

PSORIASIS

Good to know for those of you who have psoriasis.





Introduction

This information booklet has been developed for adults who have psoriasis. Our goal is that you will get an overall view of the different aspects of your skin condition.

The booklet was first published in 2006 and was a collaboration between the regional health institutions of Norway. The background for this national collaboration was illuminated in the research article "When it itches the worst" written by Kristine K. Fuskeland and Ida Torunn Bjørk.

This is the newest edition of the information booklet, and the revision was done by the board of NSF's interest group for nurses in dermatology and venereology.

The research methodology is based upon the systematic collection of up-to-date research literature, experienced-based knowledge, and patient experience.

It is important for us that you have access to quality information and that you feel reassured when reading this information booklet. Therefore, we have used quality-controlled information sources. At the back of this booklet, you will find a reference list for each of the themes discussed.

The information booklet has been reviewed by all of the dermatology departments associated with the regional health institutions; Helse Nord, Helse Midt-Norge, Helse Vest and Helse Sør-Øst.

We would like to thank our collaboration partners *Norwegian Association for Dermatology and Venereology* and *The Psoriasis and Eczema Association*.

Sincerely,

The members of the board for the interest group

Kristine Kirkeby Fuskeland
Kristine Bjørkhaug
Svanhild Caroline Martinussen
Bente Ingebrigtsen
Astrid Blikstad



The Norwegian Nurse Organization's interest group for Nurses in Dermatology and Venereology



Table of Contents

Introduction.....	1
Table of Contents	2
1. A Chronic Inflammatory Disease	3
2. Different Types of Psoriasis	4
3. Comorbidities	6
4. Topical therapy.....	7
How to remove scaly and hard skin?	7
Medical bath.....	7
Oil shower.....	8
Anti-flaking/scales treatment with oil / creams / ointments.....	8
Topical treatment with emollients.....	9
Topical treatment with tar	10
Topical treatment with Corticosteroids	10
Side effects of topical corticosteroid use:	10
Topical vitamin D analogs.....	12
5. Phototherapy.....	13
6. Systemic treatment	14
7. Living with psoriasis.....	19
8. Physical activity and nutrition	21
9. Social Security and Welfare.....	22
10. Climate Therapy	23
11. The Psoriasis and Eczema Association (PEF)	24
References.....	25

1. A Chronic Inflammatory Disease

Written by Kristine Kirkeby Fuskeland, Clinical Nurse Educator, Dermatology Clinic, The National Hospital Oslo

2-3% of the population in Norway has psoriasis. Even though the disease is chronic, how active the disease is can vary greatly, so that you can experience long periods without rashes or itchy, scaly patches or other symptoms. Those with psoriasis often experience their first debut of the disease at 15-30 years of age. The disease can strike anyone; it occurs all over the world and is equally common for both genders. Psoriasis has a hereditary component. That means that if you have a close relative with psoriasis, you will have an increased risk of developing the disease.

The cause of the disease is unknown, but both heredity and immunological reactions seem to play a role. It is not possible to see if you have psoriasis based on a blood test, but a dermatologist would be able to make a diagnosis based on how your skin looks. In some cases, the dermatologist will take a skin sample (biopsy) in order to reach a diagnosis.

Psoriasis is not a contagious disease. Today we know that psoriasis is an autoimmune inflammatory disease, which can affect the entire body. An autoimmune disease means that the body's own immune system attacks healthy cells and tissue. The immune system is significantly involved in the disease process, even though rashes and skin problems are usually the primary symptoms.

The name of the disease comes from the Greek word psora-, which means itch. Itchiness can be bothersome if you have psoriasis, but not everyone experiences this. The skin rash can be red and flaky. Thick plaques can occur but also crack formations and sores. This happens because the epidermis' cells grow abnormally fast. Skin cells renew themselves constantly. Normally, this process takes 3-4 weeks, but in the areas of skin with psoriasis "the cells run wild" and renew themselves in only 3-4 days. When the cells divide so quickly, there will be an increased irritation and blood flow to the area of skin. This appears as angry red patches on the skin.

The rash can occur anywhere on the body. Often it appears on the arms and legs, especially the elbows and knees. Other areas that can be affected are the scalp, hands, nails, feet and face. Psoriasis in the scalp does not affect hair growth and will not cause hair loss.

Types of psoriasis

Scalp psoriasis



Psoriasis vulgaris or chronic plaque psoriasis:



Psoriasis in the armpit:



Nail psoriasis:



2. Different Types of Psoriasis

Written by Kristine Kirkeby Fuskeland, Clinical Nurse Educator, Dermatology Clinic, The National Hospital Oslo

Psoriasis vulgaris is the most common form of psoriasis. The rash flakes and has a deep red color. The scaly formation varies in thickness with a silvery color. Psoriasis vulgaris is divided into two groups: “speckled” guttate psoriasis and “large spotted” plaque psoriasis. The first outbreak usually exhibits as a small spotted rash and develops into larger plaques or spots. Plaques are well defined and evenly rounded but can occasionally have irregular edges. The plaques can vary greatly in size and thickness. Speckled psoriasis is known as guttate psoriasis, and the plaques and spots are usually under 1 cm in diameter. Guttate psoriasis can arise as a result of infections, especially a sore throat. This is most common in childhood and adolescence.

Palmoplantar psoriasis means that you have rash or plaques on your hands and feet. “Palma” means palms and “planta” means soles of feet. In these areas, red, dry and thickened areas of skin can develop which can easily develop deep painful cracks, fissures and sores.

Psoriatic arthritis is a type of arthritis that people with psoriasis can develop. The disease is characterized by inflammation in joints and surrounding tissue. Joint pain is often felt in fingers, toes and the lower back. Many with psoriasis experience joint pain without receiving a diagnosis for their arthritis. This is the reason that the percentage of those who have this varies. This diagnosis is reached based on the symptoms you have. Blood tests can differentiate between psoriatic arthritis and other forms of arthritis.

Nail psoriasis changes the appearance of the nails. 50% of those who have plaque psoriasis also have changes in the nails. This can present as small pits on the nail plates. The whole nail bed can also become inflamed causing the nail plate to loosen and possibly fall off. This is painful and can often cause practical problems in daily life.

Intertriginous psoriasis is psoriasis in skin folds as in and around genitals, under the breasts and in the groin. In these places, there can easily be fungal infections because the skin is sore and damp.

With erythrodermic psoriasis, skin over most of the body is red, scaly and flaky. This is a rare form of psoriasis. This type of psoriasis often occurs in older patients and is a serious condition.

Pustular psoriasis develops small blisters in the skin in addition to skin plaques. This is caused by accumulation of white blood cells that the immune system pushes up to the surface of the skin. These pustules are

Types of psoriasis

Palmoplantar psoriasis:



Guttate psoriasis:



Pustular psoriasis:





sterile and not contagious. This rash can spread over large areas of the body and is called generalized pustular psoriasis.

