Jack, a busy salesman, came to see me because he had developed an enlarging circle of redness and tenderness on his hand. He didn’t recall injuring the area but was concerned that it was not going away. When I examined him, I found the classic picture of an infection: redness, warmth, a raised surface and pain. I did a culture and then started him on antibiotics right away. When I got the results of the culture the next day, I found out that the antibiotic I had prescribed was active against the bacteria and he got better within a couple days.

Skin infections come in all shapes, sizes, and locations. Many are trivial and will get better without any special attention. A tiny few can be lethal. Most fall in between these two extremes.

Infections capture our imagination in some special way because they are one area of medicine where cause and effect is clear and never in doubt. For example, shingles is caused by the herpes zoster virus, impetigo is caused by the staph bacterium, and yeast infection is caused by the candida species. In short, infections are diseases that result from the presence of germs.

Few things in medicine are so clear-cut. Kill the bug, get better.
Not so long ago, infections were a challenge to treat. The Scottish scientist Sir Alexander Fleming noted in 1928 that a blue mold growing in his laboratory released a compound that inhibited the growth of bacteria colonies. His famous discovery about the antibiotic effects of penicillium mold changed the course of the world forever: no more would so many people die from infections like pneumonia; no longer would injured soldiers perish from battlefield infection; no longer would new mothers be at risk for death from infection.

When Fleming discovered penicillin, the greatest revolution in the history of modern medicine began: we had identified the enemy for a century—with small microbes of all shapes and sizes darting frenetically on the microscope slide. Now we finally had a weapon to subjugate them.

Combating infection is a major part of any dermatologist's practice. Dermatologists are in fact infectious disease specialists of the skin. The skin is our major barrier to the outside world, and that world is teeming with forms of life we can't see or feel. Early on, much of the field of dermatology actually included the study and treatment of syphilis and related venereal diseases. In the 1980s, dermatologists played a key role in identifying and describing the dreadful new disease that shattered the immune system of young gay men and others, leading in many cases to the growth of the purplish skin tumors of Kaposi's sarcoma.

When a dermatologist talks about a skin infection, he or she is referring to any skin problem where germs of one sort or another have set up shop and are disrupting the normal state of affairs. Skin infections can be caused by viruses, the smallest of germs (so small that they really just consist of a patch of DNA), bacteria (included among the top ten are staph and strep), and even larger germs called fungi. Because the skin is our first defense against the outside world, it is subject to infection on a daily basis and must therefore have built-in defenses against those life-forms we would rather not share our body with.

Some of us seem to suffer from every imaginable skin infection; others bounce through life unscathed. While we may not have a choice as to which microscopic demons we encounter in our daily rounds, the more knowledge we have about that lump, bump, rash, or blister, the more effectively we will be able to send it packing.

In general, infections are equal-opportunity destroyers: they don't differentiate between rich and poor, the famous and the unknown, women and men, blacks, Native Americans, Caucasians, and other races. There is a correlation between risk and poor living conditions and lifestyle, but in
germs seem to follow the policy of catch as catch can. And most are pretty good at it.

Infections have been with us since recorded time began. Ancient people were most familiar with those that showed on the skin. If you have a moment, pick up your family Bible and turn to the Book of Leviticus 14:1–32. The lengths to which the ancient Hebrews went to shun those with leprosy is sadly evocative of our own early response to AIDS.

Despite the valiant efforts of early physicians and scientists, the understanding of disease, derived largely from what could be observed, was limited. But that did not prevent infectious disease, rampant in the form of epidemics, from playing a role in history second only to war when it came to shaping our destiny.

Bubonic plague, a condition with obvious skin symptoms, helped shape the course of European history as no other influence had in its time. Caused by a bacterium spread by rats or fleas, it manifested with lumps—enlarged lymph nodes, really—beneath the skin. These lumps were called buboes. In the middle of the fourteenth century, the plague killed a third of the European population at a time when the total world population was a fraction of what it is today. The plague wrought tidal changes in politics, wealth, power, and control.

