Questions & Answers about . . .

Psoriasis

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institutes of Health
Public Health Service • U.S. Department of Health and Human Services

For Your Information

This publication contains information about medications used to treat the health condition discussed in this booklet. When this booklet was printed, we included the most up-to-date (accurate) information available. Occasionally, new information on medication is released.

For updates and for any questions about any medications you are taking, please contact the U.S. Food and Drug Administration at 1–888–INFO–FDA (1–888–463–6332, a toll-free call) or visit their Web site at www.fda.gov.

Additional copies of this booklet are available from

National Institute of Arthritis and Musculoskeletal and Skin Diseases
NIAMS/National Institutes of Health
1 AMS Circle
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You can also find this booklet on the NIAMS Web site at www.niams.nih.gov/hi/topics/psoriasis/psoriasis.htm.

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This booklet contains general information about psoriasis. It describes what psoriasis is, what causes it, and what the treatment options are. If you have further questions after reading this booklet, you may wish to discuss them with your doctor.

What Is Psoriasis?

Psoriasis is a chronic (long-lasting) skin disease of scaling and inflammation that affects 2 to 2.6 percent of the United States population, or between 5.8 and 7.5 million people. Although the disease occurs in all age groups, it primarily affects adults. It appears about equally in males and females.

Psoriasis occurs when skin cells quickly rise from their origin below the surface of the skin and pile up on the surface before they have a chance to mature. Usually this movement (also called turnover) takes about a month, but in psoriasis it may occur in only a few days.

In its typical form, psoriasis results in patches of thick, red (inflamed) skin covered with silvery scales. These patches, which are sometimes referred to as plaques, usually itch or feel sore. They most often occur on the elbows, knees, other parts of the legs, scalp, lower back, face, palms, and soles of the feet, but they can occur on skin anywhere on the body. The disease may also affect the fingernails, the toenails, and the soft tissues of the genitals and inside the mouth. While it is not unusual for the skin around affected joints to crack, approximately 1 million people with psoriasis experience joint inflammation that produces symptoms of arthritis. This condition is called psoriatic arthritis.

How Does Psoriasis Affect Quality of Life?

Individuals with psoriasis may experience significant physical discomfort and some disability. Itching and pain can interfere with basic functions, such as self-care, walking, and sleep. Plaques on hands and feet can prevent individuals from working at certain occupations, playing some sports, and caring for family members or a home. The frequency of medical care is costly and can interfere with an employment or school schedule. People with moderate to severe psoriasis may feel self-conscious about their appearance and have a poor self-image that stems from fear of public rejection and psychosexual concerns. Psychological distress can lead to significant depression and social isolation.

What Causes Psoriasis?

Psoriasis is a skin disorder driven by the immune system, especially involving a type of white blood cell called a T cell. Normally, T cells help protect the body against infection and disease. In the case of psoriasis, T cells are put into action by mistake and become so active that they trigger other immune responses, which lead to inflammation and to rapid turnover of skin cells.

In about one-third of the cases, there is a family history of psoriasis. Researchers have studied a large number of families affected by psoriasis and identified genes linked to the disease. (Genes govern every bodily function and determine the inherited traits passed from parent to child.)

People with psoriasis may notice that there are times when their skin worsens, then improves. Conditions that may cause flareups include infections, stress, and changes in climate that dry the skin. Also, certain medicines, including lithium and betablockers, which are prescribed for high blood pressure, may trigger an outbreak or worsen the disease.

How Is Psoriasis Diagnosed?

Occasionally, doctors may find it difficult to diagnose psoriasis, because it often looks like other skin diseases. It may be necessary to confirm a diagnosis by examining a small skin sample under a microscope.

There are several forms of psoriasis. Some of these include:

- **Plaque psoriasis**—Skin lesions are red at the base and covered by silvery scales.
- **Guttate psoriasis**—Small, drop-shaped lesions appear on the trunk, limbs, and scalp. Guttate psoriasis is most often triggered by upper respiratory infections (for example, a sore throat caused by streptococcal bacteria).
- **Pustular psoriasis**—Blisters of noninfectious pus appear on the skin. Attacks of pustular psoriasis may be triggered by medications, infections, stress, or exposure to certain chemicals.

