A RESEARCH REVIEW™
EDUCATIONAL SERIES

# Topical treatment of psoriasis vulgaris in New Zealand

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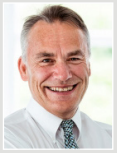
## About the Expert



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The review presents relevant background information on psoriasis vulgaris and focuses on topical therapies. In particular, it highlights the use of a fixed-dose combination of calcipotriol-betamethasone dipropionate (Cal/BD) aerosol foam spray (Enstilar®).[1] This review is intended as an educational resource for health care professionals and is sponsored by Leo Pharma.

## Introduction

Psoriasis vulgaris (also known as chronic plaque psoriasis), the most common type of psoriasis, is characterised by chronicity, with exacerbations and remissions,[2] and the presence of red, scaly patches; the condition is not contagious.[3] Psoriasis may be mild and barely noticeable, or so severe that it sometimes requires hospitalisation.[2] Approximately 80% of patients with psoriasis have mild-to-moderate disease, and are therefore candidates for topical antipsoriatic therapy in primary care.[4]

Psoriatic lesions generally vary in size and extent of inflammation, but are typically well defined; they may be itchy, but are rarely painful.[2] The most frequently affected regions are the elbows, knees and scalp, but the condition can occur anywhere on the body. In some patients, plaques may develop into uncomfortable fissures and cracks.[3] The psychosocial burden and stigma of having 'mild' psoriasis is often underestimated,[5] and quality of life (QoL) is impaired as much as having chronic cardiac disease.[6]

Psoriasis is now regarded as a multisystem inflammatory disease that is associated with, or increases, the risk of other comorbidities.[7] Psoriasis is thought to develop due to interaction of an individual's immune system, genetic susceptibility, and specific environmental factors.[8] Various disease 'triggers' are present in genetically susceptible individuals: alcohol ingestion; cigarette smoke; drug treatments (e.g. antimalarials, β-blockers, lithium, nonsteroidal anti-inflammatory drugs); general illness; human immunodeficiency virus (HIV); inappropriate diet; lack of exercise; and stress.[2,9,10]

## The prevalence of psoriasis

The prevalence of psoriasis worldwide is 0.5% to 11.4% in adults, and 0% to 1.4% in children,[11] with a higher prevalence with increasing distance from the equator.[12]

The prevalence of psoriasis in New Zealand has not yet been established. In Australia, the prevalence of psoriasis in adults is 2.3% to 6.6%, and in the UK it is between 1.3% and 2.2%.[11,13] Maori and Pacific Islander peoples may have higher rates of psoriasis compared to New Zealand Europeans,[14] and indigenous Australians and Samoans are rarely affected by the disorder.[15,16]

When psoriasis manifests, patients are usually affected for most of their lives.[3] The peak ages of disease onset are 30–39 years and 60–69 years.[17] Females, and patients with a family history of psoriasis, often develop the condition at an earlier age, and early onset tends towards more severe disease.[18] Patients with severe disease have a greater risk of mortality than the general population.[8]

## Complications of psoriasis and impact on quality of life

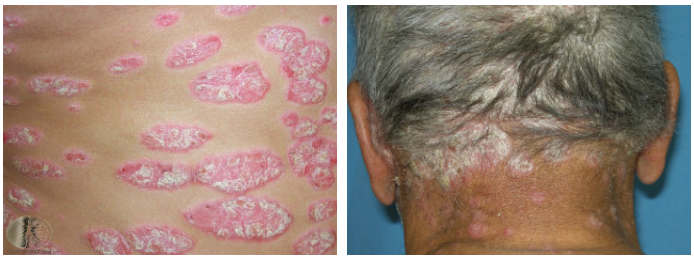
With itching and scaling as its key symptoms, psoriasis can have a significant impact on patients' health-related quality of life (HRQoL), sleep quality, and work productivity.[19-21] Increasing real-world evidence has demonstrated greater psoriasis severity is associated with worse QoL and greater reduction in work productivity.[21,22] Furthermore, Individuals with psoriasis have reported a reduction in mental and physical functioning comparable to that seen in arthritis, cancer, heart disease, hypertension, diabetes and depression.[23]

Up to 10–40% of patients with psoriasis may have nail involvement, and up to one-third will also have psoriatic arthritis.[3,24,25] Psoriasis is also associated with several comorbidities such as cardiovascular disease, depression, diabetes, dyslipidaemia, hypertension, obesity, and stroke[2,8,26] and patients are at increased risk of developing other immune-mediated disorders such as inflammatory bowel disease and rheumatoid arthritis.[8]