Lest you think the bubonic plague is gone forever, be aware that a smattering of cases continue to be reported to the Centers for Disease Control (CDC) in Atlanta. This federal agency is charged with monitoring all reportable and communicable (infectious) diseases that could represent a public health threat. Whether it is in identifying a new disease by noting geographic clustering and common dermatologic findings (as with Lyme disease) or being alert to unusual infections in a population that shouldn’t be getting rashes and fevers (in the early days of HIV), the CDC staff, assisted by researchers at universities and state health boards, plays a critical role in protecting us against both known infections and those that have yet to rear their ugly, threatening head. New strains of germs burst on the scene with an unsettling regularity: the two just cited and Legionella pneumonia (also known as Legionnaire’s disease) are three examples.

If Darwin was right, we can expect the development of new infections to continue as long as there are hosts for the germs to thrive on. Here you will read about common skin infections—whether they are serious or not, how to identify them, and what to do about them. Of course, there are many more infectious conditions of the skin than those listed here, so consider these the hit parade.
Bacterial Infections

So Satan smote Job with sore boils from the sole of his foot even into his crown. And he took him a potsherd to scrape himself therewith as he sat among the ashes.

—Book of Job, 2:7–8

Bacterial infections were popular tools of punishment in the Bible. Throughout time, the amazing diversity of bacteria has made a special impact on skin.

Bacteria are self-sufficient single-cell organisms. Unlike amoeba, they aren’t very mobile, so they must eat and do everything else where they sit. Small enough that millions could dance on the head of a pin, most are far from angelic. However, it is true that our skin is host to a wide range of good germs, which actually help our skin to stay healthy on a regular basis. Some live deep down in hair follicles, others live on the scalp or in sweat glands, causing characteristic body odor.

Perhaps the first cruel fact of life is that although we are born sterile, as we pass through the birth canal we are immediately baptized with bacteria. Within the first twenty-four hours of birth, there will be more than 6,000 bacteria per square centimeter in our tiny armpits alone. As Grandma and Grandpa and Aunt Felicity pass us around, they colonize us with those bacteria that will help keep our skin in balance over our lifetime.

Good bacteria are just that: good. It is the evil bacteria that most concern us here. There are various types of these tiny organisms and they cause many forms of bacterial infections. Unlike viral infections, bacterial infections are often responsive to treatment with a course of antibiotics. On rare occasions, the bug, somewhat smarter than we are, outmaneuvers us and develops resistance to antibiotics. But more about this later.
**IMPETIGO**

*Impetigo* (pronounced im-pe-TIE-go) is a highly contagious infection that is limited to the skin. It occurs most often on exposed areas of the skin, including the arms and legs, face, and scalp. It may also occur at the site of injury, such as an insect bite or cut. It occurs spontaneously, most often in children. When it develops in adults, it’s almost always a complication related to a more serious skin condition, such as severe eczema.

Impetigo starts with minuscule blisters. Imagine a cluster of translucent bubbles, each no larger than a pencil point. In fact, all you really can do is imagine them, because it is unlikely you will ever see them. By the time impetigo is a big enough problem to be noticed, the blisters have ruptured and the localized infection begins to color the skin. Thus what you’ll probably see first are crusty, honey-colored scabs. The area may itch or burn. A halo of redness may surround the area as well, the result of the increased blood flow the body is bringing there in an attempt to contain the infection and fight it with its own defense mechanisms, such as activated white blood cells.

**TREATMENT**

If a child has impetigo, he or she should be encouraged not to scratch the blisters or scabs because these lesions are filled with bacteria. All the admonitions in the world notwithstanding, people and pets will scratch. Since some scratching is almost inevitable and impetigo can spread rapidly, you should contact your child’s pediatrician. The doctor will probably prescribe a ten-day course of treatment with an antibiotic such as erythromycin or dicloxacillin, or treatment with a topical antibiotic ointment, such as Bactroban.