- **Inverse psoriasis**—Smooth, red patches occur in the folds of the skin near the genitals, under the breasts, or in the armpits. The symptoms may be worsened by friction and sweating.

- **Erythrodermic psoriasis**—Widespread reddening and scaling of the skin may be a reaction to severe sunburn or to taking corticosteroids (cortisone) or other medications. It can also be caused by a prolonged period of increased activity of psoriasis that is poorly controlled.

- **Psoriatic arthritis**—Joint inflammation that produces symptoms of arthritis in patients who have or will develop psoriasis.

How is Psoriasis Treated?

Doctors generally treat psoriasis in steps based on the severity of the disease, size of the areas involved, type of psoriasis, and the patient's response to initial treatments. This is sometimes called the "1-2-3" approach. In step 1, medicines are applied to the skin (topical treatment). Step 2 uses light treatments (phototherapy). Step 3 involves taking medicines by mouth or injection that treat the whole immune system (called systemic therapy).

Over time, affected skin can become resistant to treatment, especially when topical corticosteroids are used. Also, a treatment that works very well in one person may have little effect in another. Thus, doctors often use a trial-and-error approach to find a treatment that works, and they may switch treatments periodically (for example, every 12 to 24 months) if a treatment does not work or if adverse reactions occur.

Topical Treatment

Treatments applied directly to the skin may improve its condition. Doctors find that some patients respond well to ointment or cream forms of corticosteroids, vitamin D_3, retinoids, coal tar, or anthralin. Bath solutions and moisturizers may be soothing, but they are seldom strong enough to improve the condition of the skin. Therefore, they usually are combined with stronger remedies.

- **Corticosteroids**—These drugs reduce inflammation and the turnover of skin cells, and they suppress the immune system. Available in different strengths, topical corticosteroids (cortisone) are usually applied to the skin twice a day. Short-term treatment is often effective in improving, but not completely eliminating, psoriasis. Long-term use or overuse of highly potent (strong) corticosteroids can cause thinning of the skin, internal side effects, and resistance to the treatment's benefits. If less than 10 percent of the skin is involved, some doctors will prescribe a high-potency corticosteroid ointment. High-potency corticosteroids may also be prescribed for plaques that don't improve with other treatment, particularly those on the hands or feet. In situations where the objective of treatment is comfort, medium-potency corticosteroids may be prescribed for the broader skin areas of the torso or limbs. Low-potency preparations are used on delicate skin areas. (Note: Brand names for the different strengths of corticosteroids are too numerous to list in this booklet.)

- **Calcipotriene**—This drug is a synthetic form of vitamin D_3 that can be applied to the skin. Applying calcipotriene ointment (for example, Dovonex*) twice a day controls the speed of turnover of skin cells. Because calcipotriene can irritate the skin, however, it is not recommended for use on the face or genitals. It is sometimes combined with

* Brand names included in this booklet are provided as examples only, and their inclusion does not mean that these products are endorsed by the National Institutes of Health or any other Government agency. Also, if a particular brand name is not mentioned, this does not mean or imply that the product is unsatisfactory.

topical corticosteroids to reduce irritation. Use of more than 100 grams of calcipotriene per week may raise the amount of calcium in the body to unhealthy levels.

- **Retinoid**—Topical retinoids are synthetic forms of vitamin A. The retinoid tazarotene (Tazorac) is available as a gel or cream that is applied to the skin. If used alone, this preparation does not act as quickly as topical corticosteroids, but it does not cause thinning of the skin or other side effects associated with steroids. However, it can irritate the skin, particularly in skin folds and the normal skin surrounding a patch of psoriasis. It is less irritating and sometimes more effective when combined with a corticosteroid. Because of the risk of birth defects, women of childbearing age must take measures to prevent pregnancy when using tazarotene.

- **Coal tar**—Preparations containing coal tar (gels and ointments) may be applied directly to the skin, added (as a liquid) to the bath, or used on the scalp as a shampoo. Coal tar products are available in different strengths, and many are sold over the counter (not requiring a prescription). Coal tar is less effective than corticosteroids and many other treatments and, therefore, is sometimes combined with ultraviolet B (UVB) phototherapy for a better result. The most potent form of coal tar may irritate the skin, is messy, has a strong odor, and may stain the skin or clothing. Thus, it is not popular with many patients.