3. Comorbidities

Written by Kristine Kirkeby Fuskeland, Clinical Nurse Educator, Dermatology Clinic, The National Hospital Oslo

The inflammatory reaction in the body that occurs with psoriasis leads to an increased risk of developing metabolic syndrome and calcification of the arteries (arteriosclerosis). Metabolic syndrome is an increased tendency for being overweight, having increased levels of triglycerides and cholesterol in the blood stream, having increased resistance to insulin (a danger to develop diabetes) and high blood pressure. This results in deposits in the blood vessels. Therefore, you with psoriasis have an increased risk of developing cardiovascular diseases. Luckily, this can be largely prevented through a healthy diet and physical activity.

Research shows that psoriasis can be connected to other autoimmune diseases. There is also an increased prevalence of infections (including eye infections) and cancers associated with people with psoriasis.

Having psoriasis can negatively affect quality of life. Therefore, an increased occurrence of depression is seen in both adults and children with psoriasis. Many also describe feeling tired or being exhausted (fatigue). The reason for fatigue is complex and can be caused by both the inflammatory reaction in the body, medication, sleep problems and the mental strain of itchiness and other symptoms of psoriasis.

Are there things that can worsen the disease?

- Often a rash can occur in areas of skin with scarring or which have been injured. Cuts, surgical procedures, burn injuries, tattoos, friction, sunburn or repetitive itching can cause rashes. This is called Koebnerization.
- Psoriasis can often debut for the first time after an infection during the teenage years. When you have an infection again later in life, psoriasis can break out. Streptococcal throat infections are especially connected to psoriasis outbreaks. With HIV infection psoriasis outbreaks can be more severe.
- Hormonal causes can also play a role. In women, psoriasis outbreaks often occur in connection with puberty and menopause.
- Sunlight — Most improve with sunlight while 5-10% get worse, especially women with light sensitive skin.
- Some medications can aggravate psoriasis's prevalence and severity. Beta blockers, lithium and some anti-malaria medicines are examples of such medications.
- Psychological factors — Many patients believe that stress, both negative and positive, aggravates psoriasis symptoms. However, this is not unequivocally confirmed in research literature.
- Obesity/ an excess of weight — Inflammatory cells are stored in adipose tissue.
- There is a higher occurrence of psoriasis among people that smoke. There appears to be a connection between smoking habits and the risk of developing the disease. There is also apparently a connection between smoking and the severity of psoriasis.





4. Topical therapy

Written by Bente Ingebrigtsen, Registered Nurse, Dermatology clinic, Ålesund Hospital, Helse More og Romsdal; Kristine Bjørkhaug, Registered Nurse, Dermatology clinic, Haukeland Hospital

Topical therapy for psoriasis focuses on reducing the symptoms which occur during a psoriasis outbreak.

There are many different remedies to treat psoriasis. Meanwhile, it is important to understand that not all patients with psoriasis can use the same types of treatment methods. The dermatologist will recommend a treatment plan based on the type of psoriasis, its location, prevalence and severity. It is important to inform the doctor of what has worked for you, — and what hasn't worked, so that the doctor can give you individually adjusted follow-up.

How to remove scaly and hard skin?

Pretreatment is important. Many with psoriasis can have develop abundant scaly and hard skin. In order for topical treatments to penetrate the affected skin and have the best effect possible, scaly, hard skin needs to be softened and thinned. Now, we will review the different methods that can be used.

Medical bath

A bath can dissolve the scaly skin of psoriasis plaques. It is important to avoid rubbing or scrubbing the scales that still stuck to the skin after the bath. Then you risk making irritations and small sores in the skin which can cause an aggravation of the rash (Koebnerization, see chapter 3).

A bath can have a soothing effect, both physically and psychologically. If you in addition have joint pains, a bath in the morning can help loosen joints. If you are troubled by itchiness, a bath in the evening can be soothing in order to have a good night's sleep. Remember that the temperature of the bath water mustn't be too warm.

Don't stay in the bath for too long. A bath should last 10-20 minutes, depending on what type of medical bath you take. After the bath, you should carefully "pat dry" the skin with a towel.

Type of medical bath	Dead Sea salt	Sea salt	Bath oil	Sodium carbonate	Potassium permanganate
Amount	1,5 kg	4,5 dl	15-30 ml	75-150 ml	150-300 ml
Effect	Soothing Softening Dissolves scales	Soothing Softening	Softening	Softening Dissolves scales	Disinfecting Drying Antipruritic
Bath time	20 min	10-15 min	10-20 min	10-20 min	10-15 min
Note	Can be used before or after phototherapy	Can be combined with phototherapy	Can be used as a shower	Dissolves scales and flaking	As needed for an antibacterial effect



Oil shower

If you don't have a bathtub, a warm shower often can give the same good effect on stiff joints and dry, flakey skin. Use shampoo as normal, rinse well, turn off the shower and apply a neutral shower or bath oil all over the body. Rinse again in shower and then pat dry.

Anti-flaking/scales treatment with oil / creams / ointments

Anti-flaking treatments for the scalp:

- ✓ Start by one ear and part your hair with a comb in ½ - 1 cm increments. Apply salicylic oil systematically to the scalp. If you have a lot of flakes and scales in your scalp, it is recommended to use salicylic oil 10%.
- ✓ Your hair should be covered with a shower cap.
- ✓ Salicylic oil should be left to work for 4-5 hours before it is washed out. For a better result, you should apply it to the scalp in the evening and let the oil work through the night before washing it out. If you have an abundant amount of flakes and scales, you can allow a few day to pass before washing out.
- ✓ The hair oil is washed out with liquid "green soap" (made of fat and potassium hydroxide) before using shampoo. Useful tip: Use "green soap" in dry hair — it will be easier to wash out.
- ✓ The treatment can be repeated until you no longer have a flaky, scaly scalp.
- ✓ You can use cream with propylene glycol, or Salicylic oil 2%, 5% or 10%. Ask at the pharmacy.

Anti-flaking/scales treatments for the body:

- ✓ Take a shower or bath.
- ✓ Apply the ointment or cream to areas of skin with scaly plaques. The type of cream with which strength depends on the amount of scaling/flaking.
- ✓ Ointment/cream is applied in the morning and evening or as recommended by the doctor.
- ✓ You should continue the treatment until both scaling and flaking are gone.
- ✓ Allow the ointment or cream to work for 4-6 hours or overnight. You could possibly cover the areas with plastic wrap.
- ✓ The ointment/cream is removed with a normal shower, or even with shower oil.
- ✓ With widespread psoriasis that covers large areas of the body, a weakest concentration (2%) of salicylic acid should be possibly used in order to prevent an overdose.
- ✓ You can use salicylic Vaseline (2%, 5%, 10% or 20%), carbamide ointment/cream (10-50%) or cream with propylene glycol or lactic acid. Ask about this is at the pharmacy.



