

# **SKIN PATHOLOGY**

## **FOR THE HEALTH CARE PROFESSIONAL**

AGD Provider # 321355 Code DM6005

California Dental Provider # 4301, California Course # 06-4301-10007, Category-1

DANB Approval Code 09363-0019-05-08

Florida Dental CE Broker Provider # 50-1997, Florida Board of Massage CE Broker Provider #50-1997

FL. Dental CE Broker Tracking # 20-60295, FL. Massage CE Broker Tracking # 20-122057

Mississippi approved Provider MAP#058, Course Approval #58-005

NCBTMB Approved Provider # 154019-00

Texas Department of State Health Services Approved Provider CE 1342



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**SKIN PATHOLOGY**  
**For the Health Care Professional**

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**Published By:**

**The Institute for Advanced Therapeutics, Inc.**  
**P.O. Box 848152**  
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This course was developed to help expand the knowledge and skills of health care professionals with respect to the subject of skin pathology.

It is the responsibility of the health care professional to determine which principles and theories contained herein are appropriate with respect to his/her personal limitations and scope of practice.

The information in this course has been carefully researched and is generally accepted as factual at the time of publication. The Institute for Advanced Therapeutics, Inc. disclaims responsibility for any contradictory data prior to the publication of the next revision of this course.

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# **COURSE DIRECTIONS**

## **HOW TO BEST PROCEED WITH THIS COURSE**

Each chapter should be approached systematically in a careful and objective manner. It is important to master each chapter before going on to the next. Relax, take your time, and go at your own pace. As 6 credits of continuing education are rewarded after successfully completing this course, the reading of this manual and completion of the test questions should not take less than 6 hours. Only after you have successfully mastered all the material in the course should you proceed to the test questions.

## **COMPLETING THE TEST**

Before beginning, please clearly write your name, address, zip code, and license number on your test answer card. Read each question carefully before answering. Please use a ballpoint pen to fill-in your answers on the answer card by completely shading your choice. Keep in mind that each question has only one correct answer. The test consists of 40 questions. For a passing grade, you must correctly answer 32 questions. We encourage your input and would welcome any suggestions to improve our course or test questions. Please feel free to note your suggestions or comments on the course evaluation found at the bottom of the test answer card.

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# COURSE OBJECTIVES

Upon completion of this course, you will be able to:

1. Discuss the treatment options for acne.
2. Identify the causes and risk factors for developing atopic dermatitis.
3. Describe the symptoms of impetigo.
4. Discuss ways to help prevent melanoma.
5. List ways to help control psoriasis.
6. Identify the signs and symptoms of rosacea.
7. Describe the three patterns of vitiligo.

# ACNE



## DESCRIPTION

Acne is a disorder resulting from the action of hormones on the skin's sebaceous glands, which leads to plugged pores and outbreaks of lesions commonly called pimples or zits. Acne lesions usually occur on the face, neck, back, chest, and shoulders.

Nearly 17 million people in the United States have acne, making it the most common skin disease. Although acne is not a serious health threat, severe acne can lead to disfiguring, permanent scarring, which can be upsetting to people who are affected by the disorder.

Doctors describe acne as a disease of the pilosebaceous units (PSUs). Found over most of the body, PSUs consist of a sebaceous gland connected to a canal, called a follicle, that contains a fine hair. These units are most numerous on the face, upper back, and chest. The sebaceous glands make an oily substance called sebum that normally empties onto the skin surface through the opening of the follicle, commonly called a pore. Cells called keratinocytes line the follicle.

The hair, sebum, and keratinocytes that fill the narrow follicle may produce a plug, which is an early sign of acne. The plug prevents sebum from reaching the surface of the skin through a pore. The mixture of oil and cells allows bacteria that normally live on the skin to grow in the plugged follicles. These bacteria produce chemicals and

enzymes and attract white blood cells that cause inflammation. When the wall of the plugged follicle breaks down, it spills everything into the nearby skin--sebum, shed skin cells, and bacteria--leading to lesions or pimples. Diagnosis is primarily based on the appearance of the skin. No testing is usually required.