In the meantime you can begin washing the skin with an antibacterial soap, such as Lever 2000, a few times a day and restrict any sharing of towels, washcloths, or clothing. Don’t wash excessively.

**PREVENTION**

While there is no sure way to prevent impetigo from recurring, regular hand washing at home, school, and/or day care can minimize the chances of transmission. If your child has had a case of impetigo before, an antibacterial soap should be used. Don’t get obsessive about hand washing, though.
Excessive washing can deplete the skin of important oils, which are part of its natural protection against infection. (Lady Macbeth probably had very clean hands but exceptionally dry skin.)

- **CELLULITIS**

*Cellulitis* (pronounced sell-u-LIE-tis) is a highly visible infection of the skin that is generally more serious than impetigo. The bacteria cause inflammation of the loose connective tissue of the skin, so what you see is an enlarging patch, or plaque, of red, hot, tender skin. From the time it is diagnosed its progress can be monitored—that is, response to treatment can be measured by marking the advancing red edge of the infection with a black pen and determining how far it has moved in a 24-hour period. If treatment is successful the red area will begin to shrink, not expand.

Cellulitis is usually preceded by some sort of injury—naturally occurring, such as an ulcer, or an accidental puncture or cut. People with diabetes or who are immune-suppressed are at special risk for getting cellulitis.

Cellulitis is usually caused by the streptococcus bacteria, also called strep. It occurs mostly on the legs, although any part of the body can be affected. Unlike other bacterial skin infections, you might actually get a fever, feel fatigued, get chills, and develop enlarged lymph nodes. Erysipelas

**HOW DOES MY DOCTOR KNOW WHAT INFECTION I HAVE?**

The most important principle in medical practice is: make the correct diagnosis. When it comes to infections this is done by doing a skin culture of the affected site. A sterile swab is passed over the area and put into a tube with "culture or transport medium"—a solution intended to keep the germs alive. Once in the laboratory, the swab is plated on petri dishes that contain different nutrients. After a period of time, the bacteria grow and form identifiable colonies. By testing which compounds destroy the colonies or limit their growth, sensitivity to particular antibiotics can be determined as well. In many cases, though, it may not be possible to do a culture and antibiotics are started based on what the doctor believes is the true germ at fault.
is an extreme form of strep cellulitis that usually occurs on the face and is potentially fatal. Diabetics are prone to infection with strep as well as pseudomonas, a bacterium that produces a characteristic green color.

If cellulitis is suspected, see a doctor at once. The site should be cultured if possible and antibiotics begun immediately pending final test results. Depending on your general health and the nature of the cellulitis, intravenous antibiotics may be required.

**BOILS**

Boils are most notable historically because they were one of the ten plagues visited upon Pharaoh (in the Book of Exodus) in order to motivate the ancient Egyptians to liberate their enslaved workers. Then, as now, boils, or inflammatory infections of the hair follicle unit, were considered a major pain, especially if they occurred on the thick skin of the neck, in which case they were considered a pain in the neck.

**WHAT IT IS**

A boil starts in a hair follicle. Also known as a furuncle, a boil is a bacterial skin abscess and begins as a small, firm nodule. An abscess is a small (or even large) pocket of pus. Many people today don't realize that this material is actually a good thing—the ancients were so enamored of this sign of battle against infection that they called it “laudable pus.”

In the case of a boil, the nodule becomes inflamed, red, and warm and increases in size. It sits in the dermis and as it enlarges it emerges like a red dome over the surface of the skin. Boils at this stage feel tense. Some of us might even describe the appearance of an inflamed boil as “angry.” They can be especially tender, probably due to the stretching of skin nerve fibers by the expanding growth.