Topical treatment with emollients

Hydration and emollients are an important part of treating psoriasis. Emollients maintain the skin suppleness and prevent drying. Drying out of the skin can lead to itchiness and thus an aggravation of the disease. Therefore, it is important to use emollients also in periods with few symptoms, because this contributes to the prevention of new outbreaks and the need for medical creams and ointments can be reduced.

It is recommended that you use emollients regularly and always after showering or bathing because creams are more readily absorbed by moist skin. Our recommendation is to use emollients both in the morning and at night. If you do not experience sufficient effect, you should either apply emollients more often or use a different type of cream.

Many emollients contain organic compounds that possess water binding properties. Carbamide or urea and glycerol are examples of organic compounds that penetrate the outer layer of skin (stratum corneum) and connect to water molecules. Therefore, these organic compounds help the skin to maintain moisture.

Carbamide or urea can sting sore, sensitive skin. In that case, glycerol is a good alternative. Examples of other organic compounds used in emollients are lactic acid, amino acids, hyaluronic acid, and sodium chloride. All of these substances are found naturally in the skin.

Emollients are not proven to have an increased effect on phototherapy but can have a bearing on the refraction of light on the skin. Therefore, it could be appropriate to use emollients before phototherapy.

Currently, there are no emollients that qualify for a reimbursable prescription (blå resen) for people with the diagnosis psoriasis.

Ointment	Cream	Lotion	Gel
Recommended for hard skin, scabs, scales and dandruff.	Recommend for hard skin, scabs, and dry cracked skin.	Recommend for dry to normal skin and when needed for large areas of skin.	Recommend for hairy skin, skin folds, and dry skin.
Contains oil.	Contains oil and water. Can contain sulphate which can irritate*.	Contains mostly water and some oil.	Does not contain fat.
No preservatives.	Contains preservatives.	Contains preservatives.	Absorbs quickly into the skin.
Does not evaporate and works longer on the skin than cream.	Can evaporate.	Evaporates easier than cream because of the large water content.	Evaporates quickly. Can have a drying effect on the skin.
Softening	Can contain sulphate which can irritate the skin*.	Can contain sulphate which can irritate the skin*.	Can contain alcohol. Can contain menthol and eucalyptus which can have a cooling effect.
Can stain clothing.			
Can be difficult to apply.		Easy to apply.	Easy to apply.

*This is for guidance only. Always inquire at the pharmacy about the product's composition and contents.



Topical treatment with tar

Earlier, it was common to treat psoriasis with tar. Topical tar treatments seem to dampen itchiness and be antipruritic. Tar also can inhibit rapid cell division and are anti-inflammatory. Newer medical treatments that have been developed for psoriasis have led to tar being used less frequently than before.

Alphosyl® is an unregistered medical product that is still in use. Therefore, the doctor must apply for a registration exemption in order for you to use the product (called "registreringsfritak"). Alphosyl® contains tar and is used as a normal shampoo with scalp psoriasis.

Topical treatment with Corticosteroids

Corticosteroids is a type of hormones that are produced in the adrenal glands of all people. Corticosteroids, which are synthetically produced, are called topical corticosteroids.

Topical corticosteroids are divided into groups depending on effect, from weak (group 1) to strong (group 4). Topical corticosteroids have an anti-inflammatory effect and inhibit cell division. The blood vessels in the upper layer of the skin constrict, so that the psoriasis rash becomes less red and inflamed.

Topical corticosteroids come in the form of ointments, creams, lotions, gel or liniments. You should be aware that the medication absorbs more easily in areas of skin that are thin and sensitive (face, armpits, groin and mucous membranes) than in areas like hands and feet. Therefore, group 1-2 is most often used on the face and on thin skin, while group 3-4 is used on the rest of the body.

If you wish to increase the effectiveness, you can achieve this through coverage or occlusion following the application of topical corticosteroids. Hydrocolloid bandages or plastic wrap can be used to achieve occlusion.

Side effects associated with corticosteroid use is rarely a problem if topical corticosteroids are used for periods of time with correct reduction and intervals without corticosteroid use. You must follow carefully the doctor's instructions on how often the topical corticosteroid is to be applied and how long the treatment should last.

Side effects of topical corticosteroid use:

- ✓ Thin skin /skin atrophy
- ✓ Increased hair growth
- ✓ Changes in pigmentation
- ✓ Skin infections that can be masked
- ✓ Long-term use of strong corticosteroids can weaken the body's ability to naturally produce cortisone.

Pregnancy is no reason to advise against treatment with topical corticosteroids when required. The doctor will advise use of weaker corticosteroids and not application of large areas of skin for long periods of time. When breastfeeding, it is highly unlikely that the child will be affected by topical corticosteroid use by the mother, but the breast should not be treated right before breastfeeding.



Children can safely use corticosteroids as prescribed by the doctor. Which strength used depends on what areas of skin will be treated and the age of the child. You should primarily choose weak corticosteroids for the face, group 1 or 2, and stronger corticosteroids for the body, mainly groups 2 or 3.

Overview of corticosteroids groups

Group 1 (weak)	Group 2 (medium strong)	Group 3 (strong)	Group 4 (very strong)
Hydrocortisone: Fucidin-hydrocortisone® (cream)* Mildison® (cream) Terra-Cortil® (ointment)*	Hydrocortisone butyrate: Locoid (cream, ointment, liniment) Locoid Lipid® (cream) Locoid Crelo® (liniment)	Betametasone: Betnovat® (ointment, liniment) Betnovat with chionoform® (cream)* Diprosalic® (ointment, liniment)**	Clobetasol: Clobex® (shampoo) Dermovat® (cream, ointment, liniment)
	Desonide: Apolar® (cream, ointment)	Fluocinolone acetonide: Synalar® (gel, cream, ointment) Synalar with chionoform® (cream)*	
		Fluocinonide: Metosyn® (ointment)	
		Mometasone: Elocon® (cream, ointment, liniment) Mometason Glenmark® (cream) Ovixan® (cream)	
		Fluticasone: Flutivate® (ointment)	

*Antibacterial or antibiotic agent added. **Anti-dandruff agent added.

