

Psoriasis and phototherapy



A positive approach

to psoriasis and

psoriatic arthritis



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What are the aims of this leaflet?

The aim of this leaflet is to explain what phototherapy is, what treatments are available and where these treatments take place.

What is psoriasis?

Psoriasis (sor-i'ah-sis) is a long-term (chronic) scaling disease of the skin, which affects 2%-3% of the UK population. There are several types of psoriasis, although it most commonly appears as red, raised, scaly patches known as plaques. Any part of the skin may be involved but the plaques frequently appear on the elbows, knees and scalp, while the face is usually spared.

Sometimes psoriasis can “flare up”, with extensive small red patches in a distribution sometimes described as ‘paint splash’ or ‘raindrop’.

This is guttate psoriasis.

Psoriasis can also affect the palms of the hands, the soles of the feet and the nails.

It can be itchy but is not usually painful. Nail changes, including pitting and ridging, are present

in 40% to 50% of people with psoriasis.

Around 30% of people with psoriasis will develop psoriatic arthritis. There does not seem to be any link between the severity of the psoriasis affecting the skin and the severity of psoriatic arthritis.



What happens in psoriasis?

It is thought that psoriasis is caused by an oversensitive skin immune system mistakenly regarding normal skin cells as ‘foreign’ and setting up very localised patches of inflammation, which lead to the symptoms of psoriasis. This process is not fully understood, for example it is not known why psoriasis plaques appear in one place but not on the adjacent skin. For more detailed information on psoriasis, see our leaflet ***What is Psoriasis?***

Normally a skin cell matures in 21-28 days. In patches of psoriasis, the turnover of skin cells is much faster, around 4-7 days. This means that these cells do not undergo the

normal changes in their structure, which results in a build-up of large skin flakes, causing the raised plaques of psoriasis.

The extent of psoriasis and how it affects an individual varies from person to person. Some may be mildly affected, with small patches hidden away which do not bother them, while others may have large, visible areas of skin involved which significantly affect daily life and relationships.

Psoriasis is not contagious, therefore you cannot catch it from another person.

What are ultraviolet (UV) rays?

Sunlight contains a wide range of wavelengths; more than just visible light. Long wavelengths, invisible to our eyes, are called infrared and we feel these as heat from the sun. Shorter wavelengths are also invisible to us and these are called ultraviolet (UV). They can cause suntan and sunburn, and also carry the risk of skin cancer to some individuals after high- and long-term exposure.

Ultraviolet B (UVB) is the short wavelength range of UV light that only penetrates the superficial layers of the skin. It is the main cause of sunburn. We are all at risk of sunburn, but those of us with very fair (type I) skin are most at risk.

Ultraviolet A (UVA) is the longer wavelength range of UV and forms the greater part of the sun's UV content. It causes tanning more than sunburn. It penetrates the skin deeper than UVB and can also penetrate window glass, including car windows.

What is ultraviolet phototherapy?

Ultraviolet light therapy, also known as ultraviolet (UV) phototherapy, is the use of ultraviolet light to treat certain skin conditions. When used to treat psoriasis, either UVA or UVB light can be used.

How is phototherapy used to treat psoriasis?

Phototherapy cannot cure psoriasis; in some cases it will completely clear the skin, in others improve but not eliminate the plaques. Phototherapy is a second-line treatment, used in dermatology departments when first-line topical treatments (creams, lotions, ointments) have failed

to deal with severe or widespread plaques or particularly troublesome flare-ups.

Both UVB and UVA can be used to treat psoriasis. UVB is used on its own, but UVA requires that the skin be sensitised by a plant-derived chemical called psoralen before it is effective. The treatment combining **P**soralen and **U**VA is termed PUVA.