## Clinical features of psoriasis vulgaris

Psoriasis vulgaris is the most common type of psoriasis, accounting for 55–90% of cases.[12,13] Psoriasis vulgaris typically presents as small to large, clearly demarcated, erythematous plaques covered by silvery white scales, predominantly on the elbows, knees, scalp, lumbar and umbilical regions, and often affects the body symmetrically (Figure 1).[2,7,27] Scale is less evident if the patient is using emollients.[7] In people with darker skin, hyperpigmentation may develop.[2,12]

**Figure 1. Psoriasis vulgaris of the lumbar and scalp regions[28]**



## Assessment of psoriasis

Psoriasis is assessed by evaluating its severity, the presence of psoriatic arthritis, and associated features and comorbidities.[7] Commonly used clinical tools are shown in Table 1. Psoriasis affecting less than 5% of the body surface area (BSA) is considered mild, that affecting 5-10% of the BSA is considered moderate and that affecting >10% of the BSA is considered severe.[29] As a reference, the palm of the hand is equal to approximately 0.5% of the skin surface.[30]

**Table 1. Commonly used clinical tools in psoriasis[31]**

| Clinical tools | Definition |
|---|---|
| BSA | A commonly used measure of psoriasis severity based on the percentage of the total body surface area affected by psoriasis |
| DLQI | Patient-reported tool used to assess the impact of skin disease on HRQoL and daily activities |
| PASI | An index used to express the severity of psoriasis by combining the severity of psoriasis (erythema, induration and desquamation) and percentage of affected area |
| PGA | A 5- or 6-point scoring system used to assess psoriasis severity (redness and induration), ranging from clear skin to severe psoriasis |

BSA: body surface area; DLQI: Dermatology Life Quality Index; PGA: Physician's Global Assessment; PASI: Psoriasis Area and Severity Index

### Assessment of quality of life

The following features may indicate severe psoriasis due to the impact on QoL:[32] involvement of visible areas, major parts of the scalp, genitals, palms or soles; onycholysis or onychodystrophy of at least two fingernails; and pruritus leading to excoriation.

When assessing the impact of psoriasis on QoL, questions to consider asking your patient include:[33] how does psoriasis affect your daily life at home, work or at school? How are you coping with psoriasis? Are you using any treatments? How do you feel — depressed, anxious, worthless, lonely? How is psoriasis affecting your relationship with your partner, family, friends, and carers? Do you need further advice or support?

### Presence of psoriatic arthritis

Patients with psoriasis should undergo annual screening for psoriatic arthritis. This is best achieved in primary care and specialist settings through the use of a tool such as the Psoriasis Epidemiology Screening Tool (PEST).[33] Consider a non-urgent rheumatology referral or seeking rheumatology advice if the score is ≥3.[33]

### Assessment of risk factors and comorbidities

Assess patients for risk factors and comorbidities upon first presentation and as indicated thereafter.[7] Factors to consider include: 1) cardiovascular risk factors, and management of these (e.g., smoking cessation). Measure blood pressure, lipid studies and fasting glucose at least annually; 2) risk of venous thromboembolism and its management;[33] 3) depression and its management; 4) alcohol consumption; 5) signs of lymphoma, skin cancer, and solid tumours, according to guidelines for age, immune suppression, and phototherapy;[34] and 6) eye conditions may occur more commonly in people with psoriasis. Consider asking patients about ocular symptoms at each follow-up appointment.[12]

## The differential diagnosis for psoriasis

Several other skin conditions – including seborrheic dermatitis, fungal infections, mycosis fungoides and drug eruptions – may mimic psoriasis (Table 2).[35] Patients with typical psoriatic lesions are usually easy to diagnose, but challenges may arise when asymmetrical, individual lesions are present; when eruptive, pustular or erythematous phases are evolving; or when the patient has concomitant diseases.[36]

**Table 2. Differential diagnosis for psoriasis[7]**

| Differential diagnosis | Similarities to psoriasis | Differences from psoriasis |
|---|---|---|
| Seborrheic dermatitis | Erythematous patches with overlying scale. Scalp, ears and intertriginous areas are affected. | A fine, greasy scale. Eyebrows, nasolabial folds, central chest and postauricular area are affected. No family medical history of psoriasis. |
| Atopic dermatitis | Excoriated areas with erythema, hyperpigmentation and scale. Lichenification may be present. | Lacks the thick, coarse-scale and well-demarcated borders of psoriasis. Itch is a more prominent feature of atopic dermatitis, and in infants, the napkin area is usually spared. Family medical history of atopy. |
| Superficial fungal infections | Erythematous plaques and pustules. Onychomycosis may be mistaken for nail psoriasis. | A skin scraping or nail clipping show fungal elements on microscopy and the causative organism is confirmed by culture. |
| Cutaneous T-cell lymphoma | Erythematous, scaly plaques and variable itch, and sometimes as erythroderma (Sézary syndrome). | Plaques tend to be less circumscribed and less scaly, and they are not distributed symmetrically. Lymphadenopathy and hepatosplenomegaly are common. |
| Other papulosquamous disorders | | |