Procedure:

- ✓ Apply a visible layer directly to the rash or plaque and massage it in. A fingertip unit (a stripe is squeezed out of the tube from the first joint of the finger to the fingertip of an adult) is enough product to apply to an area of the same size as two palms of an adult hand.
- ✓ Emollients are important to use several times a day. Observe that the corticosteroid has been absorbed in the skin before applying emollients.
- ✓ Treatment often is performed 1-2 times a day in the beginning. Then you should follow a reduction plan. If you are not better after 1-2 weeks, you should contact your doctor again.
- ✓ Once an improvement is achieved, the treatment should be reduced by switching to a weaker corticosteroid or to fewer applications. Reduction before the treatment period is over is important in order to inhibit the symptoms from returning quickly.
- ✓ Hands should generally be washed after applying topical corticosteroids. However, if you have symptoms on your hands, you should *not* wash them in order to preserve the effects of the topical corticosteroids.
- ✓ Only in special circumstances should corticosteroids be used on the face. Always be careful applying near and around the eyes! Never use group 3 or 4 on the face unless the doctor has specifically recommended this.
- ✓ During a hospital stay, the treatment will often deviate from this procedure, since this is geared primarily towards treatment at home.



Topical vitamin D analogs

Betametasone combined with Calcipotriene

Product name: Daivobet® og Enstilar®

Available as gel, ointment and foam containing a combination of a Vitamin D like substance (Calcipotriene) and a strong corticosteroid (Betametasone, group 3).

Ointment and foam are used to treat psoriasis vulgaris in adults. Gel is used for topical treatment of scalp psoriasis as well as treatment of mild to moderate psoriasis on the body.

Calcipotriene in combination with Betametasone normalizes skin cells growth and maturation and seems anti-inflammatory and antipruritic.

Application: Applied once a day only on psoriasis plaques. It shouldn't be used on the face or genitals since these areas are very sensitive to corticosteroids. Don't use more than 105 grams a week.

Side effects: Slight skin irritation can arise where the skin has been treated. When the dosage is too high, the calcium levels in the bloodstream can be affected and become too high. Therefore, be careful when using together with calcium supplements or high doses of vitamin D. Otherwise, the side effects are the same as with use of corticosteroids.

Calcipotriene

Product name: Calcipotriol Sandoz®

The Ointment contains Calcipotriene which slows down skin cell production to a normal rate.

Used for mild to moderately severe psoriasis in adults. The ointment is applied with a thin layer on the psoriasis plaques. It shouldn't be used on the face. Wash your hands after application of the ointment (unless the hands are to be treated).

Application: Not more than 100 grams of ointment should be used for one week. This is to avoid the calcium levels in the bloodstream being affected. Therefore, be careful when using together with calcium supplements or high doses of vitamin D.

Side effects: Temporary skin irritation can occur. If contact dermatitis occurs, the treatment should be stopped.

Calcitriol

Product name: Silkis®

Silkis® is an ointment based on the vitamin D substance (Calcitriol) which is used to treat areas with plaque psoriasis. The ointment normalizes skin cell growth and maturation.

Application: The ointment can, but with caution, be applied to the face. Avoid contact with the eyes as well as healthy skin. The ointment should be covered (occlusion).

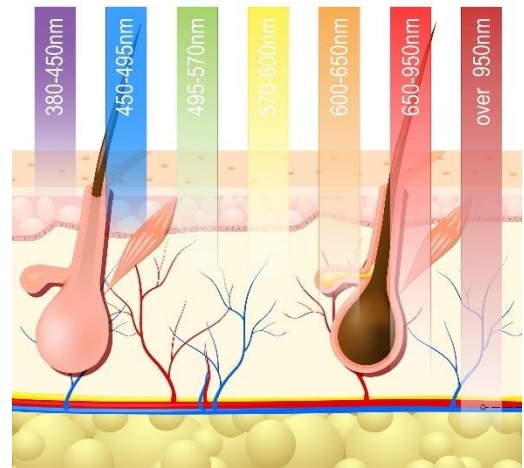
Side effects: Temporary skin irritation can occur. If contact dermatitis occurs, the treatment should be stopped.

Not more than 35% of the body's surface area should be treated daily, and not more than 30 grams of ointment should be used daily. This is to avoid the calcium levels in the bloodstream being affected. Therefore, be careful when using together with calcium supplements or high doses of vitamin D.

5. Phototherapy

Written by Stina Gundersen, Assistant section manager/Registered nurse, Dermatology clinic, The National Hospital Oslo

Phototherapy is a medical treatment prescribed by a doctor. The mechanism of how phototherapy affects the skin is not fully understood, but phototherapy reduces the pro-inflammatory cells in the skin, inhibits cell division and has an immunosuppressive effect. Phototherapy causes increased pigmentation (tanning) and thickening of the stratum corneum. Phototherapy takes place in a light cabinet or with an apparatus that only treats local areas of the body. In a light cabinet, the entire body is treated, but one should wear protective glasses. It is also possible to cover areas of skin.



Ultraviolet light (UV) is found in the rays of the sun. UVA is long-wave light (320-400nm) and UVA1 is long-wave, narrow spectrum light (340-400nm). UVB is short-wave, broad spectrum light (280-320nm) and TL01 is short-wave, narrow spectrum light (311-313nm).

Phototherapy is used as a part of treatment of skin diseases such as psoriasis, eczema, itchiness, vitiligo and some other skin disorders. Phototherapy is carried out at dermatology offices and dermatology departments in hospitals.

The treatment does not hurt, but during or immediately after irradiation, stinging, pricking and burning may occur in the skin. Use emollients if you see redness in the skin. Sunburn can occur. In case of severe redness and burning, contact the treatment center or the emergency room (evenings and weekends). Long-term phototherapy causes minimal risk of developing skin cancer. UVA light over time causes earlier aging of the skin in the form of wrinkles.

Remember to protect yourself for the sun during phototherapy. Use clothing and sunscreen.

Good advice for phototherapy:

Wear lightproof glasses during phototherapy. Stand in the middle of the light cabinet with your legs slightly apart and hold the handrails. The fluorescent lamps are not hot and the door is always unlocked. You should move a little during a prolonged treatment time. This counteracts dizziness.

If you don't need phototherapy treatment on your face, you should cover it during the treatment. If you need phototherapy on your face, you should remove any makeup before treatment. Genitals should be covered unless something else is agreed upon. Earpods and headphones can be used during the treatment.

Please note that a new hairstyle can lead to sunburn in areas that were previously covered with hair. Do not use cream with sun factor prior to treatment. Use of fragrance free emollients are an important part of treating psoriasis. Emollients hinder drying out of the skin and reduces itchiness. You should moisturize your skin following phototherapy treatment as well as in the morning and at night.

If you have thick plaques and flaking, the flakes/scales should be treated to remove them before phototherapy starts. Too much flaking or too thick scales will prevent irradiation from reaching adequately into the skin. See chapter 4 about anti-flaking/scales treatment.

Do not combine solarium use with phototherapy. Solarium is not a medical treatment.

