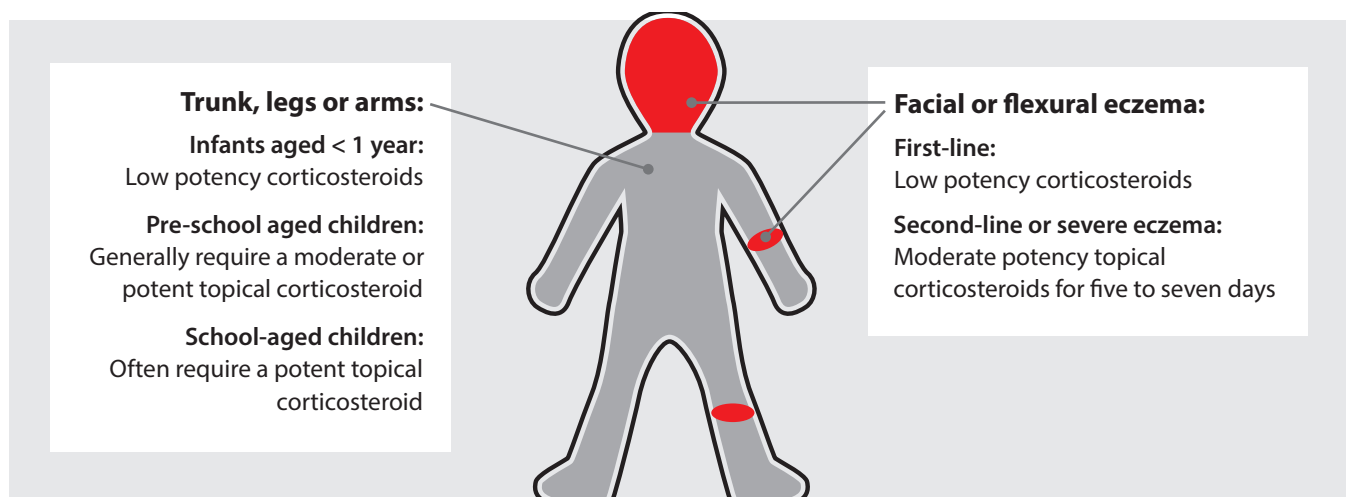
- Pimecrolimus is funded with Special Authority approval for treatment of eczema affecting the eye lid if topical corticosteroids cannot be used
- Tacrolimus ointment is approved for use in people aged ≥ 16 years and will be funded from 1 October, 2021, with Special Authority approval for eczema affecting the face if topical corticosteroids cannot be used

Patients may self-fund for other indications. Calcineurin inhibitors are more likely to cause a burning sensation and pruritis than topical corticosteroids.<sup>10, 15</sup> A possible association between topical calcineurin inhibitor use and increased risk of lymphoma has been examined in a recent systematic review and meta-analysis.<sup>16</sup> Analyses did find an association, however, the overall risk is very small.<sup>16</sup>

### When should they be applied?

Check that patients and caregivers understand when to initiate treatment with topical corticosteroids and when treatment should be stepped down or withdrawn.<sup>2, 8, 13</sup>

- Emollient use should continue during flares
- Topical corticosteroids should only be applied to areas of active eczema, unless during "weekend treatment" (see: "How long should they be applied for?")
- Initially, once daily application of topical corticosteroids is often sufficient; no more than twice daily. As symptoms improve treatment can be stepped down by either applying a lower potency corticosteroid with the same frequency, or the same potency corticosteroid applied less frequently.



**Figure 1:** "Rules of thumb" to guide topical corticosteroid use, from [www.bpac.org.nz/BPJ/2016/February/eczema.aspx](http://www.bpac.org.nz/BPJ/2016/February/eczema.aspx)



## How long should they be applied for?

Topical steroids should generally be effective in clearing inflammation so that long-term treatment is primarily with emollients.

- Flares should typically resolve within seven to 14 days of treatment.<sup>8</sup> If treatment is not effective, check adherence, consider if the treatment should be changed or re-consider the diagnosis.<sup>8</sup>
- For patients in whom treatment is effective but they have frequent flares, “weekend treatment”, also known as maintenance therapy, should be considered. This consists of applying topical corticosteroids for two days a week during remission.<sup>13</sup>
  - A study involving patients using “weekend treatment” of betamethasone dipropionate (0.05%) showed that 74% of participants maintained remission for 12-weeks and developed no adverse effects like skin atrophy or Cushing’s syndrome (see: “The adverse effects of topical corticosteroids are mild and reversible”).<sup>1</sup> Since this study, large-multicentre studies have achieved similar results.<sup>1</sup>