Patients with acne frequently have a variety of lesions. The basic acne lesion, called the comedo, is simply an enlarged and plugged hair follicle. If the plugged follicle, or comedo, stays beneath the skin, it is called a closed comedo and produces a white bump called a whitehead. A comedo that reaches the surface of the skin and opens up is called a blackhead because it looks black on the skin's surface. This black discoloration is not due to dirt. Both whiteheads and blackheads may stay in the skin for a long time.

Other troublesome acne lesions can develop, including the following:

- Papules--inflamed lesions that usually appear as small, pink bumps on the skin and can be tender to the touch
- Pustules (pimples)--papules topped by pus-filled lesions that may be red at the base
- Nodules--large, painful, solid lesions that are lodged deep within the skin
- Cysts--deep, painful, pus-filled lesions that can cause scarring.

## RISK FACTORS

The exact cause of acne is unknown, but doctors believe it results from several related factors. One important factor is an increase in hormones called androgens (male sex hormones). These increase in both boys and girls during puberty and cause the sebaceous glands to enlarge and make more sebum.

Hormonal changes related to pregnancy or starting or stopping birth control pills can also cause acne.

Another factor is heredity or genetics. Researchers believe that the tendency to develop acne can be inherited from parents. For example, studies have shown that many adolescent boys with acne have a family history of the disorder. Certain drugs, including androgens and lithium, are known to cause acne. Oily cosmetics may alter the cells of the follicles and make them stick together, producing a plug.

People of all races and ages get acne. It is most common in adolescents and young adults. Nearly 85 percent of people between the ages of 12 and 24 develop the disorder. For most people, acne tends to go away by the time they reach their thirties; however, some people in their forties and fifties continue to have this skin problem.

## TREATMENT

Acne is often treated by dermatologists. These doctors treat all kinds of acne, particularly severe cases. Doctors who are general or family practitioners, pediatricians, or internists may treat patients with milder cases of acne.

The goals of treatment are to heal existing lesions, stop new lesions from forming, prevent scarring, and minimize the psychological stress and embarrassment caused by this disease. Depending on the extent of the person's acne, the doctor will recommend one of several over-the-counter medicines or prescription medicines that are topical or systemic. The doctor may suggest using more than one topical medicine or combining oral and topical medicines.

Doctors usually recommend an over-the-counter or prescription topical medication for people with mild signs of acne. Topical medicine is applied directly to the acne lesions or to the entire area of affected skin. Benzoyl peroxide, resorcinol, salicylic acid, and sulfur are the most common topical over-the-counter medicines used to treat acne. Topical over-the-counter medications are available in many forms, such as gel, lotion, cream, soap, or pad.

Patients with moderate to severe inflammatory acne may be treated with prescription topical or oral medicines, alone or in combination.

Several types of prescription topical medicines are used to treat acne, including antibiotics, benzoyl peroxide, tretinoin, tazarotene, adapalene, and azelaic acid. Like over-the-counter topical medicines, prescription topical medicines come as creams, lotions, solutions, or gels.

People with nodules or cysts should be treated by a dermatologist. For patients with severe inflammatory acne that does not improve with medicines such as those described above, a doctor may prescribe isotretinoin, a retinoid. Isotretinoin is an oral drug that is usually taken once or twice a day with food for 15 to 20 weeks. It markedly reduces the size of the oil glands so that much less oil is produced. As a result, the growth of bacteria is decreased.

Doctors may use other types of procedures in addition to drug therapy to treat patients with acne. For example, the doctor may remove the patient's comedones during office visits. Sometimes the doctor will inject cortisone directly into lesions to help reduce the size and pain of inflamed cysts and nodules.

## PREVENTION

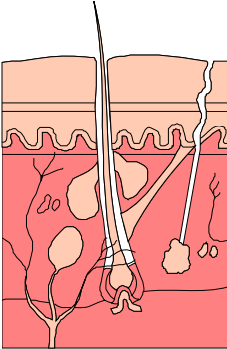
Most doctors recommend that people with acne gently wash their skin with a mild cleanser, once in the morning and once in the evening and after heavy exercise. Some people with acne may try to stop outbreaks and oil production by scrubbing their skin and using strong detergent soaps and rough scrub pads. However, scrubbing will not improve acne; in fact, it can make the problem worse. Patients should ask their doctor or another health professional for advice on the best type of cleanser to use.

Patients who squeeze, pinch, or pick their blemishes risk developing scars or dark blotches. Patients should avoid rubbing and touching their skin lesions.

