**Topical corticosteroid preparation potencies**

**New Zealand Formulary accessed 9th June 2023**

Potency of a topical corticosteroid preparation is a result of the formulation as well as the corticosteroid. For a visual display of topical corticosteroid products, see [Funded Emollients and Plain Steroid Creams in New Zealand 2020](https://media.starship.org.nz/funded-emollients-and-plain-steroid-creams-in-new-zealand-2020/Dermatology_A1_Poster.pdf) Starship Child Health, 2020 (note: subsidised brands may change see [Pharmac](https://pharmac.govt.nz/pharmaceutical-schedule/community-section-b/" \t "_blank) for most current funding information).

**Mild**

* hydrocortisone 0.1–2.5%

**Moderate** (2–25 times as potent as hydrocortisone)

* clobetasone butyrate (*Eumovate*®)
* triamcinolone acetonide (*Aristocort*®)

**Potent** (100–150 times as potent as hydrocortisone)

* betamethasone valerate (*Beta*®, *Betnovate*®)
* betamethasone dipropionate (*Diprosone®*)
* diflucortolone valerate
* hydrocortisone butyrate (*Locoid*®)
* mometasone furoate (*Elocon*®)
* methylprednisolone aceponate (*Advantan*®)

**Very potent** (up to 600 times as potent as hydrocortisone)

* clobetasol propionate (*Dermol*®)
* betamethasone dipropionate (*Diprosone OV*®*ointment*)

Topical corticosteroids are used for the treatment of inflammatory conditions of the skin (other than those arising from an infection), in particular [eczema](https://www.nzf.org.nz/nzf_6332), contact dermatitis, insect stings, and eczema of [scabies](https://www.nzf.org.nz/nzf_6587). Corticosteroids suppress the inflammatory reaction during use; they are not curative and on discontinuation a rebound exacerbation of the condition may occur (see Topical steroid withdrawal reactions below). They are generally used to relieve symptoms and suppress signs of the disorder when other measures such as emollients are ineffective.

Topical corticosteroids are not recommended in the routine treatment of urticaria; treatment should only be initiated and supervised by a specialist. Topical corticosteroids are **contra-indicated** in rosacea. They may worsen ulcerated or secondarily infected lesions. They should not be used indiscriminately in pruritus (where they will only benefit if inflammation is causing the itch) and are **not** recommended for acne vulgaris.

Systemic or very potent topical corticosteroids should be avoided or given only under specialist supervision in *psoriasis* because, although they may suppress the psoriasis in the short term, relapse or vigorous rebound occurs on withdrawal (sometimes precipitating severe pustular psoriasis). For the role of topical corticosteroids in the treatment of psoriasis, see [Topical treatment for psoriasis](https://www.nzf.org.nz/nzf_6349).

In general, the most potent topical corticosteroids should be reserved for recalcitrant dermatoses such as *chronic discoid lupus erythematosus*, *lichen simplex chronicus*, *hypertrophic lichen planus*, and *palmoplantar pustulosis*. Potent corticosteroids should generally be avoided on the face and skin flexures, but specialists occasionally prescribe them for use on these areas in certain circumstances.

When topical treatment has failed, intralesional [corticosteroid injections](https://www.nzf.org.nz/nzf_5565) may be used. These are more effective than the very potent topical corticosteroid preparations and should be reserved for severe cases where there are localised lesions such as *keloid scars*, *hypertrophic lichen planus*, or *localised alopecia areata*.

**Perioral lesions**

[Hydrocortisone](https://www.nzf.org.nz/nzf_9432) cream 1% can be used for up to seven days to treat uninfected inflammatory lesions on the lips. [Miconazole + hydrocortisone](https://www.nzf.org.nz/nzf_9437) cream is useful where infection by susceptible organisms and inflammation co-exist, particularly for initial treatment (up to seven days) e.g. in [angular cheilitis](https://www.nzf.org.nz/nzf_6191#nzf_6196). Organisms susceptible to miconazole include Candida spp. and many Gram-positive bacteria including streptococci and staphylococci.