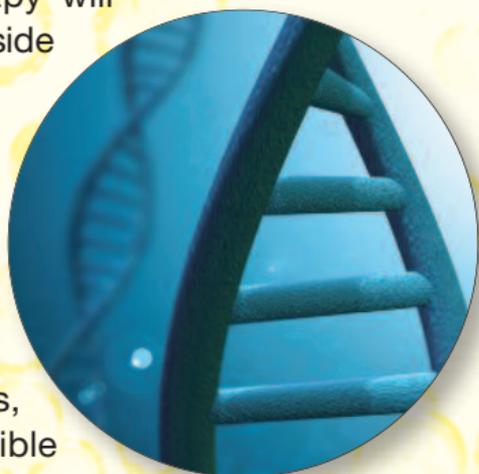
Both forms of phototherapy are given as a course of treatment over many weeks, where the time of exposure to the UV is gradually increased to prevent burning the skin and to allow the skin to acclimatise to the treatment. After a course of phototherapy the treatment is stopped; in some cases improvements last for more than a year, while in other cases the psoriasis may start to recur after a few months or even weeks. Further courses of treatment may be given. It is not possible to predict how individuals will respond or how long their response will last after the phototherapy course ends. Psoriasis is the skin condition that responds best to phototherapy and in most phototherapy units 60-70% of the people attending are being treated for psoriasis.

How does phototherapy work?

The exact cause of psoriasis is not fully understood and the effects of UV on the skin are complicated, so a precise explanation of how phototherapy works is not possible. PUVA and UVB phototherapy may also work in slightly different ways. However, a simplified description of the mechanisms of phototherapy will help to explain some of its side effects and restrictions.

Taking a simplified model of psoriasis as an example, the too-sensitive skin immune system causes localised patches of inflammation and the overproduction of skin cells, in turn causing the visible plaques.

Phototherapy stops the overproduction of skin cells by either damaging their DNA (UVB phototherapy) or by preventing the cells from dividing by 'locking' the DNA (PUVA phototherapy). It also suppresses the skin immune system to stop the 'psoriasis process'. The twin processes



of interfering with DNA and suppressing the immune system in the skin can also cause skin cancer, so phototherapy can increase cancer risk. Therefore, to safely benefit from UV phototherapy it is best administered under professional medical supervision.

Phototherapy is administered in hospital-based phototherapy units, usually within a dermatology department but sometimes in a physiotherapy department.

To treat the whole body, a phototherapy cabin is used. This consists of a stand-in cabinet with 6-foot (1.8m) fluorescent tubes all around. These tubes give out the UV needed for phototherapy. Some people dislike the rather claustrophobic feeling of being inside the cabinet, but most get used to it and a simple push on the cabin door is sufficient to open the cabin and stop the treatment. It is necessary to stand in the cabin for 5-15 minutes, although longer treatments can be split into several shorter exposure times. Fans are built into the cabinet for ventilation and temperature control. Smaller UV units are used for treating small areas of the skin, such as the hands or feet.

During treatment, goggles must be worn to protect the eyes and most people also wear a clear UV-blocking visor to protect the skin of the face (which usually has no psoriasis plaques present). Men must wear genital protection.

UVB phototherapy

Narrowband UVB (TL01) generates a narrow range of UVB wavelengths that have been shown to be the most effective at clearing psoriasis, with almost no other redundant wavelengths present.

UVB is the first-line phototherapy treatment, since, for the type of psoriasis for which it is suitable, it can be as effective as PUVA but has fewer immediate side effects and is very much safer in the long term. It is entirely safe in pregnancy and during breastfeeding and is the preferred phototherapy for children. UVB does not penetrate the skin as deeply as the UVA in PUVA phototherapy, so it is used to treat psoriasis plaques that are not too thick or white.

How is UVB phototherapy administered?

There is no nationally agreed way to give a course of UVB phototherapy and different centres may use slightly different treatment plans. However, it is usually given three

times a week for 6-8 weeks or until the psoriasis has cleared to an acceptable amount.

Many centres will check the sensitivity of the person's skin prior to a course of UVB phototherapy by applying a range of 6-10 different doses of UVB to small (1cm) areas of normally unexposed skin. The next day, some of these areas will have developed a redness (like sunburn), while others will be unaffected. The lowest dose to produce just perceptible redness is known as the minimal erythema dose (MED). This process checks for any unusual sensitivity to UVB and determines the UVB exposure dose (time in the cabin) for the first treatment. From this short exposure on the first visit, subsequent visits will feature increasing amounts of UVB. This allows the skin to become used to the UVB, in a similar way that one may gradually increase time in the sun on holiday to avoid immediate sunburn.

