Topical corticosteroids (TCS) are used for the treatment of inflammatory conditions of the skin (other than those arising from an infection), such as contact dermatitis, eczema, and insect bites. Corticosteroids regulate gene expression, resulting in inhibition of dermal oedema and capillary dilation, and reduced vascular permeability, resulting in inflammation suppression during use.

Topical corticosteroids can be classified according to their potency; application site and severity of condition influence which potency to prescribe. It is generally recommended that the lowest potency topical corticosteroid be used to control the condition. The site of application also influences the selection of topical corticosteroid potency of steroid. If TCS are applied under occlusion (wet wrap therapy) the absorption rate increases by two-fold. The risk of adverse effects increases with potency, the amount of topical corticosteroid used and occlusion.

### Classification of New Zealand Subsidised Topical Corticosteroid Preparations

<table>
<thead>
<tr>
<th>Potency Class</th>
<th>Relative Potency (compared to hydrocortisone)</th>
<th>Steroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very potent</td>
<td>600</td>
<td>Clobetasol propionate e.g. Dermol</td>
</tr>
<tr>
<td>Potent</td>
<td>100-175</td>
<td>Betamethasone valerate e.g. Beta Betamethasone dipropionate e.g. Diprosone Diflucortolone valerate e.g. Nerisone Hydrocortisone 17-butyrate e.g. Locoid Methylprednisolone aceponate e.g. Advantan Mometasone furoate e.g. Elocon, m-Mometasone</td>
</tr>
<tr>
<td>Moderate</td>
<td>2-25</td>
<td>Clobetasol butyrate e.g. Eumovate Triamcinolone acetonide e.g. Aristocort</td>
</tr>
<tr>
<td>Mild</td>
<td>1</td>
<td>Hydrocortisone 0.5-2.5%</td>
</tr>
</tbody>
</table>

The structure of fourth generation corticosteroids has been modified to increase potency without an increase in the risk of adverse events; methylprednisolone aceponate is an example and for this reason it is considered a safe and effective acute and maintenance treatment choice for children, including infants (though contra-indicated in those aged < 1 year old) which is applied once a day.

### Safety of steroids in the treatment of eczema in children

Topical corticosteroids are safe. A cross-sectional observational study involving 70 children aged younger than 18, were compared to 22 children in the control group, who had atopic dermatitis or eczema-psoriasis overlap. Using a range of steroids, wet dressing techniques used as appropriate, and adequate adherence met for inclusion, average duration of topical steroid use was 10.6 months with no observed atrophy, striae, atrophic scars, or purpura.

Studies have failed to demonstrate skin thinning or pituitary-adrenal axis suppression with short term use; or with intermittent use of a potent steroid for four months; or with prolonged use of 0.1% hydrocortisone butyrate in children with mild-moderate atopic eczema.

In adults and adolescents, striae can occur on the abdomen or outer arms, thighs, but this has not been demonstrated in children. In a randomised, double-blind, comparative study of unrestricted use of 1% pimecrolimus cream versus topical corticosteroids for 1 year in 658 adults with moderate to severe atopic eczema; 1% of those applying topical corticosteroids developed striae.
‘Steroid phobia’
Fear of using topical corticosteroids can be associated with non-adherence and poor symptom control. Underuse of topical corticosteroid is more common than overuse. An acute or severe condition that is likely to respond to topical corticosteroids should be treated generously, aiming to get control promptly.

Patients should be educated to ‘apply enough to cover the affected area’. The fingertip unit is a clear way of describing to the patient how much topical steroid to apply, and allows for accurate calculation of quantities to prescriber for the required time period.

Fingertip units (FTUs) for different areas of the body

<table>
<thead>
<tr>
<th>Adult (in FTUs)</th>
<th>Face &amp; neck</th>
<th>Arm &amp; hand</th>
<th>Leg &amp; foot</th>
<th>Torso (front)</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>2.5</td>
<td>3.0</td>
<td>6.0</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child (in FTUs)</th>
<th>Face &amp; neck</th>
<th>Arm &amp; hand</th>
<th>Leg &amp; foot</th>
<th>Torso (front)</th>
<th>Back &amp; bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>3–6 months</td>
<td>1.0</td>
<td>1.0</td>
<td>1.5</td>
<td>1.0</td>
<td>1.5</td>
</tr>
<tr>
<td>1–2 years</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>3–5 years</td>
<td>1.5</td>
<td>2.0</td>
<td>3.0</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td>6–10 years</td>
<td>2.0</td>
<td>2.5</td>
<td>4.5</td>
<td>3.5</td>
<td>5.0</td>
</tr>
</tbody>
</table>

One FTU is the amount of cream/ointment that can be squeezed onto the top third of an adult finger (approximately 2.5cm).

Emollients
Changes in the epidermal lipids in atopic eczema leads to water loss from the stratum corneum in conjunction with cracks developing which allow irritants and allergens penetration into the skin. Emollients are essential in the management of eczema and should be recommended for use daily for washing, bathing and moisturising and leave-on emollients prescribed in large quantities (250–500 g weekly).

Aqueous cream as a moisturiser is associated with decrease in skin thickness, increased desquamatory and inflammatory protease activity, accelerated skin turnover and skin reactions. These reactions may be due to the presence of sodium lauryl sulfate (SLS) or other ingredients. It is not recommended by paediatric dermatology in NZ as a leave on moisturiser.

Allergic to the Treatment?
Consider an allergy if an eczematous dermatitis does not respond to topical corticosteroid treatment. Sensitivity may be to the corticosteroid or another component of the preparation. Further information is available on DermNetNZ http://www.dermnetnz.org/dermatitis/corticosteroid-allergy.html

Best Practice Tips:
• Eczema needs adequate topical corticosteroid to be treated.
  o Apply in adequate amounts; use a fingertip unit for dosing.
• There is no place for oral steroids e.g. Redipred for the treatment of eczema in children. If this is severe these children should be referred to Hospital.
• Topical corticosteroid should be applied once or twice daily, depending on the condition being treated, while moderate.
• Encourage the use of emollients daily; avoiding aqueous cream as a leave-on moisturiser.
Disclaimer:
The information and advice contained in this document is based upon evidence from available resources at our disposal at the time of publication, and reflects best practice. However, this information is not a substitute for clinical judgment and individualised medical advice. Health Hawke’s Bay accepts no responsibility or liability for consequences arising from use of this information.

References

8. Research Review. Methylprednisolone aceponate 0.1% Research Review(Product Review) 2012 www.researchreview.co.nz