- **Anthralin**—Anthralin reduces the increase in skin cells and inflammation. Doctors sometimes prescribe a 15- to 30-minute application of anthralin ointment, cream, or paste once each day to treat chronic psoriasis lesions. Afterward, anthralin must be washed off the skin to prevent irritation. This treatment often fails to adequately improve the skin, and it stains skin, bathtub, sink, and clothing brown or purple. In addition, the risk of skin irritation makes anthralin unsuitable for acute or actively inflamed eruptions.

- **Salicylic acid**—This peeling agent, which is available in many forms such as ointments, creams, gels, and shampoos, can be applied to reduce scaling of the skin or scalp. Often, it is more effective when combined with topical corticosteroids, anthralin, or coal tar.

- **Clobetasol propionate**—This is a foam topical medication (Olux), which has been approved for the treatment of scalp and body psoriasis. The foam penetrates the skin very well, is easy to use, and is not as messy as many other topical medications.

- **Bath solutions**—People with psoriasis may find that adding oil when bathing, then applying a moisturizer, soothes their skin. Also, individuals can remove scales and reduce itching by soaking for 15 minutes in water containing a coal tar solution, oiled oatmeal, Epsom salts, or Dead Sea salts.

- **Moisturizers**—When applied regularly over a long period, moisturizers have a soothing effect. Preparations that are thick and greasy usually work best because they seal water in the skin, reducing scaling and itching.

Light Therapy

Natural ultraviolet light from the sun and controlled delivery of artificial ultraviolet light are used in treating psoriasis.

- **Sunlight**—Much of sunlight is composed of bands of different wavelengths of ultraviolet (UV) light. When absorbed into the skin, UV light suppresses the process leading to disease, causing activated T cells in the skin to die. This process reduces inflammation and slows the turnover of skin cells that causes scaling. Daily, short, nonburning exposure to sunlight clears or improves psoriasis in many people. Therefore, exposing affected skin to sunlight is one initial treatment for the disease.

- **Ultraviolet B (UVB) phototherapy**—UVB is light with a short wavelength that is absorbed in the skin's epidermis. An artificial source can be used to treat mild and moderate psoriasis. Some physicians will start treating patients with UVB instead of topical agents. A UVB phototherapy, called broadband UVB, can be used for a few small lesions, to treat widespread psoriasis, or for lesions that resist topical treatment.

This type of phototherapy is normally given in a doctor's office by using a light panel or light box. Some patients use UVB light boxes at home under a doctor's guidance.

A newer type of UVB, called narrowband UVB, emits the part of the ultraviolet light spectrum band that is most helpful for psoriasis. Narrowband UVB treatment is superior to broadband UVB, but it is less effective than PUVA treatment (see next paragraph). It is gaining in popularity because it does help and is more convenient than PUVA. At first, patients may require several treatments of narrowband UVB spaced close together to improve their skin. Once the skin has shown improvement, a maintenance treatment once each week may be all that is necessary. However, narrowband UVB treatment is not without risk. It can cause more severe and longer lasting burns than broadband treatment.

- **Psoralen and ultraviolet A phototherapy (PUVA)**—This treatment combines oral or topical administration of a medicine called psoralen with exposure to ultraviolet A (UVA) light. UVA has a long wavelength that penetrates deeper into the skin than UVB. Psoralen makes the skin more sensitive to this light. PUVA is normally used when more than 10 percent of the skin is affected or when the disease interferes with a person's occupation (for example, when a teacher's face or a salesperson's hands are

involved). Compared with broadband UVB treatment, PUVA treatment taken two to three times a week clears psoriasis more consistently and in fewer treatments. However, it is associated with more short-term side effects, including nausea, headache, fatigue, burning, and itching. Care must be taken to avoid sunlight after ingesting psoralen to avoid severe sunburns, and the eyes must be protected for one to two days with UVA-absorbing glasses. Long-term treatment is associated with an increased risk of squamous-cell and, possibly, melanoma skin cancers. Simultaneous use of drugs that suppress the immune system, such as cyclosporine, have little beneficial effect and increase the risk of cancer.