Acne is a skin condition and is not contagious. However, if patients pick or squeeze an acne lesion with their fingernails and then scratch another area, they can contaminate a non-infected sebaceous duct with bacteria-infected material and cause a new lesion to arise.

Using the general principles of washing both hands and face on a regular basis and not picking at acne lesions will decrease the likelihood of new acne lesions developing.

# ATOPIC DERMATITIS



## DESCRIPTION

Atopic dermatitis is a chronic disease that affects the skin. It is not contagious. It cannot be passed from one person to another. The word "dermatitis" means inflammation of the skin. "Atopic" refers to a group of diseases where there is often an inherited tendency to develop other allergic conditions, such as asthma and hay fever. In atopic dermatitis, the skin becomes extremely itchy. Scratching leads to redness, swelling, cracking, "weeping" clear fluid, and finally, crusting and scaling. In most cases, there are periods of time when the disease is worse (called exacerbations or flares) followed by periods when the skin improves or clears up entirely (called remissions). As some children with atopic dermatitis grow older, their skin disease improves or disappears altogether, although their skin often remains dry and easily irritated. In others, atopic dermatitis continues to be a significant problem in adulthood.

Atopic dermatitis is often referred to as "eczema," which is a general term for the several types of inflammation of the skin. Atopic dermatitis is the most common of the many types of eczema. Several have very similar symptoms.

## RISK FACTORS

Atopic dermatitis is very common. It affects males and females and accounts for 10 to 20 percent of all visits to dermatologists. Although atopic dermatitis may occur at any age, it most often begins in infancy and childhood.

Scientists estimate that 65 percent of patients develop symptoms in the first year of life, and 90 percent develop symptoms before the age of 5. Onset after age 30 is less common and is often due to exposure of the skin to harsh or wet conditions. Atopic dermatitis is a common cause of workplace disability. People who live in cities and in dry climates appear more likely to develop this condition.

Although it is difficult to identify exactly how many people are affected by atopic dermatitis, an estimated 20 percent of infants and young children experience symptoms of the disease. Roughly 60 percent of these infants continue to have one or more symptoms of atopic dermatitis in adulthood. This means that more than 15 million people in the United States have symptoms of the disease.

The cause of atopic dermatitis is not known, but the disease seems to result from a combination of genetic and environmental factors.

## SYMPTOMS

Symptoms of atopic dermatitis vary from person to person. The most common symptoms are dry, itchy skin and rashes on the face, inside the elbows and behind the knees, and on the hands and feet. Itching is the most important symptom of atopic dermatitis. Scratching and rubbing in response to itching irritates the skin, increases inflammation, and actually increases itchiness. Itching is a particular problem during sleep when conscious control of scratching is lost.

The appearance of the skin that is affected by atopic dermatitis depends on the amount of scratching and the presence of secondary skin infections. The skin may be red and scaly, be thick and leathery, contain small raised bumps, or leak fluid and become crusty and infected.

Atopic dermatitis may also affect the skin around the eyes, the eyelids, and the eyebrows and lashes. Scratching and rubbing the eye area can cause the skin to redden and swell. Some people with atopic dermatitis develop an extra fold of skin under their eyes. Patchy loss of eyebrows and eyelashes may also result from scratching or rubbing.

Although a number of people who developed atopic dermatitis as children also experience symptoms as adults, it is also possible for the disease to show up first in adulthood. The pattern in adults is similar to that seen in children; that is, the disease may be widespread or limited to only a few parts of the body. For example, only the hands or feet may be affected and become dry, itchy, red, and cracked. Sleep patterns and work performance may be affected, and long-term use of medications to treat the atopic dermatitis may cause complications.

Adults with atopic dermatitis also have a predisposition toward irritant contact dermatitis, where the skin becomes red and inflamed from contact with detergents, wool, friction from clothing, or other potential irritants. It is more likely to occur in occupations involving frequent hand washing or exposure to chemicals.

## DIAGNOSIS

A medical history may help the doctor better understand the nature of a patient's symptoms, when they occur, and their possible causes. The doctor may ask about family history of allergic disease; whether the patient also has diseases such as hay fever or asthma; and about exposure to irritants, sleep disturbances, any foods that seem to be related to skin flares, previous treatments for skin-related symptoms, and use of steroids or other medications.