Other centres may start phototherapy based on how each individual recalls their skin reacting to sun exposure. This allows the person receiving treatment to be assigned a phototype. The phototype ranges from type I, pale-skinned individuals who burn easily and do not tan, through type IV, darker-skinned individuals who rarely burn and tan easily and darkly, to type VI, black skin. Some centres use tabulated dose increase schedules, designed to increase the dose as quickly as possible, taking no account of the UV sensitivity of the individual. All of these methods result in effective treatment of psoriasis. UVB can be used as a single treatment or in combination with other topical or systemic medications as recommended by a doctor or healthcare professional.

What are the side effects of UVB treatment?

The most common immediate side effect of UVB phototherapy is a mild sunburn reaction. This may be more likely if the person being treated has been using other medications or herbal supplements which can cause sensitivity to light. It is, therefore, important, before starting any course of



any treatment, to inform the healthcare professional or doctor of any products being taken. This sunburn reaction is usually not serious and the phototherapist will adjust the dose of the next treatment or postpone treatments until the redness has settled. Some people report itchiness in the early stages of treatment, but this should soon settle.

The long-term effects of phototherapy (both UVB and PUVA) include increased ageing (photoageing) of the skin and an increased risk of certain skin cancers. In the 30+ years of the medical use of narrowband UVB phototherapy, increased skin cancer has not been reported. UVB causes very little photoageing. Nevertheless, if someone has had 500 or more UVB treatments it is recommended that the risks and benefits of further UVB are re-evaluated and their skin checked for signs of skin cancer.

PUVA phototherapy

PUVA stands for Psoralen and UVA. Psoralen makes the skin more sensitive to light and enables UVA to help many skin conditions, especially psoriasis. PUVA is the second-line phototherapy and is used when UVB is not suitable. In PUVA therapy the psoralen is taken as tablets, or applied directly to the skin as a gel or by soaking in a bath solution. The skin is then exposed to UVA.

Tablet PUVA requires taking psoralen tablets 2-2½ hours before exposure to UVA. It is important to take the tablets with a light meal, in a consistent manner. Tablet PUVA can be most effective at treating the thickest plaque psoriasis.

Most PUVA is administered as bath PUVA, where the individual soaks in a warm bath containing psoralen for 10-15 minutes before exposure to UVA. This sensitises the skin directly, so there are no side effects of feeling sick or need to protect the eyes, unlike with tablet PUVA. The sensitisation of the skin is, however, stronger with bath rather than tablet PUVA, so less time in the phototherapy cabin is needed.

How is PUVA treatment administered?

Like UVB treatment, PUVA is administered in hospital phototherapy or physiotherapy units. As with UVB phototherapy, there are different methods for deciding on a starting dose of UVA and how to increase the dose to a

therapeutically effective level. Some centres measure the sensitivity of the individual's skin to PUVA by applying test doses to small areas of skin, in a similar way to the MED test described previously. Because PUVA involves sensitising the skin before UV exposure, the sensitivity test is called the minimal photosensitivity dose (MPD) test. Other centres may use phototype-based treatment schedules or a table of doses.

Treatment times for bath PUVA are shorter than for tablet PUVA and may range from less than a minute up to 5-8 minutes, depending on the output of the PUVA cabin and the dose scheme used. Tablet PUVA times may extend to 15 minutes or more. If any session produces a sunburn reaction, or if any other symptoms are reported, the subsequent doses may be altered.

Bath PUVA phototherapy is usually given twice a week or three times every fortnight, whereas tablet PUVA is usually given twice a week for 15-25 treatment sessions or until the psoriasis has cleared to an acceptable amount.

Psoriasis usually clears after 15-25 treatments, which take 7-12 weeks when following a twice-a-week schedule or 10-16 weeks for a three-times-a-fortnight schedule. It is not possible to predict how long the improvement achieved by a course of phototherapy will last. For some people, remission of longer than a year is possible, for others their psoriasis remains clear for some months before beginning to return.