- **Light therapy combined with other therapies**—Studies have shown that combining ultraviolet light treatment and a retinoid, like acitretin, adds to the effectiveness of UV light for psoriasis. For this reason, if patients are not responding to light therapy, retinoids may be added. UVB phototherapy, for example, may be combined with retinoids and other treatments. One combined therapy program, referred to as the Ingram regime, involves a coal tar bath, UVB phototherapy, and application of an anthralin-salicylic acid paste that is left on the skin for 6 to 24 hours. A similar regime, the Goeckerman treatment, combines coal tar ointment with UVB phototherapy. Also, PUVA can be combined with some oral medications (such as retinoids) to increase its effectiveness.

Systemic Treatment

For more severe forms of psoriasis, doctors sometimes prescribe medicines that are taken internally by pill or injection. This is called systemic treatment.

- **Methotrexate**—Like cyclosporine, methotrexate slows cell turnover by suppressing the immune system. It can be taken by pill or injection. Patients taking methotrexate must be closely monitored because it can cause liver damage and/or decrease the production of oxygen-carrying red blood cells, infection-fighting white blood cells, and clot-enhancing platelets. As a precaution, doctors do not prescribe the drug for people who have had liver disease or anemia (an illness characterized by weakness or tiredness due to a reduction in the number or volume of red blood cells that carry oxygen to the tissues). It is sometimes combined with PUVA or UVB treatments. Methotrexate should not be used by pregnant women, or by women who are planning to get pregnant, because it may cause birth defects.

- **Retinoids**—A retinoid, such as acitretin (Soriatane), is a compound with vitamin A-like properties that may be prescribed for severe cases of psoriasis that do not respond to other therapies. Because this treatment also may cause birth defects, women must protect themselves from pregnancy beginning 1 month before through 3 years after treatment with acitretin. Most patients experience a recurrence of psoriasis after these products are discontinued.

- **Cyclosporine**—Taken orally, cyclosporine acts by suppressing the immune system to slow the rapid turnover of skin cells. It may provide quick relief of symptoms, but the improvement stops when treatment is discontinued. The best candidates for this therapy are those with severe psoriasis who have not responded to, or cannot tolerate, other systemic therapies. Its rapid onset of action is helpful in avoiding hospitalization of patients whose psoriasis is rapidly progressing. Cyclosporine may impair kidney function or cause high blood pressure (hypertension). Therefore, patients must be carefully monitored by a doctor. Also, cyclosporine is not recommended for patients who have a weak immune system or those who have had skin cancers as a result of PUVA treatments in the past. It should not be given with phototherapy.

- **6-Thioguanine**—This drug is nearly as effective as methotrexate and cyclosporine. It has fewer side effects, but there is a greater likelihood of anemia. This drug must also be avoided by pregnant women and by women who are planning to become pregnant, because it may cause birth defects.

- **Hydroxyurea (Hydrea)**—Compared with methotrexate and cyclosporine, hydroxyurea is somewhat less effective. It is sometimes combined with PUVA or UVB treatments. Possible side effects include anemia and a decrease in white blood cells and platelets. Like methotrexate and retinoids, hydroxyurea must be avoided by pregnant women or those who are planning to become pregnant, because it may cause birth defects.

- **Biologic Response Modifiers**—Recently, attention has been given to a group of drugs called biologics, which are made from proteins produced by living cells instead of chemicals. They interfere with specific immune system processes which cause the overproduction of skin cells and inflammation. Some examples are alefacept (Amevive), etanercept (Enbrel), and efalizumab (Raptiva). These drugs are injected (sometimes by the patient). Patients taking these treatments need to be monitored carefully by a doctor. Since these drugs suppress the immune

system response, patients taking these drugs have an increased risk of infection, and the drugs may also interfere with patients' taking vaccines. Also, some of these drugs have been associated with other diseases (like central nervous system disorders, blood diseases, cancer, and lymphoma) although their role in the development of or contribution to these diseases is not yet understood. Some are approved for adults only, and their effects on pregnant or nursing women are not known.

- **Antibiotics**—These medications are not indicated in routine treatment of psoriasis. However, antibiotics may be employed when an infection, such as that caused by the bacteria *Streptococcus,* triggers an outbreak of psoriasis, as in certain cases of guttate psoriasis.

Combination Therapy

There are many approaches for treating psoriasis. Combining various topical, light, and systemic treatments often permits lower doses of each and can result in increased effectiveness. Therefore, doctors are paying more attention to combination therapy.