A preliminary diagnosis of atopic dermatitis can be made if the patient has three or more features from each of two categories: major features and minor features. Some of these features are listed below:

### Major and Minor Features of Atopic Dermatitis

#### Major Features

- Intense itching
- Characteristic rash in locations typical of the disease
- Chronic or repeatedly occurring symptoms
- Personal or family history of atopic disorders (eczema, hay fever, asthma)

## Minor Features

- Early age of onset
- Dry skin that may also have patchy scales or rough bumps
- High levels of immunoglobulin E (IgE), an antibody, in the blood
- Numerous skin creases on the palms
- Hand or foot involvement
- Inflammation around the lips
- Nipple eczema
- Susceptibility to skin infection

When people with atopic dermatitis come into contact with an irritant or allergen they are sensitive to, inflammation-producing cells become active. These cells release chemicals that cause itching and redness. As the person responds by scratching and rubbing the skin, further damage occurs.

## Common Irritants

- Wool or synthetic fibers
- Soaps and detergents
- Some perfumes and cosmetics
- Substances such as chlorine, mineral oil, or solvents
- Dust or sand

## TREATMENT

The doctor has two main goals in treating atopic dermatitis: healing the skin and preventing flares. These may be assisted by developing skin care routines and avoiding substances that lead to skin irritation and trigger the immune system and the itch-scratch cycle.

New medications known as immuno-modulators have been developed that help control inflammation and reduce immune system reactions when applied to the skin. Examples of these medications are tacrolimus ointment and pimecrolimus cream. They can be used in patients older than 2 years of age and have few side effects (burning or itching the first few days of application). They not only reduce flares, but also maintain skin texture and reduce the need for long-term use of corticosteroids.

Corticosteroid creams and ointments have been used for many years to treat atopic dermatitis and other autoimmune diseases affecting the skin. Sometimes over-the-counter preparations are used, but in many cases the doctor will prescribe a stronger corticosteroid cream or ointment.

Antibiotics to treat skin infections may be applied directly to the skin in an ointment, but are usually more effective when taken by mouth. If viral or fungal infections are present, the doctor may also prescribe specific medications to treat those infections.

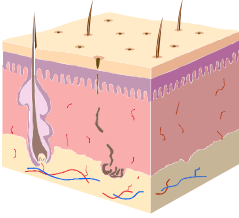
Certain antihistamines that cause drowsiness can reduce nighttime scratching and allow more restful sleep when taken at bedtime. This effect can be particularly helpful for patients whose nighttime scratching makes the disease worse.

In adults, drugs that suppress the immune system, such as cyclosporine, methotrexate, or azathioprine, may be prescribed to treat severe cases of atopic dermatitis that have failed to respond to other forms of therapy.

### Ways to Control Atopic Dermatitis

- Prevent scratching or rubbing whenever possible.
- Protect skin from excessive moisture, irritants, and rough clothing.
- Maintain a cool, stable temperature and consistent humidity levels.
- Limit exposure to dust, cigarette smoke, pollens, and animal dander.
- Recognize and limit emotional stress.

# IMPETIGO



## DESCRIPTION

Impetigo is an infection of the top layers of the skin and is most common among children ages 2 to 6 years. It usually starts when the bacteria get into a cut, scratch, or insect bite. Impetigo is usually caused by staphylococcus (“staph”), a different bacterium, but can be caused by group A streptococcus. Skin infections are usually caused by different types of strep bacteria than those that cause strep throat. Therefore, the types of “strep” bacteria that cause impetigo are usually different from those that cause strep throat.

## SYMPTOMS

Symptoms start with red or pimple-like lesions surrounded by reddened skin. These lesions can be anywhere on your body, but mostly on your face, arms, and legs. Lesions fill with pus, then break open after a few days and form a thick crust.

Itching is common. Your health care provider can diagnose the infection by looking at the skin lesions.

## HOW IMPETIGO IS SPREAD

The infection is spread by direct contact with wounds or sores or nasal discharge from an infected person. Scratching may spread the lesions.