Inform the staff if you start taking any new medications, natural medicines, ointments or creams while receiving phototherapy.

6. Systemic treatment

Written by Svanhild Caroline Martinussen, Registered nurse, Ålesund Dermatology Center

When topical treatment does not achieve the desired effect on your psoriasis, your doctor will often consider if systemic treatment can be appropriate. Largely, you will be offered systemic treatment in the form of tablets, of ready-filled syringe or auto injector, or as an intravenous infusion (directly into the bloodstream).

Always inform your doctor, if you start treatment with the specific medication. Always take a list over medications you use when you see your doctor or are admitted to the hospital.

Alternative medicine is not currently used at the dermatology departments in Norway. If you wish to try alternative medicine, it is recommended that you first discuss this with your dermatologist. This is to clarify if the alternative medicine can affect your medical treatment.



Methotrexate

Product name: Methotrexate®

Methotrexate is used with moderate to severe psoriasis when topical treatment doesn't give an adequate result. It is a well-suited drug if you also have psoriatic arthritis, since it is effective for joint pain. Methotrexate is also used for some other chronic skin diseases.

Effect and properties: Works like a “brake” for cell division of both skin cells and inflammatory cells (white blood cells). Methotrexate's effect comes slowly, usually after 1-2 months. When effective, the treatment can continue for many years.

Methotrexate is administered in tablet form or by injection **once weekly**. Tablets should be taken 1 hour before or after meals.

Side effects: Most don't experience any side effects. Side effects are often caused by impact on the bone marrow, the stomach or the liver. Most side effects are harmless and often temporary. Examples of this are nausea, decreased appetite and diarrhea the day after taking the tablet. More serious side effects are rare, but if you should experience any sign of these, you should contact your doctor immediately. Examples of more serious side effects are difficulty breathing, unexplained cough, rash and itching or bruising and nosebleeds (This can be a sign that the bone marrow isn't functioning properly).

For complete information about this medication, see [the package insert for Methotrexate](#).



Acitretin

Product name: Neotigason®

Acitretin is a medication utilized for patients with severe psoriasis, pustular psoriasis, pustular palmoplantar psoriasis (PPP) and some other skin conditions. Treatment can be long-lasting or given for shorter periods. The treatment is often combined with different types of phototherapy.

Effect and properties: Acitretin is a systemic retinoid and a derivative of vitamin A. This medication is normally utilized for skin diseases which have disturbances in the keratinization of the skin. This medication slows the production of skin cells and normalizes the maturation of these cells. In addition, this medication probably has an immunosuppressive effect.

The dose should be taken once a day with food or a glass of milk. The tablet/capsule should be swallowed whole.

Side effects: Most side effects are harmless, temporary and often occur in the first weeks of treatment. Dry skin, lips and eyes are common side effects for nearly all who take acitretin. This can cause difficulty wearing contact lenses. Hair loss can occur but normalizes once treatment stops. Rarer side effects include muscle-/joint pain, headache, liver affectation, and changes in fat metabolism. These changes usually disappear after reduction of the dosage or stopping the treatment. Some patients become more sensitive to sunlight. Long-term treat can in some cases result in osteoporosis or calcification in the skeleton.

Precautions: Acitretin is teratogenic and can cause very serious birth defects. Women must use reliable birth control prior to treatment, during the entire time of treatment and for 3 years following ended treatment. Therefore, this medication is rarely recommended for women of childbearing age. Men can use acitretin in connection with fertilization. Women of childbearing age must take regular pregnancy tests before, during and following treatment. Do not take acitretin if you are breastfeeding.

Increased sensitivity to sunlight: Avoid too much sunbathing as you will burn more easily and the dryness of your skin will increase.

Good advice: Use a hydrating lip balm several times a day for dry lips. Emollients can help fight dry skin. For dry, itchy eyes, an eye lubricant or artificial tears can help. When outside, use sun lotion with a high sunscreen factor (at least SPF 15).

For complete information about this medication, see [the package insert for Neotigason®](#).

Cyclosporine

Product name: Sandimmun®

Cyclosporine is an immunosuppressive substance formed from a mushroom originally found in a small earth sample from the Hardanger plateau. This medication is used primarily to prevent rejection of organ transplants. It is also effective for several skin diseases and is used for among other things pronounced psoriasis and atopic eczema.



Effects and properties: Cyclosporine is immunosuppressant for a number of skin diseases by dampening the activity of special white blood cells (T cells).

Cyclosporine comes in both capsules and suspension. Capsules should be swallowed whole and can be taken with food. Avoid taking the medication with grapefruit since this affects the absorption of cyclosporine.

Side effects: Most side effects are mild and often dependent on dosage. The most common side effects are nausea, reduced appetite, fatigue, shaking hands, muscular pain, swollen gums and increased hair growth.

During treatment with cyclosporine, the immune system can become somewhat decreased, and this can lead to an increased risk of infection. There is still some question about the risk of developing tumors in patients who have used cyclosporine for a long time. If you have, or have had cancer, you should not have this treatment.

Precautions: Cyclosporine can cause serious side effects if combined with other medications. Always inform your doctor that you are using cyclosporine. If you develop a fever or other flu-like symptoms, see your doctor immediately.

Cyclosporine should usually not be used in pregnancy or when breastfeeding. This is occasionally done in special circumstances under strict conditions and regulations.

Cyclosporine should not be combined with phototherapy. Actively sunbathing should be avoided while taking cyclosporine. It is recommended using sunscreen with SPF 25 or more on areas of skin exposed in the sun.

Some vaccines cannot be given while under cyclosporine treatment. Consult your doctor if you need any vaccines while being treated.

Contact your doctor if you suspect that you are experiencing serious side effects or symptoms of other illnesses, especially infectious disease.

For complete information about this medication, see [the package insert for Sandimmun®](#).

Dimethyl fumarate

Product name: Skilarence®

Dimethyl fumarate (Skilarence®) has been used for psoriasis in European countries for over 30 years and is used for pronounced psoriasis when topical treatment does not give adequate effect. Dimethyl fumarate has some effect on psoriatic arthritis and has few side effects in long-term use.

Effects and properties: Dimethyl fumarate is immunosuppressant and has a regulatory effect on the immune system. The medication affects therefore several factors, which together can lead to the inhibition of psoriasis.

Tablets should be swallowed whole during or immediately after a meal.

Side effects: Side effects can be reduced by taking the tablets with milk.



The most common side effects are flushing (reddening of the skin) and digestive issues like nausea, vomiting or diarrhea. These side effects come following tablet intake and are reversible. Dimethyl fumarate is an immunomodulator and can affect how the immune system reacts to infections. Serious side effects rarely occur.

Precautions: Dimethyl fumarate should not be taken with other systemic treatments for psoriasis.