**Children**

Children, especially infants, are particularly susceptible to adverse effects. However, concern about the safety of topical corticosteroids in children should not result in the child being undertreated. The aim is to control the condition as well as possible; inadequate treatment will perpetuate the condition. A mild corticosteroid such as hydrocortisone 0.5% or 1% is useful for treating [nappy rash](https://www.nzf.org.nz/nzf_6248) and hydrocortisone 1% may be used for atopic eczema in childhood (see [Preparations for eczema](https://www.nzf.org.nz/nzf_6332)). A moderately potent or potent corticosteroid may be appropriate for severe atopic eczema on the limbs, for one to two weeks only, switching to a less potent preparation as the condition improves. In an acute flare-up of atopic eczema, it may be appropriate to use more potent formulations of topical corticosteroids for a short period to regain control of the condition. Very potent corticosteroids such as betamethasone dipropionate are generally not recommended for eczema.

**Choice of formulation**

Water-miscible corticosteroid *creams* are suitable for moist or weeping lesions whereas *ointments* are generally chosen for dry, lichenified or scaly lesions, or where a more occlusive effect is required. *Lotions* may be useful when minimal application to a large or hair-bearing area is required or for the treatment of exudative lesions. *Occlusive polythene or hydrocolloid dressings* increase absorption, but also increase the risk of adverse effects; they are therefore used only under supervision on a short-term basis for areas of very thick skin (such as the palms and soles). The inclusion of urea or salicylic acid also increases the penetration of the corticosteroid.

Combination topical products that contain anti-infective(s) and a corticosteroid may be useful for inflammatory skin conditions complicated by bacterial or candidal infection, however inappropriate use of these preparations can promote antibiotic resistance (see [Anti-infective skin preparations](https://www.nzf.org.nz/nzf_6502), and [Topical antibiotics for skin infections: when are they appropriate?](http://www.bpac.org.nz/2017/topical-antibiotics-2.aspx) bpacnz, February 2017).

In the NZF topical corticosteroids for the skin are categorised as ‘*mild*’, ‘*moderately potent*’, ‘*potent*’, or ‘*very potent*’ (see [Topical corticosteroid preparation potencies](https://www.nzf.org.nz/nzf_6288)). The **least potent** preparation which is effective should be chosen, and dilution should be avoided. Diluting a topical corticosteroid with an emollient **does not** result in a less potent medicine (potency is related to factors other than just the concentration of the formulation) and may promote excessive use leading to an increased risk of systemic absorption or adverse effects (see also Adverse effects below).

**Cautions**

Avoid prolonged use of a topical corticosteroid on the face (and keep away from eyes). In children avoid prolonged use and use potent or very potent corticosteroids under specialist supervision; extreme caution is required in dermatoses of infancy including [nappy rash](https://www.nzf.org.nz/nzf_6248)—treatment should be limited to five to seven days.

**Psoriasis**

The use of potent or very potent corticosteroids in [psoriasis](https://www.nzf.org.nz/nzf_70919) can result in rebound relapse, development of generalised pustular psoriasis, and local and systemic toxicity.

**Contra-indications**

Topical corticosteroids are contra-indicated in untreated bacterial, fungal, or viral skin lesions, in acne, in rosacea, and in perioral dermatitis; potent corticosteroids are contra-indicated in widespread plaque psoriasis (see notes above).

**Adverse effects**

**Local adverse effects** are rarely observed with *mild* and *moderately potent* topical corticosteroid use, but care is required with the use of *potent* and *very potent* corticosteroids. Local adverse effects include:

* perioral dermatitis;
* spread and worsening of untreated infection;
* thinning of the skin which may be restored gradually after stopping treatment, but the original skin structure may never return;
* irreversible striae atrophicae and telangiectasia;
* contact dermatitis;
* acne/worsening of acne or rosacea;
* mild depigmentation (which may be reversible);
* hypertrichosis also reported.

**Adrenal suppression** due to systemic absorption is rarely reported with topical corticosteroid use, but can lead to reversible hypothalamic-pituitary adrenal (HPA) axis suppression, [Cushing’s syndrome](https://www.nzf.org.nz/nzf_4093), and adrenal insufficiency. When adrenal suppression with topical corticosteroids occurs it is most often caused by inappropriate use, i.e., long-term application of excessive quantities (see [Application](https://www.nzf.org.nz/nzf_6272#nzf_6283) for appropriate amounts); almost all cases occur with use of *potent* or *very poten*t topical corticosteroids (see [Topical corticosteroid preparation potencies](https://www.nzf.org.nz/nzf_6288)).