Not much has changed since the time of Hippocrates. Boils are classic examples of infection. Before microscopes and stethoscopes, doctors relied on obvious signs of infection, which were rubor (redness), tumor (mass), calor (warmth), and dolor (pain). The inflammation and expansion of the boil, typical of any internal or external infection, are a result of the effort of the body to fight, seal off, or otherwise contain infection. Thus the contents of the boil actually are an immunologic stew. The pus consists of white blood cells, fibrin, proteins, and other materials the body produces.
or eliminates in the course of fighting infection. In any infection that produces pus, a way must be found for it to escape. Warm compresses sometimes help, but it is not unusual to require simple draining.

Boils may appear anywhere on the body where there is hair, which means practically everywhere. However, they are most common on the buttocks, under the arms, on the back, and on the scalp.

A carbuncle is a boil that sits deeper in the skin. It can be extremely painful. Although anyone can develop boils or carbuncles, some people are more prone to get them. When a person has multiple boils or recurrent boils, the condition is referred to as furunculosis. People with AIDS and other immune-deficiency diseases are at special risk for boils, as are people with long-term or poorly controlled diabetes.

**WHAT IT LOOKS LIKE**

Boils vary in size. They are swollen and red, and usually shaped a bit like a cone. It's not a stretch to think of a boil as a small volcano, given the heat it sometimes generates. Boils are hot and tender to the touch. As the infection progresses, the boil may become extremely painful as it changes into a more deeply seated carbuncle. When a boil nears the point of rupturing a yellowish white "point" appears in the center of the abscess.

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**WARM COMPRESSES THE MODERN WAY**

Warm compresses are helpful in many skin problems. Try this method.

1. Soak a washcloth in tap water and wring it out.
2. Place in a plastic sandwich bag but don't seal it.
3. Place in your microwave for fifteen to thirty seconds.
4. Make sure the pack is not too hot.
5. Apply the washcloth in the bag to affected area for five minutes at a time.
6. Repeat process, paying close attention to make sure pack is not too hot.
7. **Caution:** If you are diabetic or have circulatory problems, consult your doctor before using warm compresses.
RESISTANCE TO ANTIBIOTICS

Antibiotics should always be used cautiously. There is much legitimate concern about their excessive use leading to antibiotic resistance of bacteria. However, in a particular situation the risk of ongoing infection must be balanced against the risk of antibiotic resistance. By varying antibiotics among different types and not staying on one particular agent for too long, risk of resistance can be minimized and a chronic problem with furunculosis or any other skin infection can be controlled.

TREATMENT

Don’t pick, pop, or scratch a boil—you’ll only cause yourself more pain and discomfort. Warm compresses applied several times daily can help speed the natural process of the lesion rupturing and the subsequent healing. All you need do is soak a washcloth in warm water, wring it out, and apply it to the boil until it cools. Alternatively, see the method described on page 297.

If the boil persists for more than ten days, if it is particularly painful, or if redness develops around the area, call your doctor. He or she will want to examine it and may decide to use a small scalpel to lance the hard, swollen lump in order to aid drainage and healing. An antibiotic, either oral or topical, may also be prescribed. If you suffer from furunculosis, a daily prophylactic dose of an antibiotic for a period of a few months under the supervision of your doctor will be helpful.

PREVENTION

Whether you get boils and carbuncles or not is largely a function of your genetic makeup (what isn’t?). Occasionally, circumstances arise where you can take some preventive steps. If you have diabetes, tight control—that means keeping blood glucose levels within the normal range, with as little day-to-day variation as possible—will help control outbreaks of boils.

Be tuned in to your body. At the first sign a boil is developing, treat it with compresses and/or antibiotic ointment to try to prevent its further growth into a deeper carbuncle.
**Viral Infections**

Viruses are infectious particles many times smaller than bacteria. If millions of bacteria could dance on the head of a pin, millions of viruses could party on the back of a bacterium. New viruses continue to pop up, causing disease and havoc throughout the world. But they serve a useful purpose as well.