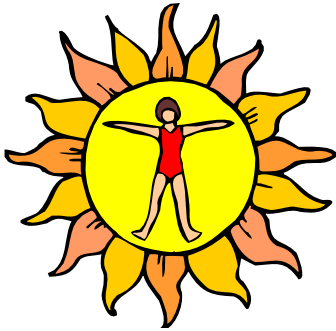
From the time of infection until you show symptoms is usually 1 to 3 days.

Dried streptococci in the air are not infectious to skin with no breaks.

## TREATMENT

Your health care provider will prescribe oral antibiotics, as with “strep” throat. This treatment may also include an antibiotic ointment to be used on the skin.

# MELANOMA



## DESCRIPTION

Melanoma is a type of skin cancer. It begins in cells in the skin called melanocytes. To understand melanoma, it is helpful to know about the skin and about melanocytes—what they do, how they grow, and what happens when they become cancerous.

Melanoma occurs when pigment cells called melanocytes become malignant. Most pigment cells are in the skin. When melanoma starts in the skin, the disease is called cutaneous melanoma.

Melanoma may also occur in the eye (ocular melanoma or intraocular melanoma). Rarely, melanoma may arise in the meninges, the digestive tract, lymph nodes, or other areas where melanocytes are found. Melanomas that begin in areas other than the skin are not discussed in this course.

Melanoma is one of the most common cancers. The chance of developing it increases with age, but this disease affects people of all ages. It can occur on any skin surface.

In men, melanoma is often found on the trunk (the area between the shoulders and the hips) or the head and neck. In women, it often develops on the lower legs.

Melanoma is rare in African-Americans and others with dark skin. When it does develop in dark-skinned people, it tends to occur under the fingernails or toenails, or on the palms or soles.

When melanoma spreads, cancer cells may show up in nearby lymph nodes. Groups of lymph nodes are found throughout the body. Lymph nodes trap bacteria, cancer cells, or other harmful substances that may be in the lymphatic system. If the cancer has reached the lymph nodes, it may mean that cancer cells have spread to other parts of the body such as the liver, lungs, or brain. In such cases, the cancer cells in the new tumor are still melanoma cells, and the disease is called metastatic melanoma, not liver, lung, or brain cancer.

Studies have found the following risk factors for melanoma:

- ◆ Dysplastic nevi – Dysplastic nevi are more likely than ordinary moles to become cancerous. Dysplastic nevi are common and many people have a few of these abnormal moles. The risk of melanoma is greatest for people who have a large number of dysplastic nevi. The risk is especially high for people with a family history of both dysplastic nevi and melanoma.
- ◆ More than 50 ordinary moles – Having many moles increases the risk of developing melanoma.
- ◆ Fair skin – Melanoma occurs more frequently in people who have fair skin that burns or freckles easily. These people also typically have red or blond hair and blue eyes. Caucasians get melanoma far more often than do dark-skinned people, probably because light skin is more easily damaged by the sun.
- ◆ Personal history of melanoma or skin cancer – People who have been treated for melanoma have a high risk of a second melanoma. Some people develop more than two melanomas. People who had one or more of the common skin cancers (basal cell carcinoma or squamous cell carcinoma) are at increased risk of melanoma.

- ◆ Family history of melanoma – Melanoma sometimes runs in families. Having two or more close relatives who have had this disease is a risk factor. About 10 percent of all patients with melanoma have a family member with the disease. When melanoma runs in the family, all family members should be checked regularly by a physician.
- ◆ Weakened immune system - People whose immune system is weakened by certain cancers, by drugs given following organ transplantation or by HIV are at increased risk of developing melanoma.
- ◆ Severe blistering sunburns – People who have had at least one severe blistering sunburn as a child or teenager are at increased risk of melanoma. Because of this, physicians advise that parents protect children’s skin from the sun. Such protection may reduce the risk of melanoma later in life. Sunburns in adulthood are also a risk factor for melanoma.
- ◆ Ultraviolet radiation (UV radiation) – Experts believe that much of the worldwide increase in melanoma is related to an increase in the amount of time people spend in the sun. This disease is also more common in people who live in areas that get large amounts of UV radiation from the sun. UV radiation from the sun causes premature aging of the skin and skin damage that can lead to melanoma. Artificial sources of UV radiation, such as sunlamps and tanning booths also cause skin damage and increase the risk of melanoma. Physicians advice people to limit their exposure to natural UV radiation and to avoid artificial sources to reduce their risk of melanoma.