Other Risk factors include:

* prolonged or frequent application;
* application to thin skin or mucous membranes (e.g., eyelids, genitals, flexural areas) or striae (stretch mark-prone areas);
* occlusion of application site;
* concomitant use of oral or high-dose inhaled corticosteroids.

Fear of this adverse effect should not deter topical corticosteroid use when indicated as under-use can lead to poor symptom control and adverse outcomes for the individual. To ensure appropriate use prescribers should consider the severity of symptoms and location and size of the affected area to be treated, prescribe the lowest potency of corticosteroid needed to control symptoms, and limit frequency of application to twice daily or less. Use of *fingertip unit*measurements ensures enough topical corticosteroid is administered while avoiding excessive exposure. See also [Adrenal Suppression Associated with the Use of Topical Corticosteroids](https://medsafe.govt.nz/profs/PUArticles/December2017/AdrenalSuppressionTopicalCorticosteroids.htm) Prescriber Update, December 2017.

**Topical steroid withdrawal reactions**

Withdrawal reactions (symptom rebound or flare) can occur in the days or weeks following cessation of long-term topical treatment with corticosteroids, or inappropriately frequent use of *moderate* to *high potency* products (especially on the face or genital area). Rarely, the withdrawal reaction can produce dermatitis with intense redness, stinging, and burning that extends beyond the initial symptomatic area (in [eczema](https://www.nzf.org.nz/nzf_6332), a rebound of pre-existing symptoms can occur). Monitor individuals for the development of these symptoms following discontinuation of long-term treatment. Ideally topical corticosteroids should be discontinued gradually, with ongoing regular [emollient](https://www.nzf.org.nz/nzf_6237) use to repair and protect the natural skin barrier.

The least potent topical corticosteroid that is effective should be used and individuals should be advised to carefully follow instructions regarding the frequency, location, and duration of use.

**Application**

Topical corticosteroid preparations should be applied no more frequently than twice daily; once daily is often sufficient.

Initial topical corticosteroid treatment should be generously applied to the affected area once or twice daily to gain rapid control of an inflammatory dermatosis within a few days. After that, a thin smear of topical corticosteroid can be applied no more than once daily until settled. Specialist advice is recommended if potent or very potent topical steroids are required for more than two to four weeks.

The length of cream or ointment expelled from a tube may be used to specify the quantity to be applied to a given area of skin. This length can be measured in terms of a *fingertip unit* (the distance from the tip of the adult index finger to the first crease). For a tube with a standard 5 mm diameter nozzle one fingertip unit is approximately equivalent to 500 mg for an adult male and 400 mg for an adult female. A fingertip unit is sufficient to cover an area that is twice that of a flat adult handprint (palm and fingers).

| **Suitable quantities of corticosteroid preparations to be prescribed for specific areas of the body** | |
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|  | Creams and Ointments |
| Face and neck | 15–30 g |
| Both hands | 15–30 g |
| Both feet | 15–30 g |
| Scalp | 15–30 g |
| Both arms | 30–60 g |
| Both legs | 100 g |
| Trunk | 100 g |
| Groins and genitalia | 15–30 g |
| These amounts are usually suitable for an adult for a single daily application for two weeks | |

If an individual is using topical corticosteroids of different potencies, they should be told when to use each corticosteroid. The potency of each topical corticosteroid (see [Topical corticosteroid preparation potencies](https://www.nzf.org.nz/nzf_6288)) should be included on the label with the directions for use and precise written instructions should be provided.

Mixing topical preparations on the skin should be avoided where possible; several minutes should elapse between application of different preparations.

**Compound preparations**

The advantages of including other substances (such as antibacterials or antifungals) with corticosteroids in topical preparations are uncertain, but such combinations may have a place where inflammatory skin conditions are associated with bacterial or fungal infection, such as localised infected eczema. In these cases the antimicrobial drug should be chosen according to the sensitivity of the infecting organism and used regularly for a short period (typically twice daily for one week). Longer use increases the likelihood of resistance and of sensitisation.

The keratolytic effect of salicylic acid facilitates the absorption of topical corticosteroids; however, excessive and prolonged use of topical preparations containing salicylic acid may cause salicylate toxicity.