In the annals of medicine, a very special viral skin infection played a most important role. Everything we do today to immunize our children against infectious diseases is based on the ingenious and courageous observation two hundred years ago made by an English country doctor, Edward Jenner. His ability to observe was probably Jenner’s greatest genius. Most important, he could, as we would say today, think out of the box.

It was Jenner’s attention to the countryfolk of Gloucestershire that led to his special experiments. He observed that dairymaids often contracted cowpox, a disease of cattle; this seemed to confer protection against getting smallpox, a common cause of death in eighteenth-century England. Jenner reasoned that perhaps he could protect humans against lethal smallpox by inoculating them with the much less dangerous cowpox. Although he had no idea that a virus caused the problem or that the two diseases were caused by members of the same viral family, he assumed they were somehow related based on the dermatologic similarity of the conditions.

In 1796, Jenner inoculated an eight-year-old boy named James Phipps with some material taken from the pustule of Sarah Nelmes, an infected dairymaid. Although the boy developed a fever, he recovered without incident. Almost two months later, Jenner inoculated the boy with smallpox material, which failed to take. By 1799, over 5,000 people were vaccinated and the vaccine’s value was so widely recognized that Napoleon had his whole army inoculated against the smallpox virus.

Immunization against viral infections, begun with the pioneering work of Jenner, has limited our risk of infection greatly. Several dermatologic infections, however, are caused by viruses for which immunization is not yet possible because of the plethora of subtypes. Venereal warts, common warts, and herpes simplex are just some examples.

**Cold Sores**

Cold sores are one of the most irritating, painful, and common of all skin infections. Even though they are rarely serious, they can cause
tremendous irritation both physically and emotionally. At one point little could be done for cold sores, but the advent of antiviral therapy has made it possible for people who develop them frequently (say several times a year) to use prophylactic treatment (as I shall describe below).

**WHAT IT IS**

Cold sores are caused by the herpes simplex virus, also known as herpes simplex type I. This is a cousin to herpes simplex type II, which is the cause of genital herpes. Once contracted, herpes virus type I stays in your skin. It lies dormant in the nerve root cells, but can cause recurrences of fever blisters intermittently throughout your lifetime. Recurrences may be triggered by stress, sunburn, menstruation, excessive fatigue, or another infection, such as a cold. Trauma from facial surgery is a special risk. If you have a history of this problem and will be having facial surgery (even something as trivial as a biopsy) you should advise your doctor.

Cold sores are highly contagious and are spread most easily by kissing. So, alas, while recuperating from your fever blisters you should refrain from kissing others and having any other direct bodily contact that involves the infected area. As mentioned, the herpes virus type that affects the mouth is different than the type that causes genital herpes infections.

**WHAT IT LOOKS LIKE**

Cold sores usually appear on or around the lips. They may also appear on the cheeks, chin, or nose, but rarely on other parts of the body. The good news is that certain symptoms foretell the onset of a cold sore; this gives

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**SKIN IS AN IMMUNE ORGAN**

Cold sores frequently break out after exposure to sunlight. Research over several decades has shown that the skin acts as an immunologic organ. It is thought that ultraviolet radiation from the sun destroys or alters important immunologic cells in your skin, thus permitting a reactivation of cold sores.

If you get outbreaks after sun exposure, try wearing a good sunscreen and use prescription antiviral medication.
you a fighting chance of controlling it. Because the virus lives in the nerves, burning, stinging, itching, or some other sensation will usually be felt before the rash breaks out. Antiviral medication should be used at the first sign of a symptom (it is of less benefit once the blisters have developed).

The common cold sore consists of a cluster of tiny blisters. The cluster itself is generally small, ranging from about the size of a pencil eraser to a penny. Since fever blisters generally appear on the face, they are easily identified. Unfortunately, they are also noticed by others, which causes a certain degree of embarrassment. Not only do they do nothing to enhance our appearance, but others may confuse the cold sores with the herpes II virus, which causes genital herpes.