## SYMPTOMS

Frequently, the first sign of melanoma is a change in the size, shape, color, or feel of an existing mole on the body. Most melanomas have a black or blue-black area. Melanoma also may appear as a new mole. It may be black, abnormal, or “ugly looking.”

If you have a question or concern about something on your skin, see your physician. Do not try to diagnose it yourself.

Thinking of “ABCD” can help you remember what to watch for:

- ◆ Asymmetry – The shape of one half does not match the other.
- ◆ Border – The edges are often ragged, notched, blurred, or irregular in outline. The pigment may spread into the surrounding skin.
- ◆ Color – The color is uneven. Shades of black, brown, and tan may be present. Areas of white, grey, red, pink, or blue also may be seen.
- ◆ Diameter – There is a change in size, usually an increase. Melanomas are typically larger than the eraser of a pencil (1/4 inch or 5 millimeters).

Melanomas can vary greatly in how they look. Many show all of the ABCD features. However, some may show changes or abnormalities in only one or two of the ABCD features.

Melanomas in an early stage may be found when an existing mole changes slightly, for example, when a new black area forms. Newly formed fine scales and itching in a mole also are common symptoms of early melanoma.

In more advanced melanoma, the texture of the mole may change. For example, it may become hard or lumpy. Melanomas may feel

different from regular moles. More advanced tumors may itch, ooze, or bleed. But melanomas usually do not cause pain.

Melanoma can be cured if it is diagnosed and treated when the tumor is thin and has not deeply invaded the skin. However, if a melanoma is not removed at its early stages, cancer cells may grow downward from the skin surface and invade healthy tissue. When a melanoma becomes thick and deep, the disease often spreads to other parts of the body and is difficult to control.

People who have had melanoma have a high risk of developing a new melanoma. People at risk for any reason should check their skin regularly and have regular skin exams by a health care provider.

## DIAGNOSIS

If the physician suspects that a lesion on the skin could be a melanoma, the patient will need to have a biopsy. A biopsy is the only way to make a definite diagnosis.

## TREATMENT

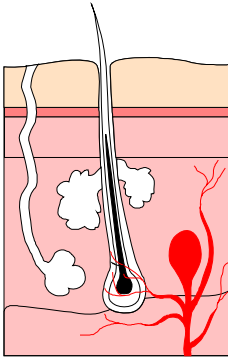
People with melanoma may have:

1. Surgery.
2. Chemotherapy.
3. Biological therapy.
4. Radiation therapy.
5. A combination of the above treatments.

At any stage of disease, people with melanoma may have treatment to control pain and other symptoms of the cancer, to relieve the side effects of therapy, and to ease emotional and practical problems. This kind of treatment is called symptomatic management, supportive care, or palliative care.

The physician is the best person to describe the treatment choices and discuss the expected results. Surgery is the usual treatment for melanoma. The surgeon removes the tumor and some normal tissue around it. This procedure reduces the chance that cancer cells will be left in the area. The width and depth of surrounding skin that needs to be removed depends on the thickness of the melanoma and how deeply it has invaded the skin.

# PSORIASIS



## DESCRIPTION

Psoriasis is a chronic 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.

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:

- ◆ stress
- ◆ infection
- ◆ 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.

## DIAGNOSIS

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.

## TREATMENT

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.

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.

# ROSACEA



## DESCRIPTION

Rosacea is a chronic disease that affects the skin and sometimes the eyes. The disorder is characterized by redness, pimples, and, in advanced stages, thickened skin. Rosacea usually affects the face; other parts of the upper body are only rarely involved.

## RISK FACTORS

Approximately 14 million people in the United States have rosacea. It most often affects adults between the ages of 30 and 60. Rosacea is more common in women (particularly during menopause) than men. Although rosacea can develop in people of any skin color, it tends to occur most frequently and is most apparent in people with fair skin.

## SYMPTOMS

There are several symptoms and conditions associated with rosacea. These include frequent flushing, vascular rosacea, inflammatory rosacea, and several other conditions involving the skin, eyes, and nose.

Frequent flushing of the center of the face--which may include the forehead, nose, cheeks, and chin--occurs in the earliest stage of rosacea. The flushing often is accompanied by a burning sensation, particularly when creams or cosmetics are applied to the face. Sometimes the face is swollen slightly.