# Treatment for psoriasis vulgaris

## General considerations

While many therapeutic options exist for the treatment of psoriasis vulgaris, including topical preparations, phototherapy, systemic therapy and biologic agents, none offer a cure.[7,37] Successful disease management relies on tailoring therapeutic strategies to the particular needs of the patient. It should be explained to patients that psoriasis is a chronic disease and that treatment is aimed at control rather than cure, with complete clearance possibly not being achievable.[2]

In some cases, patients with mild disease will prefer coping with psoriasis (i.e. not require therapy) than applying topical treatments every day.[2] Sunshine may be enough to clear psoriasis in some cases, but can flare it in some, and fair skinned patients should be warned about the risks of sunburn and long-term overexposure accelerating skin cancers.[7,37]

Patients should be encouraged to continue to optimise lifestyle factors (e.g. not smoking, avoiding excessive alcohol intake, and maintaining a healthy weight and blood pressure[12,33] and regularly apply emollients for dry/scaly-prone skin. Successful self-management of psoriasis involves pharmacotherapy as well as awareness and treatment of psychosocial comorbidities. Prior to initiating therapy, establishment of treatment expectations and goals will facilitate formation of a personalised doctor-patient partnership.[38]

Food allergy is not associated with psoriasis,[39] compared with eczema, and allergy testing is not normally indicated. A Mediterranean-type diet has been shown to be associated with some improvement in psoriasis.[40]

## Topical therapy

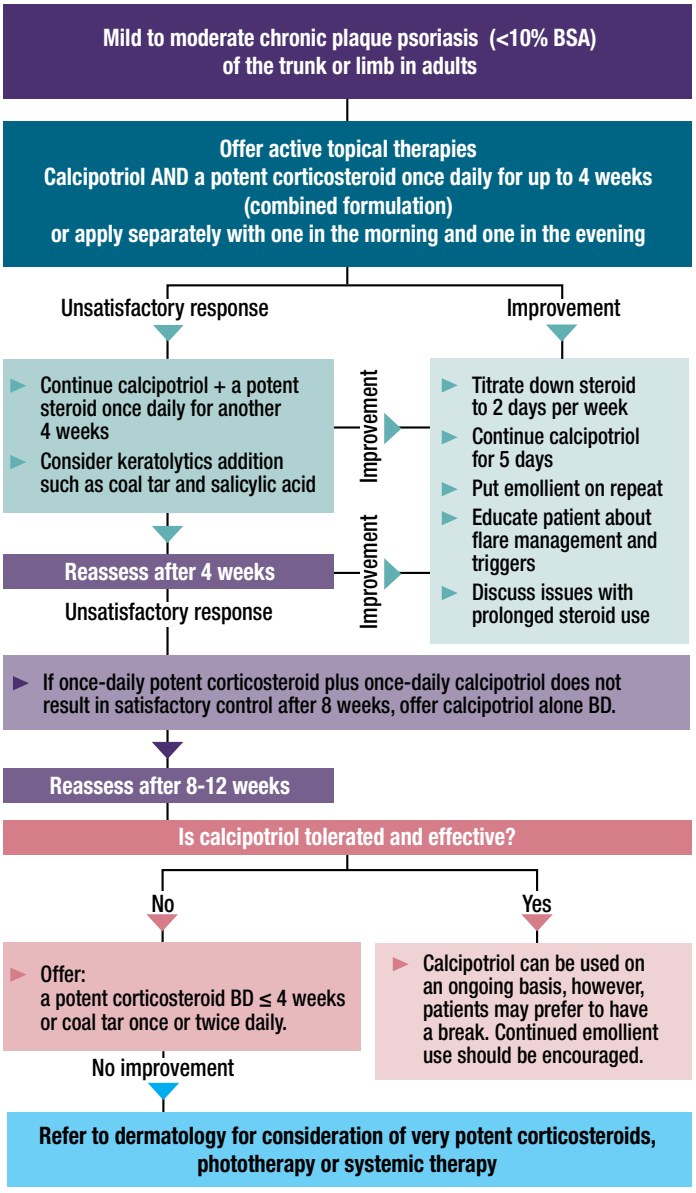
Topical treatments are appropriate for patients with mild-to-moderate psoriasis vulgaris, and also for patients with severe psoriasis vulgaris who are receiving systemic therapy.[41] Most individuals with psoriasis have limited mild-to-moderate disease (<5% of their BSA).[4] These individuals tend to respond well to topical agents such as limited corticosteroids, vitamin D analogues, tar products and emollients, which generally exhibit a high efficacy-to-safety ratio.[4] 70-80% of patients will respond adequately to topical therapy alone.[27] Consideration of adjunctive topical therapy is also recommended with phototherapy or systemic therapy in patients with more extensive or resistant disease.[42]