**TREATMENT**

Cold sores are treated with an antiviral medication (generally Denavir, Famvir, or Valtrex), which slows down the replication of the virus at the site of infection. Denavir can be applied topically when cold sore symptoms are first experienced and has been shown to reduce healing time. Valtrex and Famvir must be taken by mouth. Currently there is no medication that can completely eradicate the herpes simplex virus from the body.

At home, you may apply ice to the affected area to relieve the itching and burning. You may also want to apply an over-the-counter antibiotic ointment during the healing process to avoid further bacterial outbreaks on top of the viral infection. Eroded skin is more prone to bacterial infection. When the blisters become crusty, apply a warm, moist cloth to the area to soften the scabs and avoid bleeding. And, of course, do not pick. Bad outbreaks can result in scarring, but with proper care this usually does not happen.

**PREVENTION**

You can't easily prevent cold sores, but there are measures you can take to limit their recurrence. If you know your cold sore outbreaks are stress related, try to reduce the stress in your life. (Easier said than done.) If they are related to exposure to the sun, wear a hat whenever you go out in the sun and use the highest SPF sunscreen you can find. You might even want to use flesh-colored zinc oxide on the affected lip area.

The antiviral medications mentioned above can speed the healing of your fever blisters. Since the average cold sore sufferer has only two to three outbreaks per year, taking oral medication all year as a preventative
A diagnosis of herpes is made from cells scraped from the blister and examined under the microscope.

may be excessive. Alternatively, if you begin to take the medication, topical or otherwise, at the first sign of an outbreak, you'll at least decrease healing time and perhaps the severity.

Some old soldiers in the cold sore wars insist that taking folic acid regularly minimizes the frequency of cold sores. In addition, those all too familiar with this viral nuisance swear by L-lysine, a dietary supplement. It must be noted that there are no clinical studies that have verified the efficacy of these preventive measures, though many cold sore sufferers swear by them. Better to swear by science and use a medication we know affects the activity of the virus.

• SHINGLES

Shingles are also called herpes zoster. Both shingles and chicken pox are caused by the varicella-zoster virus, and anyone who's had chicken pox may develop shingles. The most important thing to know about shingles is that the real difficulty can begin after the rash has healed. Postherpetic neuralgia, a special type of pain that persists after the infection and rash are gone, can cause untold misery. Thankfully, some new medications are beginning to show promise in controlling this bad side effect.

WHAT IT IS

Once you've had the chicken pox, the varicella-zoster virus will lie dormant in a nerve root in the spine, poised to flare at some unknowable and unpredictable time in the future.

A case of shingles is accompanied by an obvious red rash that contains small blisters that may rupture. The first sign that a case of shingles is on the way involves a painful burning sensation that seems to wrap around one area of the body, generally an arm or a leg or one side of the face or body.

Because the virus lives in the nerve root, its distribution is along the lines of the nerves that supply a particular distribution of your skin.
SHINGLES AND PAIN

One elderly patient came to see me after he had a protracted course of shingles over his forehead and eye area. His pain was unbearable. We tried a whole range of medications and finally referred him to our pain management clinic. It is hard to know for sure, but if he had been put on antiviral medication right away, perhaps with a steroid as additional therapy, his degree of pain would have been less.

There is one nerve root on each side of the body and it supplies branches of nerves that circle the body to the midpoint. For this reason the rash will stop sharply on the midline. In fact, the word zoster means girdle, reflecting the way the rash distributes itself.

Multiple blisters appear within the reddened area. These blisters may range in size from a quarter to the size of your palm. Shingles around the eye occurs more frequently in the elderly and can be very painful. The pain can be a continuous burning or shooting spasms.

TREATMENT

Early diagnosis will ensure the most successful treatment of shingles. This means starting therapy within forty-eight to seventy-two hours of the first tingling sensations and the appearance of the red rash. As soon as you have the first inkling of a case of shingles, call your doctor. He or she will prescribe an antiviral medication (such as Valtrex or Famvir) to prevent progression of the eruption and decrease the postherpetic pain syndrome. To be effective, the drug must be started within seventy-two hours of the onset of the shingles symptoms. Some believe that the use of steroids, taken orally in the form of prednisone or injected into the site of pain, will mitigate postherpetic neuralgia.

