CALCINEURIN INHIBITORS

What are the aims of this leaflet?

This leaflet has been written to help you understand more about topical (applied to the skin) calcineurin inhibitors. It tells you what they are, how they work, how they are used to treat skin conditions, and where you can find out more about them.

What are calcineurin inhibitors?

There are two types of topical calcineurin inhibitors called tacrolimus (Protopic 0.03% and 0.1%) and pimecrolimus (Elidel). They are classified as immunomodulating agents; this means that they act on the immune system to reduce skin inflammation. Both tacrolimus and pimecrolimus block a chemical called calcineurin which activates inflammation in the skin causing redness and itching of the skin.

What skin conditions are treated with calcineurin inhibitors?

Tacrolimus ointment and pimecrolimus cream are licensed in the UK for the treatment of atopic eczema in adults, and children over the age of 2. Tacrolimus comes in two strengths, 0.03% (weaker) and 0.1% (stronger); the weaker preparation should be used in children, between the ages of 2 and 16, and the stronger preparation in adults over the age of 16.

These medications can also be prescribed for a number of other inflammatory skin conditions such as psoriasis, seborrheic eczema (seborrheic dermatitis), lichen planus, lichen sclerosis, vitiligo, cutaneous lupus and pityriasis alba but the calcineurin inhibitors are not licensed for these skin diseases.
Will calcineurin inhibitors cure my skin condition?

No, but they will control inflammation and help settle flares. You should expect to see some improvement within one week.

If you have eczema which flares frequently longer-term preventative treatment may be recommended.

How often should I use calcineurin inhibitors?

Application is generally twice daily initially, but you should use calcineurin inhibitors as instructed by your doctor as it may be decided that you need a different regime depending on your circumstances.

If preventative treatment is recommended you should apply the treatment twice weekly to keep the skin clear. However, if the condition flares during this maintenance phase then the treatment should be applied twice daily. Again, once condition comes under control the twice weekly maintenance regime should be restarted. It may be necessary at times to use a steroid cream to bring flares under control, before reverting to using the calcineurin inhibitor for maintenance. The requirement for maintenance treatment should be reviewed at least annually.

Occasionally, calcineurin inhibitors can be used together with moderately strong topical steroids for a short period and then continued alone afterwards. However some dermatologists may prefer to alternate between using the calcineurin inhibitor and topical steroids, switching between them if flares aren’t controlled and/or prevented by the calcineurin inhibitor alone.

What time of day should I apply calcineurin inhibitors?

If you are prescribed tacrolimus ointment or pimecrolimus cream once a day, you should apply it at night; if twice daily, then morning and night. If you suffer from eczema then you should ensure that you use emollients (moisturisers) whilst you are being treated with these medications, just as you would with a steroid cream.

How much topical calcineurin inhibitor should be applied?

In order to determine the amount of treatment to be applied it is recommended that an adult fingertip unit (the length of squeezed-out ointment which reaches from the crease overlying the joint at the end of the index finger to the end of the finger) should be applied to twice the area of a
handprint (adult palm plus fingers). This amount is about 0.5 grams; therefore for an adult arm up to 3 grams may be needed if the whole arm is affected. Your doctor should give an estimate of the amount of treatment required on a daily basis.

**When should I not apply calcineurin inhibitors?**

Calcineurin inhibitors should not be applied if the affected area of your skin is infected, e.g. has sore, weeping or crusted areas as it can cause infection to spread. It is advisable not to use tacrolimus for at least two weeks before and 4 weeks after any vaccinations.

It is recommended that calcineurin inhibitors should not be used if you are pregnant, breastfeeding or have a weakened immune system.

Exposure of the skin to sunlight should be minimised and the use of ultraviolet light treatments or sun beds should be avoided. Inform the prescribing doctor if you have had a previous skin cancer.

**What are the common side effects of calcineurin inhibitors?**

About 50% of patients develop some local skin irritation or a burning and itching sensation when these treatments are started, particularly with tacrolimus. However, these side-effects are usually not a reason to discontinue the treatment since they usually settle within a week. It is important to persevere with treatment during this time. It is also possible to get redness, tingling, a feeling of warmth where the treatment is applied, and occasionally folliculitis (inflamed or infected hair follicles).

There is a small increased risk of developing cold sores (herpes simplex infection) on the treated skin during the first few weeks of treatment.

Calcineurin inhibitors do not cause skin atrophy (thinning or stretch marks) or some of other side-effects associated with using strong topical steroids for a long period, such as fragility of the skin, telangiectasia (dilated blood vessels) or, if used on and around the eyelids, glaucoma (increased pressure within the eye). As a result, they can be particularly useful on the face and neck, particularly if the eczema is very persistent at these sites.

**What is known about the long-term effects of calcineurin inhibitors?**

Although available since 1999 and used by thousands of patients worldwide, at present it is impossible to know what the long-term side effects of using
tacrolimus ointment for many years might be. There is not enough information available to tell if there may be some increased risk of skin cancer or lymphoma. However, in 2009, a study of patients who had been using tacrolimus for 4 years concluded that there was no increased risk of infections or cancers associated with use over this period of time.

**Do calcineurin inhibitors affect fertility or pregnancy?**

It is unknown whether these medications will harm an unborn baby. Tell your dermatologist or your GP if you are pregnant or plan to become pregnant whilst using tacrolimus or pimecrolimus.

**May I drink alcohol while using calcineurin inhibitors?**

Yes, but you may find that your face will become red and flushed.

**Where can I get more information about calcineurin inhibitors?**

http://www.eczema.org/Factsheet_Pimecrolimus_Cream.pdf  
http://www.eczema.org/Factsheet_Tacrolimus_Ointment.pdf  
http://www.eczema.org/elidel_protopic.pdf

For details of source materials used please contact the Clinical Standards Unit (clinicalstandards@bad.org.uk).

This leaflet aims to provide accurate information about the subject and is a consensus of the views held by representatives of the British Association of Dermatologists; its contents, however, may occasionally differ from the advice given to you by your doctor.

_This leaflet has been assessed for readability by the British Association of Dermatologists’ Patient Information Lay Review Panel_

**BRITISH ASSOCIATION OF DERMATOLOGISTS**  
**PATIENT INFORMATION LEAFLET**  
**PRODUCED AUGUST 2012**  
**REVIEW DATE AUGUST 2015**