When choosing a treatment, the likes and dislikes of the patient must be considered.[2] Consider asking patients about their preferences regarding frequency of application, texture of formulation (e.g., not greasy), odour, visibility on skin after application, and speed of application.[43] Creams, gels, foams and lotions are useful for spreading over hairy areas or larger plaques.[7,44] Scalp preparations are usually liquid or foam solutions to allow the product to disperse between hair follicles.[45] Ointments are usually more effective for psoriasis of the trunk and limb and thick scale,[33] however, patients may find them less cosmetically appealing and inconvenient as they may stick to clothing.[45] Patients may prefer to apply an ointment overnight.[42] Keep in mind that the best topical therapy to prescribe is the one the patient will actually apply![2]

Emollients should be recommended to all patients with psoriasis vulgaris,[45,46] and are effective for reducing itch, for facilitating movement in thick, scaly areas, and for reducing the appearance of scales.[47] They also allow better absorption of products such as vitamin D analogues and tar.[46] Soap substitutes may also be used as a basis for treatment.[37] While emollient therapy may be adequate to treat mild psoriasis, a step up in treatment might be needed.[46] Figure 2 shows a suggested treatment pathway for managing psoriasis.[46]

For management of psoriasis, guidance focuses on use of corticosteroids in combination with vitamin D analogues.[44] Topical corticosteroids work by decreasing inflammation, whereas calcipotriol works by regulating skin cell production and proliferation, which is abnormal in psoriasis.[48] Fixed-dose combination products that contain both a vitamin D analogue and a corticosteroid are more effective than either drug used alone.[48] Fixed-dose combination vitamin D analogue and corticosteroid treatments used for psoriasis include calcipotriol/betamethasone dipropionate (Cal/BD) ointment and gel (Daivobet®), and Cal/BD aerosol foam spray (Enstilar®). The NICE guidelines divide management of plaque psoriasis into three categories: trunk and limbs; scalp; and face, flexures and genitals.[44]

**Figure 2. Suggested treatment pathway for psoriasis management** [7,28,44-47]




*Aim for a break of 4 weeks between courses of treatment with potent or very potent corticosteroids. Consider topical treatments that are not steroid-based to maintain psoriasis disease control during this period.
Do not use potent corticosteroids continuously at any site for longer than 8 weeks.

### Trunk and limb psoriasis

For therapy of trunk and limb psoriasis, a potent corticosteroid is recommended once daily or in combination with a vitamin D analogue for up to 4 weeks if emollients are not adequate.[44] Where clearance is not achieved within 8 weeks, it is advised that vitamin D analogues are used twice daily and treatment with corticosteroids ceased.[44] If vitamin D analogue monotherapy is unsuccessful, offer potent corticosteroids twice daily for up to 4 weeks or a coal tar preparation.[44] Very potent corticosteroids should only be offered for 4-week courses in a specialist setting when other topical treatment strategies

have failed.[44] Extended use of potent or very potent topical corticosteroids may lead to permanent skin atrophy and/or striae, unstable or worsening psoriasis or adrenal suppression.[7,45] Topical corticosteroids should not be applied to more than 10% of BSA; patients with psoriasis this widespread should be referred to a dermatologist.[7,45]

For patients with thick scale, the use of a keratolytic, such as topical salicylic acid or urea, a coal tar preparation, or oils, may soften plaques prior to application of topical corticosteroids.[37,44,45] Coal tar preparations may cause staining of clothes or skin,[49] therefore patients may find coal tar products used during bathing more convenient.