PREVENTION

Until recently there was no way to prevent shingles, but the new varicella vaccine available to prevent chicken pox may also help protect you from getting a case. Unfortunately, for those of us who have already had chicken pox, this is not of much benefit—but be sure that your children
POSTHERPETIC NEURALGIA

Early aggressive treatment of shingles can reduce the chances of pain afterward, especially important in patients over sixty who are at special risk for this complication.

• Start antiviral medication within seventy-two hours of getting the rash. This reduces the risk of pain by up to 50 percent.
• Use corticosteroids—they will decrease the acute pain even though they probably won’t decrease the chronic pain afterward.
• In some older patients, amitriptyline (Elavil) used for three months, as soon as shingles starts, can reduce the persistent pain. Similar drugs are helpful if you can’t tolerate Elavil.
• Neurontin (gabapentin) with or without Elavil can help with the pain as well.
• Topical anesthetics such as lidocaine cream (ELA-Max) can be applied to the painful area and might decrease discomfort.

and grandchildren get immunized. Pediatricians consider the vaccine safe and effective.

- WARTS

As old as witches and toads, warts are among the most common skin infections in the world. They are caused by one of seventy-five different types of the human papilloma virus, or HPV. Each of these versions of HPV causes a different kind of wart, depending on where on the body it occurs.

HPV is medically important because several forms of the virus that cause warts can lead to cancer. Chief among these are the genital HPV types, which can cause cervical cancer. Nonetheless, rest assured that the majority of warts that we encounter in daily life are mundane and noncancerous.

Warts can be unsightly, and if they appear on the soles, as plantar warts, they may also be painful. However unsightly, warts are rarely a serious condition. Though not dangerous, warts can and often do recur despite treatment. Eventually, though, most warts resolve on their own.
WHAT IT IS

Medically speaking, a wart is a verruca. A verruca is not a famous fashion model or a great, exotic new dance, but a benign skin lesion that is raised and rough to the touch. They generally appear on the hands and feet. The wart virus is contagious and can be spread by direct or indirect contact (the latter means that yes, you can catch HPV at the gym or in the shower). The virus is transmitted more easily if you have a cut or a scratch on the skin. The types that occur most frequently are common warts (obviously) and plantar (foot) warts. Common warts occur most frequently on the hands. When they develop in and around the nails, they are extremely difficult to treat and may, if present for many years, evolve into squamous cell cancer (see chapter 23). While warts mainly plague children and young adults, they can occur at any age. They are very common and problematic in kidney and heart transplant patients, because these individuals are immune-suppressed.

Because a wart is in fact a tumor (an abnormal growth of excess cells), it requires an extra supply of nutrients. These nutrients are brought to the growing wart by blood vessels that the wart itself generates. If you examine a wart closely you can see small, clotted blood vessels on the surface.

KIDS AND WARTS

Warts can be a problem for children. They tend to be unsightly and often occur on their hands, where they are especially noticeable. Even though most warts will resolve completely on their own—once the body’s immune system finally recognizes that the virus is an unwanted visitor—dealing with unsightly growths remains a concern. Try a cautious and conservative approach; use topical over-the-counter remedies first. If these don’t work, some prescription remedies may help. Finally, if those don’t work, freezing or burning the wart off can be effective.
THE PROFESSOR AND THE COUNTRY GIRL

Some time ago, early in my practice, I was vacationing in the wonderful town of Amalfi on the Italian coast. The manager of my hotel discovered I was a dermatologist and asked if I would be willing to see a patient (the closest dermatologist was in Naples, many miles away). I agreed and was ushered into a dimly lit hotel ballroom. There, lined up against a back wall were eight elderly ladies, all dressed in black, and a beautiful girl of seven or eight. I was introduced in a long flowery speech in Italian, as if I were the surgeon general of the United States. Be that as it may, the little girl showed me her hands on which she had multiple clusters of common warts. I studied her carefully, intent on not missing anything (I didn't have malpractice insurance to practice in Italy, let alone a license). Finally, I completed my exam and announced to the concerned relatives that this was not cancer and that it would all go away on its own. They were delighted to hear this but were clearly skeptical. I finished my vacation, happy to have been of help.