## How much should be used?

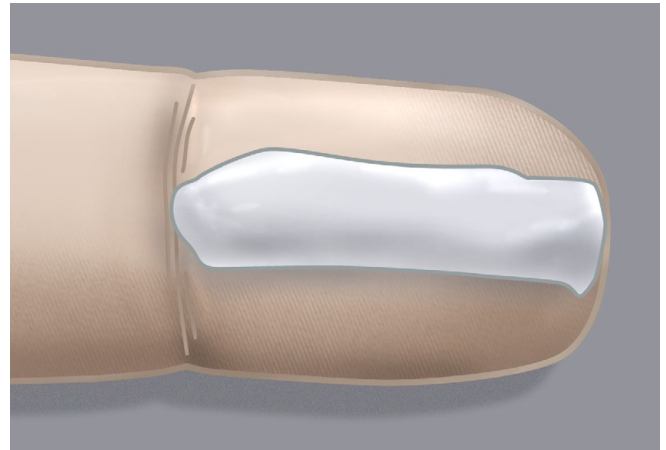
Calculate how much topical corticosteroid to prescribe and if possible, provide an indication of when a repeat prescription is likely to be required. Caregivers can use fingertip units (FTU) to guide the amount of topical corticosteroid to apply (Table 3 and Figure 2). A fingertip unit is the amount of product that covers the tip of an adult’s index finger to the distal skin crease from a standard 5 mm tube.<sup>10</sup> This is a sufficient quantity for an area of skin equal to the palms of two adult hands. One FTU is approximately 0.5 g.<sup>10</sup>

For example, a child aged five years with eczema mainly affecting one arm and hand will require approximately four FTU of topical corticosteroid per application (Table 3). If this is applied once daily during flares, and flares last approximately

seven days in total during a month, this would equate to:

$$4 \times 0.5 \text{ g} \times \text{once daily} \times \text{seven days} = \text{approximately } 14 \text{ g}$$

Usage may vary depending on the extent of flares, how quickly they resolve, whether topical corticosteroid use is tapered or stepped down, and whether patients are also using topical corticosteroids during “weekend treatment”.



**Figure 2.** Fingertip unit

## The adverse effects of topical corticosteroids are mild and reversible

Shortly after application of a topical corticosteroid some patients may experience local irritation or a change in skin colour caused by corticosteroid-induced vasoconstriction.<sup>2</sup> Hypopigmentation typically clears when the topical corticosteroid is stopped.<sup>7</sup> Changes in pigmentation usually occur due to the eczema itself or another dermatological condition, e.g. pityriasis alba.<sup>7,17</sup>

There is little evidence as to what percentage of a topical corticosteroid dose is absorbed systemically. Studies investigating systemic effects do not measure how much of the corticosteroid is in the blood, but instead focus on measuring cortisol as a marker of hypothalamic-pituitary-adrenal (HPA) axis suppression. After a few weeks’ treatment with potent or very potent topical corticosteroids temporary

**Table 3:** Approximate number of adult fingertip units (FTU) of corticosteroid needed per application for children with eczema.<sup>1,10 \*</sup>

	3 – 6 months	1 – 2 years	3 – 5 years	6 – 10 years	11 – 18 years
<b>One entire arm and hand</b>	1	1.5	2	2.5	4
<b>One entire leg and foot</b>	1.5	2	3	4.5	8
<b>Torso (front)</b>	1	2	3	3.5	7
<b>Back and buttocks</b>	1.5	3	3.5	5	7
<b>Face and neck</b>	1	1.5	1.5	2	2.5

\* Note that these values are a guide and will be influenced by the size of the child

HPA axis suppression does occur. However, this resolves upon cessation of the topical corticosteroid, without the need for dose tapering.<sup>7</sup> HPA axis suppression is more likely when topical corticosteroids are applied under occlusion, e.g. with wet wraps as greater systemic absorption occurs.<sup>8,13</sup>


### Inappropriate or prolonged use may cause more serious adverse effects

More serious adverse effects include clinically significant HPA axis suppression, skin atrophy or striae or withdrawal symptoms upon stopping the corticosteroid, such as erythema and aggravation of cutaneous symptoms.<sup>1,2,13</sup> These are rarely seen with normal prescribing patterns.

The risk of these adverse effects is increased:<sup>7,8</sup>

- With a higher potency of corticosteroid
- With application to a greater area of skin or a larger quantity of application
- When corticosteroids are applied under occlusion or to flexural or groin areas, which increases absorption
- If patients are also taking oral or high-dose inhaled corticosteroids
- When potent topical corticosteroids are applied to striae-prone areas, e.g. axillae or groin areas, during growth phases of puberty

If patients request repeat prescriptions earlier than expected consider whether they may be using a topical corticosteroid inappropriately; case reports of adverse effects typically involve patients who have used the product for longer than it was prescribed for.<sup>2</sup>

 Ask patients to bring their tubes of topical corticosteroids with them to appointments so you can more accurately assess the quantities used

Patient information on the use of topical corticosteroids is available from:

- <https://www.kidshealth.org.nz/when-how-use-steroid-creams-children-eczema?language=rar>: A video guide for how to apply topical corticosteroids
- <https://www.healthnavigator.org.nz/medicines/t/topical-steroids/>: Information on topical corticosteroids, how to apply them and potential adverse effects
- [www.nhs.uk/Conditions/Corticosteroid-preparations-\(topical\)](http://www.nhs.uk/Conditions/Corticosteroid-preparations-(topical)): Information on what conditions topical corticosteroids are used to treat, different potencies and formulations of corticosteroids, how to use these medicines and potential adverse effects

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