### Scalp psoriasis

Offer a potent corticosteroid once daily for up to 4 weeks as initial treatment for scalp psoriasis.[44] After 4 weeks if the response remains unsatisfactory then offer a different formulation of the corticosteroid (e.g., a shampoo or mousse) and/or topical agents to remove scale (e.g., salicylic acid, emollients and oils) before application of the corticosteroid.[44] If after a further 4 weeks of treatment the response remains unsatisfactory offer: combined Cal/BD once daily for up to 4 weeks OR a vitamin D analogue once daily (only in those who cannot use steroids and with mild to moderate scalp psoriasis).[44] If continuous treatment with either a combined Cal/BD product or a vitamin D analogue once daily for up to 8 weeks does not result in clearance, offer a very potent corticosteroid applied up to twice daily for 2 weeks, or coal tar, or specialist referral.[44] Occasionally for severe cases systemic treatment may be necessary.

### Face, flexures and genitals

Offer a short-term mild or moderate potency corticosteroid applied once or twice daily for a maximum of 2 weeks for psoriasis of the face, flexures or genitals.[44] If the response is unsatisfactory, a calcineurin inhibitor can be offered in the specialist setting.[44] Do not use potent or very potent corticosteroids on the face, flexures or genitals.[44]

## Maintenance therapy

There are few published studies/randomised controlled trials that have evaluated topicals for long-term use or maintenance therapy.[31] DermNet NZ states that once a satisfactory outcome has been achieved treatments can be reduced to the amount needed to maintain psoriasis control.[7] Recent consensus from Europe[50,51] and Asia[52] states that a fixed-dose combination of a vitamin D analogue and corticosteroid is the preferred medication for satisfactory control of the disease and prevention of relapses during the maintenance phase. NICE guidelines state that topical agents can be used when needed to maintain satisfactory disease control.[44] German guidelines recommend topical maintenance therapy with corticosteroids, tazarotene or vitamin D analogues once or twice a week.[53]

Independent from recommendations and guidelines, less frequent (once- or twice-weekly) treatment application regimens are supported by physicians, as well as patients, and these regimens are important in the long-term management of mild-to-moderate psoriasis.[31]

Two as yet unpublished studies are evaluating the long-term use of Cal/BD aerosol foam. PSO-LONG is a phase III trial comparing the efficacy and safety of Cal/BD aerosol foam with foam vehicle used twice weekly as long-term maintenance therapy in patients with psoriasis vulgaris.[54] The ongoing phase IV PSOREAL trial is currently evaluating the use of Cal/BD aerosol foam in everyday clinical practice over 1 year.[55]

# Clinical rationale for a topical fixed-dose formulation

Numerous potential advantages exist for combining a potent steroid with a vitamin D analogue in one formulation for the treatment of both body and scalp psoriasis.[56] The combination has a greater effect on the immune-mediated mechanisms of psoriasis than either monotherapy used alone.[57] There is also a strong biological rationale for decreased side effects with the combination; vitamin D restores skin barrier function, which is weakened with corticosteroid use, and counteracts steroid-induced skin atrophy.[57] Corticosteroids may decrease skin irritation induced by vitamin D analogues.[57]

A fixed-dose combination also provides a reduced application time relative to separate application of the individual product constituents.[58] Time savings also occur for prescribers, who can generate only one, rather than several, prescriptions. Cost savings are also likely because patients will need to collect fewer repeat prescriptions than if individual components were prescribed separately. Overall, these benefits will likely translate into substantial improvements in convenience, acceptability, satisfaction and adherence to treatment.[56,58-63] This is particularly pertinent given that some surveys suggest that up to half of all patients with psoriasis may fail to collect their prescriptions for antipsoriatic medication.[64]

# Focus on calcipotriol/betamethasone dipropionate aerosol foam spray

Recently an innovative formulation of an aerosol foam has been developed for the established fixed-dose combination of 50 µg/g calcipotriol and 500 µg/g betamethasone dipropionate (Enstilar®). Cal/BD aerosol foam is the first combination foam spray in New Zealand. It is fully funded as of 1 April 2020 for all severities of psoriasis vulgaris in adults.[1]

## Mechanism of action

Once Cal/BD aerosol foam is sprayed on the skin, the propellants evaporate to leave fully dissolved, non-crystalline active ingredients available for deeper penetration into the skin and greater bioavailability.[65,66] This is believed to be why Cal/BD aerosol foam has demonstrated significant efficacy in comparison to the ointment and gel preparations.[66] The influence of the vehicle on the active ingredients of Cal/BD aerosol foam has been described as "supersaturation".[66]

## Efficacy

Foams become a liquid on contact with skin and are well-tolerated by patients.[67] Studies of corticosteroid foams found that patients with psoriasis prefer foam to other formulations, were able to apply it more quickly, and used it more consistently.[68-73] A further advantage of foam is that, unlike other formulations, it can be used on both the body and scalp.[73]