A condition called vascular rosacea causes persistent flushing and redness. Blood vessels under the skin of the face may dilate, showing through the skin as small red lines. This is called telangiectasia. The affected skin may be swollen slightly and feel warm.

A condition called inflammatory rosacea causes persistent redness, papules, and pustules on the skin. Eye inflammation and sensitivity as well as telangiectasia also may occur.

In the most advanced stage of rosacea, the skin becomes a deep shade of red and inflammation of the eye is more apparent. Numerous telangiectases are often present, and nodules in the skin may become painful.

A condition called rhinophyma also may develop in some men; it is rare in women. Rhinophyma is characterized by an enlarged, bulbous, and red nose resulting from enlargement of the sebaceous (oil-producing) glands beneath the surface of the skin on the nose.

People who have rosacea also may develop a thickening of the skin on the forehead, chin, cheeks, or other areas.

## RISK FACTORS

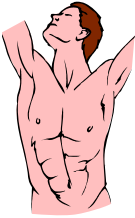
Doctors do not know the exact cause of rosacea but believe that some people may inherit a tendency to develop the disorder. People who blush frequently may be more likely to develop rosacea. Some researchers believe that rosacea is a disorder where blood vessels dilate too easily, resulting in flushing and redness.

Factors that cause rosacea to flare up in one person may have no effect on another person. Although the following factors have not been well-researched, some people claim that one or more of them have aggravated their rosacea: heat, strenuous exercise, sunlight, wind, very cold temperatures, hot or spicy foods and drinks, alcohol consumption, menopause, emotional stress, and long-term use of topical steroids on the face.

Although there is no cure for rosacea, it can be treated and controlled. A dermatologist usually treats rosacea. The goals of treatment are to control the condition and improve the appearance of the patient's skin. It may take several weeks or months of treatment before a person notices an improvement of the skin.

Some doctors will prescribe a topical antibiotic, such as metronidazole, which is applied directly to the affected skin. For people with more severe cases, doctors often prescribe an oral antibiotic. Tetracycline, minocycline, erythromycin, and doxycycline are the most common antibiotics used to treat rosacea. The papules and pustules symptomatic of rosacea may respond quickly to treatment, but the redness and flushing are less likely to improve.

# VITILIGO



## DESCRIPTION

Vitiligo is a pigmentation disorder in which melanocytes in the skin, the mucous membranes, and the retina are destroyed. As a result, white patches of skin appear on different parts of the body. The hair that grows in areas affected by vitiligo usually turns white.

The cause of vitiligo is not known, but doctors and researchers have several different theories. One theory is that people develop antibodies that destroy the melanocytes in their own bodies. Another theory is that melanocytes destroy themselves.

Finally, some people have reported that a single event such as sunburn or emotional distress triggered vitiligo, however, these events have not been scientifically proven to cause vitiligo.

## RISK FACTORS

About 1 to 2 percent of the world's population, or 40 to 50 million people, have vitiligo. In the United States, 2 to 5 million people have the disorder. Ninety-five percent of people who have vitiligo develop it before their 40th birthday. The disorder affects all races and both sexes equally.

Vitiligo seems to be more common in people with certain autoimmune diseases. These autoimmune diseases include hyperthyroidism, adrenocortical insufficiency, alopecia areata, and pernicious anemia. Scientists do not know the reason for the association between vitiligo and these autoimmune diseases. However, most people with vitiligo have no other autoimmune disease.

Vitiligo may also be hereditary, that is, it can run in families. Children whose parents have the disorder are more likely to develop vitiligo. However, most children will not get vitiligo even if a parent has it, and most people with vitiligo do not have a family history of the disorder.

## SYMPTOMS

People who develop vitiligo usually first notice white patches known as depigmentation on their skin. These patches are more common in sun-exposed areas, including the hands, feet, arms, face, and lips. Other common areas for white patches to appear are the armpits and groin and around the mouth, eyes, nostrils, navel, and genitals.

Vitiligo generally appears in one of three patterns.