Dimethyl fumarate should not be used if you have or have had gastrointestinal disorders like inflammatory bowel disease or ulcers. You should also not use this medication if you have or have had liver or kidney disease. Dimethyl fumarate should also not be used when breastfeeding, cancer or disturbances in the white blood cells. Kidney function can be affected. Therefore, dimethyl fumarate should not be used with other medications that can affect kidney function.

Do not use if pregnant or you are under 18 years.

For complete information about this medication, see [the package insert for Skilarence®](#).

Biologics

In recent years, there have come new medications, which fall under the common category “biologics”. Biologics are used to treat moderate to severe psoriasis, and have the aim to inhibit certain steps of the disease process, which leads to psoriasis. There are strict requirements for who can start treatment with biologics, and the dermatologist will complete a comprehensive evaluation of whether you can start with this type of treatment.

Before you can begin treatment with biologics, you must have tried both treatment with tablets and phototherapy without achieving adequate effect. Biologics come in the form of injections or intravenous infusions. Intravenous infusions take place at the hospital.

Prior to treatment: Biologics are immunosuppressive. Therefore, you must take blood tests prior to treatment to make sure you do not have an infection. You must also get a pneumonia vaccine. In addition, it is recommended that you have a flu vaccine every year.

Side effects: All medication has side effects. The most common side effects of biologics are upper respiratory tract infections and reaction at the injection site. Read the package insert for the relevant medication.

Some types of biologics:

[Enbrel®](#) (Etanercept)

[Remicade®](#) (Infliximab)

[Humira®](#) (Adalimumab)

[Stelara®](#) (Ustekinumab)

[Taltz®](#) (Ixekizumab)

[Skyrizi®](#) (Risankizumab)



- ✓ Take medication as recommended by your doctor.
- ✓ Do not lend or borrow medication from others.
- ✓ Consult with your doctor if you wish to stop taking medication for psoriasis.

You can always read about your medication at: www.felleskatalogen.no



7. Living with psoriasis

Written by Marit Eriksen, Psychiatric nurse, Dermatology ward, The National Hospital OUS and Astrid Bikstad, Professional development nurse, Dermatology ward, The National Hospital OUS

Disease control: It is essential to receive the correct treatment so that your skin disease comes under control. Furthermore, it is quite important that you receive good guidance and acquire a solid knowledge of psoriasis treatment, so that you can prevent and treat your skin disease yourself at home. Research shows that good disease control is significant in preventing other disorders like stress, anxiety and depression associated with psoriasis.

- ✓ Follow the prescribed treatment.
- ✓ Take an active role in your own treatment. Ask for help if you cannot perform the treatment alone.
- ✓ Many who have psoriasis find it helpful to belong to a support group. In Norway, you could join The Psoriasis and Eczema Association for example.

Acceptance and motivation: Accept your skin disease as a part of you and your life. Accept yourself as you are. Take a piece of paper and write! Reflect over your life and your wishes, — make yourself short-term and long-term goals.

- ✓ What is important to you?
- ✓ Have you mastered your psoriasis treatment or do you need help?
- ✓ What motivates exactly you? What can motivate you in your treatment of psoriasis at home?

Everyday at home, at school, and at work: Live well with psoriasis!

- ✓ Write a “treatment diary” so that you have an overview of what you have done and what you can do if you have a psoriasis outbreak.
- ✓ Facilitate your home in the most practical way for treatment of psoriasis at home.
- ✓ Make sure that you have all of the recommended skin care products at all time.
- ✓ Establish routines that fit your daily life — also your work.

Sexual health: It is normal that psoriasis can lead to insecurity in regards to self-confidence, body image, relationships and sexual relationships. Many with psoriasis can experience that it is difficult to talk with their partner, friends or healthcare professionals about sex.

Healthcare professionals who help people with skin disorders are well aware that it can be challenging to have psoriasis, also in regard to sexual health. It is important that you know it is normal to seek advice and guidance from healthcare professionals, if you experience that psoriasis affects your sexual health.

Psychological health: For some, having a chronic skin condition can lead to worry, stress and a low mood. Itchiness can be a bothersome symptom of psoriasis, which can affect you psychologically in your daily activities, including disrupting your quality of sleep. If you are bothered by anxiety, depression or suicidal thoughts, it is important to address this with your doctor or healthcare provider that is involved in your treatment of psoriasis.

Be mindful of these signs:

- ✓ Sadness.
- ✓ Restlessness and inner turmoil.
- ✓ Not having the energy to be with friends and family.
- ✓ Loneliness.
- ✓ Suicidal thoughts.
- ✓ Increased use of narcotics.



Resource Pages:

- ✓ Medical emergencies: 113 for immediate help. Psychological health and suicidal thoughts.
- ✓ Mental Helse helpline: 116 123
- ✓ The church's SOS helpline : 22 40 00 40
- ✓ Psoriasis- and eczema Association (PEF): [Lev med psoriasis](https://levmedpsoriasis.no).



8. Physical activity and nutrition

Written by Kristine Kirkeby Fuskeland, Clinical Nurse Educator, Dermatology clinic, The National Hospital Oslo

A healthy lifestyle is important for avoiding “lifestyle diseases”, feeling well and having the possibility of living a rich life. As mentioned in chapter 3, having psoriasis makes it easier to gain weight. Therefore, it can be beneficial to know that obesity is a risk factor associated with psoriasis and can increase the seriousness of the disease. Weight reduction can consequently improve your psoriasis symptoms if you are overweight.

Physical activity reduces general inflammation for all who have inflammatory diseases. Physical activity and a healthy diet are therefore an important part in the treatment of psoriasis, since psoriasis is an inflammatory disease. Quitting smoking and regular exercise as well as a healthy diet prevents problems connected to psoriasis. Good nutritional guidelines can be found on the Norwegian Directorate of Health's website.

According to the Norwegian Directorate of Health's recommendations for nutrition and physical activity, adults should be physically active everyday, at least 30 minutes. Everyday exercise can be, for example, walking to and from work, walking the dog or taking the stairs instead of the elevator.

The gain will be even greater if you, in addition, take part in physical activity that exerts the body more a few times a week. This type of exercise should make you warm and sweaty, out of breath and tired. It could be conditioning like walking quickly, jogging, cycling, cross-country skiing or swimming. Fitness training is positive for the entire body, but has a particularly beneficial impact on the heart. Strength training is recommended in combination with conditioning. This builds muscle and makes them stronger. Strength training can be done without equipment through exercises where you only use your own body weight as resistance. This can be easily done at home.

Physical activity is not just important for improving endurance and muscular strength, it is also vital for maintaining mobility. This is important for everyone, but perhaps especially if you have psoriasis and maybe also joint pain caused by psoriatic arthritis. Physical activity positively affects your humor and your psychological well-being. Consequently, physical activity can contribute to giving you energy for everyday life.