What are the side effects of PUVA?

The phototherapist will carefully explain all of the possible side effects of phototherapy before a course begins. The most common immediate side effect of PUVA phototherapy is a mild sunburn reaction. This may be more likely if the individual has been using other medications or herbal supplements which can cause sensitivity to light, so it is important to tell the phototherapist of anything being taken. This sunburn reaction is usually not serious, and the phototherapist will adjust the dose of the next treatment or postpone treatments until the redness has settled. Some people report some itchiness in the early stages of treatment, but this should soon settle. People on tablet PUVA may feel a little sick after taking the tablets. This may be only a mild inconvenience but if it is intolerable, an

alternative tablet is available and may help. Taking the tablets will sensitise the eyes to UVA and exposure to the sun may increase the risk of cataract formation, so eyes must be protected from sunlight or other sources of UVA for 12 hours or until night-time. After taking the tablets, patients should wear sunglasses or other UV protective eyewear, or avoid exposure to sunlight altogether.

The long-term effects of phototherapy (both UVB and PUVA) include increased ageing (photoageing) of the skin and an increased risk of certain skin cancers. PUVA is more risky than UVB, and a long-term follow-up study of PUVA has identified that the risk of skin cancer increases with treatments. PUVA is also more damaging to the structure of the skin and causes more skin 'sun damage'. If a patient has had 200 PUVA treatments in his/her lifetime then it is recommended that their skin is carefully checked for skin cancer, and the risks of further PUVA are fully considered before further treatments are recommended. For men, there is an extra risk of skin cancer of the genital skin. For this reason it is very important to protect the genitals from PUVA exposure. Although UVB has not had a similar long-term study, it is assumed that the risk to genital skin from UVB exposure is similar to PUVA, so similar precautions should be taken.



Recommendations for people undergoing UVB or PUVA phototherapy

- Courses of phototherapy are much more effective if administered without interruption. So, attend every appointment and avoid arranging a holiday during a phototherapy programme.
- Phototherapy dosing schedules aim to apply the maximum amount of UV that the skin can tolerate, in order to maximise the therapeutic effect. So it is important that all other exposure to UV is avoided. This means absolutely never using sunbeds while on phototherapy and avoiding sunbathing or other sun exposure. People having PUVA will have extra

photosensitisation of their skin immediately and for some hours after each session, so should be especially careful about exposing their skin on the day of treatment.

- Please inform your phototherapist nurse if you have been started on any new medication, as some medicines make you more sensitive to UV light.
- Dry, itchy skin can be treated by creams such as aqueous cream or emollients; these are available on prescription and over the counter. It is advisable not to use bubble baths as these can dry out the skin. Instead, add prescribed bath oils or emollient to the bath water and soak the body for 10-15 minutes.
- Women of childbearing age should not become pregnant while having PUVA, but previous use of PUVA does not affect subsequent pregnancies.
- Do not wear deodorants, perfume or aftershave during treatment. Some of them contain chemicals which sensitise the skin to UV light and may result in a sunburn reaction.

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Further references used in the production of PAPAA information can be found at: www.papaa.org/resources/references.

About this information

This material was produced by PAPAA. Please be aware that research and the development of treatments is ongoing.

For the latest information or any amendments to this material, please contact us or visit our website: www.papaa.org. The site contains information on treatments and includes patient experiences and case histories.

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A lay and peer review panel has provided key feedback on this leaflet. The panel includes people with or affected by psoriasis and/or psoriatic arthritis.

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The charity for people with psoriasis and psoriatic arthritis

PAPAA is independently funded and is a principal source of information and educational material for people with psoriasis and psoriatic arthritis in the UK.

PAPAA supports both patients and professionals by providing material that can be trusted (evidence-based), which has been approved and contains no bias or agendas.

PAPAA provides positive advice that enables people to be involved, as they move through their healthcare journey, in an informed way which is appropriate for their needs and any changing circumstances.

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