Psychological Support

Some individuals with moderate to severe psoriasis may benefit from counseling or participation in a support group to reduce self-consciousness about their appearance or relieve psychological distress resulting from fear of social rejection.

What Are Some Promising Areas of Psoriasis Research?

Significant progress has been made in understanding the inheritance of psoriasis. A number of genes involved in psoriasis are already known or suspected. In a multifactor disease (involving genes, environment, and other factors), variations in one or more genes may produce a greater likelihood of getting the disease. Researchers are continuing to study the genetic aspects of psoriasis.

Since discovering that inflammation in psoriasis is triggered by T cells, researchers have been studying new treatments that quiet immune system reactions in the skin. Among these are treatments that block the activity of T cells or block cytokines (proteins that promote inflammation). Several of these drugs are awaiting approval by the U.S. Food and Drug Administration (FDA).

Advances in laser technology are making it possible for doctors to experiment with laser light treatment of localized plaques. A UVB laser was recently tested in a study that was conducted at several medical centers. Although improvements in the skin were noted, this treatment is not without possible side effects. In some patients, the skin became inflamed, blistered, or discolored following treatment.

Where Can People Find More Information About Psoriasis?

- **National Institute of Arthritis and Musculoskeletal and Skin Diseases**
  NIAMS/National Institutes of Health
  1 AMS Circle
  Bethesda, MD 20892-3675
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  TTY: 301-565-2966
  Fax: 301-718-6366
  E-mail: NIAMSInfo@mail.nih.gov
  www.niams.nih.gov

  NIAMS provides information about various forms of skin diseases; arthritis and rheumatic diseases; and bone, muscle, and joint diseases. It distributes patient and professional education materials and also refers people to other sources of information. Additional information and updates can be found on the NIAMS Web site.

- **American Academy of Dermatology**
  P.O. Box 4014
  Shaumburg, IL 60168-4014
  Phone: 847-330-0230 or
  888-462-DERM (3376) (free of charge)
  Fax: 847-330-0050
  www.aad.org

  This national professional association for dermatologists has a Web site (PsoriasisNet) that contains basic information on psoriasis for lay readers. Also included are press releases, answers to frequently asked questions, information updates, and lists of dermatologists.

- **National Psoriasis Foundation**
  6600 SW 92nd Avenue, Suite 300
  Portland, OR 97223-7195
  Phone: 503-244-7404 or
  800-723-9166 (free of charge)
  Fax: 503-245-0626
  E-mail: getinfo@npfusa.org
  www.psoriasis.org

  The National Psoriasis Foundation provides physician referrals and publishes pamphlets and newsletters that include information on support groups, research, and new drugs and other treatments. The foundation also promotes community awareness of psoriasis.

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The mission of the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), a part of the Department of Health and Human Services' National Institutes of Health (NIH), is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases, the training of basic and clinical scientists to carry out this research, and the dissemination of information on research progress in these diseases. The National Institute of Arthritis and Musculoskeletal and Skin Diseases Information Clearinghouse is a public service sponsored by the NIAMS that provides health information and information sources. Additional information can be found on the NIAMS Web site at www.niams.nih.gov.

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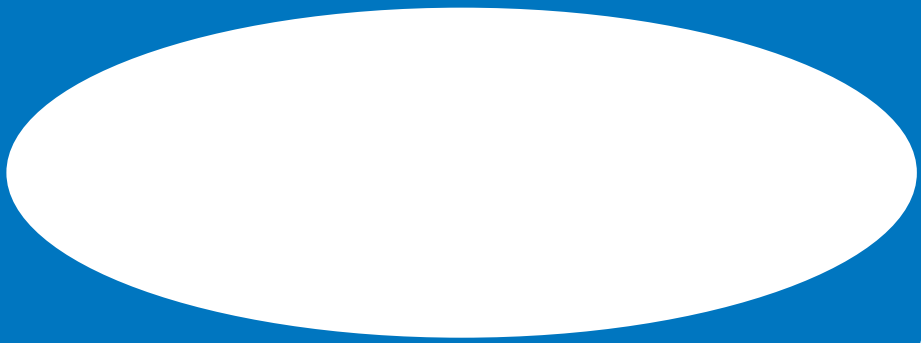

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