- ✓ Have a varied diet with lots of vegetables, fruit and berries, whole grains and fish. Limit your amounts of processed meats, red meat, salt and sugar.
- ✓ Maintain a good balance between how many calories you eat and drink and how many calories you burn through activity.
- ✓ Eat at least 5 portions of fruits and vegetables.
- ✓ Eat whole grain products everyday.
- ✓ Eat fish for dinner 2-3 times a week. Also use fish, by all means, as a topping on bread.
- ✓ Choose lean meat and other lean products.
- ✓ Include low-fat milk products in your daily diet.
- ✓ Choose cooking oil, liquid or soft margarine instead of hard margarine or butter.
- ✓ Choose foods with little salt and limit the amount of salt used in cooking or on your meals.
- ✓ Avoid food and drink containing a lot of sugar on a daily basis.
- ✓ Choose water for quenching thirst.
- ✓ Be physically active for at least 30 minutes a day.
- ✓ Look for “Keyhole” products when grocery shopping.

There are still no conclusive research that show any specific dietary recommendations that positively affect psoriasis.

9. Social Security and Welfare

Written by Vibeke Klouman Berg, Social Worker, The National Hospital Oslo OUS

In this chapter, you will learn about certain social and welfare schemes. If you are reading this information booklet online, you can click on the link below. If you are reading this on paper, you can go to the website www.nav.no to read about the services that are applicable to you.

Financial support for special circumstances according to The National Insurance Act §5-22.

If you have expenses from emollients, bathing oils and hydrocolloid bandages, financial support can be provided if they are long-term. The application should be sent to www.helfo.no with a reference from your dermatologist over the different products that are necessary for your treatment. Keep your receipts and send them to NAV when your expenses exceed your deductible.

Sick pay

Sick pay is provided to those who are unable to work because of sickness or injury. If you are an employee, an independent entrepreneur or freelancer, you have the right to sick pay and you are a member of the national welfare system.

Work assessment allowance (AAP)

If you are sick for over a year or do not have the right to sick pay, you can have the right to work assessment allowance. AAP will secure income for you when you need help from NAV in order to return to work following illness or injury.

Basic allowances

You can apply for a basic allowance as compensation for extra expenses associated with your skin disease. This can be applied to increased consumption of for example clothing, bedding, shoes and boots due to frequent washing and extra wear. Extra expenses must as a general rule last 2-3 years. Basic allowances can be given if you have extra expenses related to transportation or diet if a special diet is prescribed by a doctor. Expenses must be documented with receipts or be made probable.

Completing applications for NAV

If you need help filling out the application form, contact your local NAV office. Be aware that you have the right to appeal decisions from NAV. This will be stated in the decision you receive.

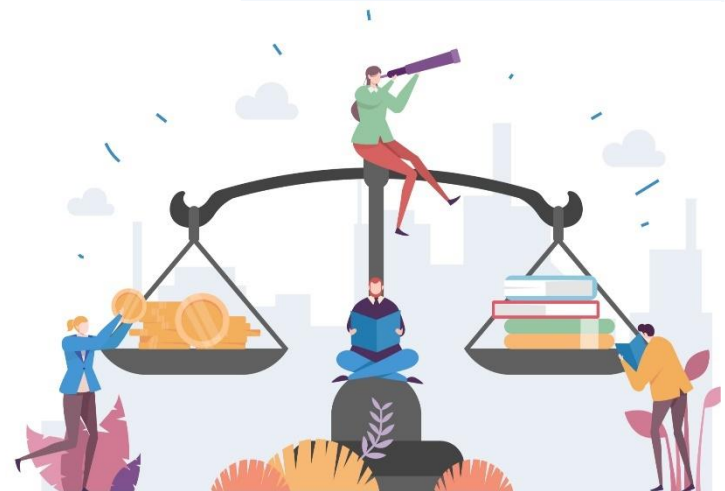
Other social security and welfare schemes:

Travel expenses:

If you travel to and from publicly approved treatment, this is covered as a general rule if the distance to the treatment center is over 10 km. If you need to be accompanied, can transportation for your companion be covered in certain circumstances. The application can be sent in electronically or in paper form.

Patient transport can answer questions :Tlf: 05515.

If you need information or advice about social and welfare services, you should contact your local NAV office.



10. Climate Therapy

Written by Pär-Arne Pajunen, Nursing advisor, Climate Therapy Abroad OUS

The aim of climate therapy is:

1. To improve psoriasis rashes/plaques through exposure to sunlight.
2. To increase knowledge of psoriasis and its comorbidities.
3. To contribute to insight, mastery and a better quality of life.
4. To provide information about healthy diet and physical activity, which can in turn inspire to life changes.

The application form can be found on Oslo University Hospital's website under Climate therapy.

The application form is made up by two parts, the personal application and the doctor's referral. Applicants will be prioritized by the severity of psoriasis they have (thickness, redness, the amount of flaking and the spread of the disease), comorbidities, experience from earlier climate therapy in addition to other supplementary information.

According to the "The regulation of climate therapy abroad", you can apply to have a companion accompany you because of a reduced functional ability. Meanwhile, this is only applicable to very few patients.

Trips for adults are arranged from January to June and September to December. For children and teenagers, there is one trip held in March/April.

Climate therapy takes place currently at the Norwegian Health Center Valle Marina which is located on the southern tip of the Grand Canary Island. This location may change in the future. The climate therapy trip lasts 3 weeks and is made up of sun and bathing in saltwater. During your stay, different physical activities and obligatory instruction is offered. Among other things, quality of life, coping strategies and lifestyle issues will be discussed in small discussion groups.

It is important that you pretreat your plaques/rashes for scaling or flaking so that you can get the biggest benefit of the trip.

According to the National Insurance Act §8-4, you have the right to sick leave in order to participate in the climate therapy trip. You must apply yourself for this. If you would like more information about climate therapy, you can read more about it on Oslo university hospital's website or contact by phone: 90559290 Monday – Friday from 12 – 14

By email: behandlingsreiser@ous-hf.no. Do not write any sensitive information in the email.





11. The Psoriasis and Eczema Association (PEF)

Written by Eldrid Oftestad, Editor and Communications Officer, The Psoriasis and Eczema Association

This organization is for those of you that have psoriasis, atopic eczema, hidradenitis suppurativa (HS), chronic urticaria, and other skin conditions and psoriatic arthritis.

The Psoriasis and Eczema Association has approximately 4000 members, and several local chapters around the country. The county and local chapters provide you with both information classes as well as social activities near where you live. PEF-young is the association's youth organization and has responsibility for work directed towards children and teens. PEF-young was established in 1987 and has four local chapters as well as youth representatives from around the country.