- ◆ focal
- ◆ segmental
- ◆ generalized

In one pattern (focal pattern), the depigmentation is limited to one or only a few areas. Some people develop depigmented patches on only one side of their bodies (segmental pattern). But for most people who have vitiligo, depigmentation occurs on different parts of the body (generalized pattern). In addition to white patches on the skin, people with vitiligo may have premature graying of the scalp hair, eyelashes, eyebrows, and beard. People with dark skin may notice a loss of color inside their mouths.

## DIAGNOSIS

If a doctor suspects that a person has vitiligo, he or she usually begins by asking the person about his or her medical history. Important factors in a person's medical history are a family history of vitiligo; a rash, sunburn, or other skin trauma at the site of vitiligo two to three months before depigmentation started, stress or physical illness, and premature (before age 35) graying of the hair.

In addition, the doctor will need to know whether the patient or anyone in the patient's family has had any autoimmune diseases and whether the patient is very sensitive to the sun.

The doctor will then examine the patient to rule out other medical problems. The doctor may take a biopsy of the affected skin. He or she may also take a blood sample to check the blood-cell count and thyroid function. For some patients, the doctor may recommend an eye examination to check for uveitis. A blood test to look for the presence of antinuclear antibodies may also be done. This test helps determine if the patient has another autoimmune disease.

## TREATMENT

### Medical Therapies:

- ◆ topical steroids therapy
- ◆ topical psoralen photochemotherapy
- ◆ oral psoralen photochemotherapy
- ◆ topical depigmentation therapy

### Surgical Therapies:

- ◆ skin grafts from a person's own tissues
- ◆ skin grafts using blisters
- ◆ micropigmentation (tattooing)
- ◆ autologous melanocyte transplants

### Adjunctive Therapies:

- ◆ sunscreens
- ◆ cosmetics
- ◆ counseling and support

**END OF COURSE**

# GLOSSARY

adrenocortical insufficiency: A condition in which the adrenal gland does not produce enough of the hormone called corticosteroid.

alopecia areata: Bald patches.

androgens: Male sex hormones.

anthralin: A substance that 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.

antinuclear antibodies: A type of autoantibody.

autoimmune diseases: Diseases in which a person's immune system reacts against the body's own organs or tissues.

autologous: From a person's own tissues.

biological therapy (also called immunotherapy): A form of treatment that uses the body's immune system, either directly or indirectly, to fight cancer or to reduce side effects caused by some cancer treatments.

biopsy: A small sample.

calcipotriene: A drug that is a synthetic form of vitamin D3 that can be applied to the skin.

chronic: Long-lasting.

clobetasol propionate: A foam topical medication which has been approved for the treatment of scalp and body psoriasis.

corticosteroids: Drugs that reduce inflammation and the turnover of skin cells. They also suppress the immune system.

dermatitis: Inflammation of the skin.

dermatologist: A doctor who specializes in diagnosing and treating skin problems.

dilate: Enlarge.

eczema: A general term for several types of inflammation of the skin.

genes: Very small pieces of hereditary material that govern every bodily function and determine the inherited traits passed from parent to child.

genetic: Hereditary.

hyperthyroidism: An overactive thyroid gland.

inflammation: A characteristic reaction of tissues to disease or injury marked by four signs: swelling, redness, heat, and pain.

lesions: Sores.

melanin: A yellow, brown, or black pigment that determines skin color.

melanocytes: Pigment cells that produce melanin.

meninges: Three membranous layers of tissue that envelop the brain and spinal cord.

mucous membranes: Tissues that line the inside of the mouth, nose, genital and rectal areas.

oral antibiotics: antibiotics that are taken by mouth.

papules: Pink bumps.

pernicious anemia: A low level of red blood cells caused by failure of the body to absorb vitamin B-12.

phototherapy: Use of ultraviolet A or B light waves.

pigment: A coloring matter in the cells and tissues of the body.

PUVA: A combination of psoralen and ultraviolet A phototherapy.

pustules: Bumps containing pus.

radiation therapy: A therapy that uses high-energy rays to kill cancer cells.

retina: The inner layer of the eyeball.

retinoid: A synthetic form of vitamin A.

salicylic acid: A peeling agent.

sebaceous glands: Oil glands.

topical: Applied to the skin.

ultraviolet light A: A type of radiation that is part of sunlight and reaches the earth's surface.

ultraviolet light B: Light with a short wavelength that is absorbed in the skin's epidermis.

uveitis: Inflammation of part of the eye.

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