### Trunk and limbs

The efficacy of once daily use of Cal/BD aerosol foam has been investigated in four randomised, double-blind or investigator-blind, 4-week clinical trials including more than 1500 patients with psoriasis on the body of at least mild severity according to the PGA, affecting at least 2% BSA and with a modified PASI of a least 2.[74-77]

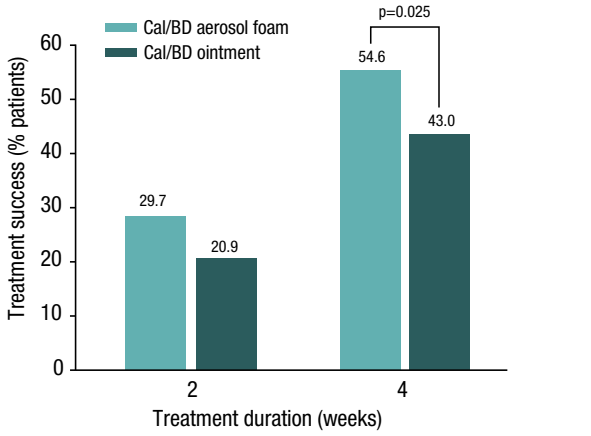
The primary endpoint was patients with 'treatment success' ('clear' or 'almost clear' for patients with at least moderate disease at baseline, 'clear' for patients with mild disease at baseline) according to the PGA at Week 4.

Cal/BD aerosol foam demonstrated improvement in plaque psoriasis with 38% to 55% of patients achieving treatment success within the recommended treatment period of 4 weeks.[74-77] Improvement was seen as early as Week 1 in some patients.[75,77]

Cal/BD aerosol foam also demonstrated superiority to Cal/BD ointment (Figure 3), Cal/BD gel (Figure 3) and topical calcipotriol or betamethasone monotherapy (in the foam spray vehicle) in terms of efficacy (Table 3).[74,76,77]

Regarding itch, in a pooled analysis of three phase II/III trials, improvements in itch VAS score were greater and occurred more rapidly with Cal/BD aerosol foam versus foam vehicle, over 4 weeks of treatment.[78] More Cal/BD aerosol foam-treated patients achieved a 70% reduction in itch at day 3 (34.2% vs 22.5%; $P<0.05$) through to week 4 (79.3% vs 38.1%; $P<0.001$). The reduction in itch was associated with significant improvements in sleep and HRQoL in the Cal/BD aerosol foam-treated patients.

**Figure 3. Treatment success rates by visit in patients receiving Cal/BD aerosol foam vs Cal/BD ointment[74] or gel[76]**



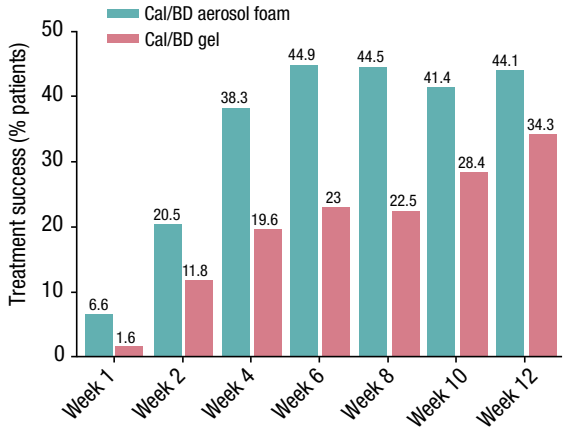




**Table 3. Percentage of subjects with 'treatment success' according to PGA at Week 4**

| Study | Cal/BD Foam | Foam vehicle | BD in foam vehicle | Cal in foam vehicle | Cal/BD Ointment | Ointment vehicle | Cal/BD Gel* |
|---|---|---|---|---|---|---|---|
| Leonardi 2015 (PSO-FAST)[75] N=426 | 53.3% | 4.8% | | | | | |
| Lebwohl 2016[77] N=302 | 45.0% | | 30.7% | 14.9% | | | |
| Koo 2015[74] N=376 | 54.6% | 6.1% | | | 43.0% | 7.8% | |
| Paul 2017 (PSO-ABLE)[76] N=463 | 38.0% | | | | | | 22.0% |

*measured at Week 8

### Scalp

Cal/BD aerosol foam showed greater overall treatment success than calcipotriol foam or betamethasone foam after 4 weeks of treatment in 302 patients with psoriasis (66% of whom had moderate scalp psoriasis).[77] Treatment success of the scalp with Cal/BD aerosol foam was significantly greater than with calcipotriol foam at week 4 (53.0% vs 35.6%; P=0.021), but not betamethasone foam (47.5%; P=0.45).[77] In a separate study, Cal/BD aerosol foam was also associated with significant reductions in scalp lesion severity for erythema, scaliness, and elevation at week 4, with effects observed as early as week 1.[79]