What can the Psoriasis and Eczema Association do for you?

- ✓ Increase knowledge and awareness while creating understanding and acceptance for having a skin disease through relevant information.
- ✓ Ensure that good treatment options are available all over the country.
- ✓ Ensure that climate therapy trips remain permanently available.
- ✓ Contribute to increased research on skin diseases and the development of new and better treatment methods by providing research grants.
- ✓ Ensure and increase the rights of its members, and make demands on the behalf of its members for just systems which provide security for the individual.
- ✓ Contribute to reduce the use of deductibles in healthcare.
- ✓ Ensure the distribution of good information in order to provide knowledge and awareness of all sides to living with a chronic disease to people with skin diseases and psoriatic arthritis.
- ✓ Ensure that the interests and opinions of the members are heard and affect decisions made by different levels of government through user participation.
- ✓ Promote national, Nordic and international cooperation and influence the exchange of information, the promotion of research and the improvement of available treatments across borders.

You can contact the Psoriasis and Eczema Association via telephone 23376240 or via email post@pefnorge.no.

The Psoriasis and Eczema Association is active on social media:

Facebook: @psoraisisogeksemforbundet

Twitter: @PEFNORGE

Instagram: @psoraisisogeksemforbundet

You can also go to the Psoriasis and Eczema Association's websites: hudportalen.no and levmedpsoriasis.no. There you will find courses offered and can network and come in contact with people in a similar situation.



References

Chapter 1. A Chronic Inflammatory Disease

- Feldman, S R. [Psoriasis: Epidemiology, clinical manifestations, and diagnosis](#). [UpToDate]. Januar 2021.
- Feldman, S R. [«Treatment of psoriasis in adults»](#). [UpToDate]. Nov. 2019.

Chapter 2. Different Types of Psoriasis

- Feldman, S R. [Psoriasis: Epidemiology, clinical manifestations, and diagnosis](#). [UpToDate]. Januar 2021.

Chapter 3. Comorbidities

- Korman, N. [«Comorbid disease in psoriasis»](#). [UpToDate]. Sept. 2020.
- Fosnocht, K. M., Ende, J. [«Approach to the adult patient with fatigue»](#). [UpToDate]. Apr. 2020
- Feldman, S R. [«Treatment of psoriasis in adults»](#). [UpToDate]. Nov. 2019.
- Best Practice [Patient information; Psoriasis](#): What is it? [BMJ]. Jan. 2019.
- Skoie, M. et al. [«Fatigue in psoriasis; a controlled study»](#). [BJD]. Jan. 2017.

Chapter 4. Topical Therapy

- Feldman, S R. [«Treatment of psoriasis in adults»](#). [UpToDate]. Nov. 2019.
- Langeland, T. [Koebnerfenomen](#). [SNL]. Des. 2018.
- Oslo Universitetssykehus. [Badeblandinger](#). [OUS]. Okt. 2020.
- Verdolini, R. et al. [Old fashioned sodium bicarbonate baths for the treatment of psoriasis in the era of futuristic biologics: An old ally to be rescued](#). [JDT]. Jul. 2009.
- Norsk Helseinformatikk. [Kaliumpermanganatbad](#). [NHI]. Okt. 2020.
- Norsk Helseinformatikk. [Skiellfjerning](#). [NHI]. Jan. 2018.
- Halevy, S., Giryes, H., Sukenik, S. [Dead sea bath salt for the treatment of psoriasis vulgaris: a double-blind controlled study](#). [JEADV]. Jul. 2006.
- Felleskatalogen. [Dermatologiske midler: bløtgjørende og beskyttende midler](#).
- Goldstein, BG, Goldstein A.O. [Topical corticosteroids: Use and adverse effects](#). [UpToDate]. Aug. 2019.

Chapter 5. Phototherapy

- Gundersen, Stina. [Lysbehandling: UVA, UVB og TL01 – pasientinformasjon](#). [OUS]. Apr. 2020.
- Gundersen, Stina. [Lysbehandling: UVA1 – pasientinformasjon](#). [OUS]. Apr. 2020.
- Gundersen, Stina. [Lysbehandling: Generelle råd](#). [OUS]. Apr. 2020.

Chapter 6. Systemic treatment

- Feldman, S R. [«Treatment of psoriasis in adults»](#). [UpToDate]. Nov. 2019



Chapter 7. Living with Psoriasis

Kelly A, Ryan C. Genital Psoriasis: [Impact on Quality of Life and Treatment](#) Options. American Journal of Clinical Dermatology. 2019;20.

Parrish L. Psoriasis: [Symptoms, treatments and its impact on quality of life](#). British journal of community nursing. 2012;17:524-8.

Dalgard FJ, Gieler U, Tomas-aragones L, Lien L, Poot F, Jemec G, et al. [The Psychological Burden of Skin Diseases: A Cross-Sectional Multicenter Study Among Dermatological Out-Patients in 13 European Countries](#). Journal of Investigative Dermatology. 2014.

Dowlatsahi E, Wakkee M, Arends L, Nijsten T. [The Prevalence and Odds of Depressive Symptoms and Clinical Depression in Psoriasis Patients: A Systematic Review and Meta-Analysis](#). The Journal of investigative dermatology. 2013;134.

Dalgard, FJ., Svensson, Å., Halvorsen, JA., Finlay, A. et al. [Itch and Mental Health in Dermatological Patients Across Europe: A multi-centre study in 13 countries](#). J Invest Dermatol. 2020 Mar;140(3):568-573.

Chapter 8. Physical Activity and Nutrition

Feldman, S R. [«Treatment of psoriasis in adults»](#). [UpToDate]. Nov. 2019

Norman, K. [Comorbid disease in psoriasis](#). [UpToDate]. Dec. 2019.

Helsedirektoratet. [Råd om kosthold ved ulike diagnoser og sykdomstilstander: kosthold ved hjerte- og karsykdom](#).

Wilson, P.B., Bohjanen, K.A., Ingraham, S.J., Leon, A.S. (2012) *Journal of the European Academy of Dermatology and Venereology* 1;1-9: Psoriasis and physical activity: A review.

Chapter 9. Social Security and Welfare

HelseNorge. [Pasientreiser](#). [Norsk Helsenett]. Nov. 2020.

Chapter 10. Climate Therapy

Oslo Universitetssykehus. [Behandlingsreiser](#). [OUS]. Nov. 2020.

Chapter 11. The Psoriasis and Eczema Association PEF).

Psoriasis- og eksemforbundet. Om organisasjonen: [Psoriasis- og eksemforbundet](#). [PEF]. Nov. 2020.

Psoriasis- og eksemforbundet. [Kontakt oss](#). [PEF]. Nov. 2020.