## Ease of use

In a clinical trial, a greater proportion of patients receiving Cal/BD aerosol foam than Cal/BD gel thought it was more effective, easier to apply and generally preferred it compared with previous topical and systemic therapies.[76] This may be important in clinical practice, given that adherence to topical therapy remains a significant issue.[80]

## Quality of life

QoL was investigated in the trial by Leonardi et al.[81] Statistically significantly greater improvement in QoL, measured by DLQI, was demonstrated for subjects receiving Cal/BD aerosol foam compared to those receiving foam vehicle from week 1 and throughout the treatment period. Measured by EQ5D-5L, a statistically significantly greater improvement in favour of subjects receiving Cal/BD aerosol foam compared to those receiving foam vehicle was demonstrated at week 4.

## Real-life studies

Gerdes et al. investigated whether the benefits of Cal/BD aerosol foam could also be obtained in real-world clinical practice.[82] They identified three large real-world studies with Cal/BD aerosol foam: a prospective noninterventional study from Germany,[83] a medical chart review from the US,[84] and a retrospective non-interventional study from Spain.[85] Among patients with mild to moderate psoriasis, high levels of lesion improvement and reduction in symptoms (itch, pain, erythema, and flaking) and very good overall tolerability were demonstrated. Of note, patients with more severe disease also showed significant improvement after treatment with Cal/BD aerosol foam. Adherence levels at 4 weeks were 82% to 93%. Most patients (85% to 95%) were satisfied to extremely satisfied with Cal/BD aerosol foam and its ability to produce visible improvement within the first few days of starting treatment. Ratings by healthcare providers for symptom control, overall efficacy and the emotional status of patients were also very high (75% to 100%).

In a real-world study of the effectiveness of Cal/BD aerosol foam in three patients with a long history of scalp psoriasis, Cal/BD aerosol foam relieved itching in the first few days and was associated with visible improvement of flaky patches on the scalp at the end of the 4-week treatment period.[86] View almost complete clearance achieved on the scalp of one of the patients here.[86]

## Cost-effectiveness

A Swedish study evaluated the cost-effectiveness of Cal/BD aerosol foam versus Cal/BD ointment over a 12-weeks.[87] The superior efficacy of Cal/BD aerosol foam over Cal/BD ointment led to fewer consultations, and a decreased risk of progressing to phototherapy/methotrexate. Although the medication cost of the foam was higher than that of the ointment, this was offset by lower costs for phototherapy/methotrexate or consultation visits. An Italian study showed a similar cost-effectiveness benefit when comparing Cal/BD aerosol foam to Cal/BD gel over 3 years.[88] Finally, a US study demonstrated that the introduction of Cal/BD aerosol foam would be expected to reduce yearly costs of treatment for moderate-to-severe psoriasis treatable with biologics by $US36,112,572 for a US healthcare plan with 1 million members.[89]

## Combined with biologics

Topical therapies are used adjunctively in patients receiving biologic therapy, as many patients do not experience full disease clearance with biologics alone.[90] Adjunctive therapy with Cal/BD aerosol foam was associated with an improvement of every measure of disease activity in patients with psoriasis vulgaris and inadequate response to biologics, an effect that was maintained over 16 weeks.[91] The majority of patients achieved treat-to-target goals. In addition, QoL was improved, with high treatment satisfaction, and adjunctive Cal/BD aerosol foam was safe and well-tolerated.

## Tolerability

Cal/BD aerosol foam is well tolerated, with an adverse event profile comparable to Cal/BD ointment or gel when used as recommended.[74-77] The most common adverse events are nasopharyngitis and application-site pain; most adverse events are mild.[67,92] Furthermore, Cal/BD aerosol foam is devoid of changes in calcium homeostasis and hypothalamic-pituitary-adrenal axis.[92]

## Dosage and how to use

Cal/BD aerosol foam is an alcohol-free foam formulation of the two drugs in a pressurised spray; this permits application across large areas.[93]

Cal/BD aerosol foam should be applied to the affected area once daily for four weeks.[1] The appropriate amount to use depends on the extent of the patient's plaque psoriasis BSA coverage.[94] As an example, in moderate plaque psoriasis affecting a BSA of 5%, prescribe 2 x 60 g cans (120g) to last for 4 weeks.[94] The total BSA treated should not exceed 30%.[1]

The patient should shake the can a few seconds before use then apply Cal/BD aerosol foam by spraying, holding the can at least 3 cm from the skin in any orientation except horizontally.[1] Cal/BD aerosol foam should be sprayed directly onto each affected skin area and rubbed in gently.[1] The hands should be washed after using Cal/BD aerosol foam (unless used to treat the hands) to avoid accidentally spreading to other parts of the body.[1] Cal/BD aerosol foam should not be applied on the face, genitals, or in skin folds.[1] The foam preparation has a warning about flammability.[1]

## Follow-up and when to refer

A follow-up appointment is recommended four to six weeks after treatment is initiated for adults.[44]

Topical therapy should be discontinued when the skin feels smooth even though still looking pink-red. Ongoing treatment with a vitamin D analogue or simple emollient is a logical follow on.

Emphasise appropriate durations for the use of topical corticosteroids and that patients should leave at least four weeks between courses of topical corticosteroids on the same area of skin; severe adverse effects are more likely when patients continue treatment beyond recommended timeframes or without appropriate intervals between courses.[95]

If topical therapy fails, other treatments available in secondary care include phototherapy, oral agents (methotrexate, acitretin, cyclosporin) and injectable biologics, and these agents are being increasingly used in patients with joint involvement.[42] Most of these therapies need to be prescribed by a dermatologist.

In an indirect comparison study, Cal/BD aerosol foam demonstrated comparable efficacy to fumaric acid esters and greater efficacy compared to apremilast, methotrexate or acitretin.[96] This may be relevant for psoriasis patients considered for non-biologic systemic treatment, unresponsive to systemic treatments or cannot be treated because of contraindications, previous toxicity or concurrent treatments.

## EXPERT'S CONCLUDING COMMENTS

This is a good review of the topical treatment for psoriasis vulgaris. While there have been dramatic advances with new biological agents in the treatment of severe psoriasis, the majority of psoriasis cases are mild and well controlled with topical therapy.

Topical corticosteroids and corticosteroid/vitamin D analogues combined are the mainstay of therapy. Compounding with salicylic acid for hyperkeratotic psoriasis and with coal tar are less commonly used treatments.

There are differences depending on the body area involved with psoriasis. Care needs to be taken on thin-skinned areas with the amount and length of steroid use. In areas like the scalp, it is very important to remove scale first to allow steroid and steroid/vitamin D analogue combinations to work. This is an example where a salicylic acid mixture used in combination with steroid and vitamin D analogues is very important.

Patient compliance is essential to achieve good treatment results. The new aerosol delivery vehicle for corticosteroid/vitamin D is a significant advance. It does show superior efficacy to other delivery vehicles and patients find it more pleasant to use. It also has the advantage of being able to be used on the body and the scalp.

Overall, these are exciting times with psoriasis and, while not cured, most patients should be easily controlled.

## TAKE-HOME MESSAGES

- Most patients receive topical therapy for psoriasis in primary care.
- Emollients are the cornerstone of psoriasis management, but a step up in treatment is usually required.
- Fixed-dose combinations of a potent topical corticosteroid with a vitamin D analogue are available as first-line therapy. Compared with using the same ingredients as separate agents, fixed-dose combination formulations are easier to apply, can increase efficacy, and sometimes allow for use of lower doses with fewer adverse events. They may also facilitate patient adherence.
- Topical foam vehicles are innovative alternatives to creams and ointments, addressing some of the patient challenges experienced with traditional vehicles.
- Well-designed foam vehicles are easily spread over large areas of the skin and do not leave a greasy or oily film on the skin after application.
- A fixed-dose combination of Cal/BD aerosol foam (Enstilar®) is a simple, once-daily solution specifically designed to treat psoriasis of the body and scalp.
- Cal/BD aerosol foam is rapidly effective, offers faster absorption and greater efficacy compared to Cal/BD ointment and gel formulations, and has been shown to increase patient treatment satisfaction.
- Although moderate-to-severe psoriasis is typically treated with systemic or biological therapies, an effective topical treatment may be a cost-saving alternative or adjunct to systemic therapy or phototherapy.
- Starting topical therapy along with biologic therapy can lead to faster response compared with biologic therapy alone.

**RESOURCES**

DermNet NZ is an excellent resource with instructions on undertaking the PASI: http://www.dermnetnz.org/scaly/pasi.html. Links to a downloadable PASI form and calculator: http://pasi.corti.li/

Psoriasis Epidemiology Screening Tool (PEST): http://www.bad.org.uk/shared/get-file.ashx?id=1655&itemtype=document

Screening tool for psoriatic arthritis: https://www.psoriasis.org/sites/default/files/screening_tool_for_psoriatic_arthritis.pdf

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