About four months later, I received a call at my office in New Haven. The hotel manager had come to America on business and sought me out. He told me that about two weeks after I left the girl's warts all disappeared. I apparently had won the relatives' confidence. Who knows what they believe now about the American doctor who cured the little girl just by talking to her!

Their appearance, as little black dots, almost certainly confirms that the growth is a wart and not some other lesion.

When a plantar wart “blossoms” on a weight-bearing part of your foot—the heel or ball of the foot—it will flatten as you walk on it and can become very painful. A plantar wart can be confused with a corn, except that corns do not have those telltale pinpoints that identify it as an HPV infection.

WHAT IT LOOKS LIKE

Warts are rough, hard bumps. They are usually pea-sized or smaller, though a wart the size of a dime is not uncommon. They may be white, pinkish, or tan in color, depending partly on the pigmentation of your skin.
WARNING!

If you have a wart that occurs around the fingernail (a periungual wart) and it has been present for more than ten years, it should be biopsied. It could be squamous cell cancer. The cancer is confined to the top layer of the skin and has no risk of traveling in the body, but it is cancer and should be treated. The best method of treatment is Mohs surgery (see chapter 23).

Often, warts can cluster to give the appearance of a much larger area of affected skin.

TREATMENT

Warts may be treated at home with an over-the-counter patch or liquid that contains salicylic acid. But keep in mind that warts do not necessarily have to be treated—unless, of course, they are causing pain and discomfort. Common warts are neither cancerous nor precancerous. And given enough time, a wart will likely "miraculously" disappear over time and without any treatment (usually within one to two years). Thus, if you are a patient person, you may do best simply to watch and wait.

If patience is not your greatest asset, your doctor can remove a common wart by freezing it with liquid nitrogen. This is an office procedure that requires no anesthetic and little recovery time. Expect the site to hurt while the procedure is being done and to throb a bit after. Although people rarely need any painkillers, when treating the fingertips Tylenol may be helpful.

Other means of removing a common wart include laser vaporization and the surgical procedure curettage and electrodessication (scraping and burning). In both cases there can be permanent scarring, so one must consider that risk when treating a condition known to disappear on its own.

It should be emphasized that none of these procedures can guarantee that a wart will not recur in the same spot months—even years—after removal. This happens because the wart virus lives in the apparently normal skin as much as one-third of an inch away from the wart itself.

Treatment options for plantar warts are the same, as are the chances of recurrence.
MY FAVORITE TREATMENT

Because I like to eschew aggressive treatments for conditions that usually vanish of their own accord, I've adapted a technique that has been used by dermatologists for a long time. For years we have advocated taping warts to make them go away. Unfortunately many people use porous cloth tape or duct tape. I have found that if you apply waterproof plastic tape and keep it in place over the wart twenty-four hours a day for two weeks, you can see a 50 percent decrease in the size of the wart. Since the area is waterproofed, this treatment will not hamper a child's activity. It will have the added benefit of concealing the unsightly warts, which the child is likely to be self-conscious about.

The process can be repeated for another two-week period, until the wart, which is swollen from moisture, simply undergoes cellular death and disappears. Since the tape is likely to fall off during the two-week period, simply replace it.

PREVENTION

There is no way yet to prevent warts; indeed, most of us who have ever had a wart have no idea when or where we contracted it. To minimize the chance of getting warts, however, you can try to avoid "wart friendly" environments, such as the gym, though sticking with your exercise plan is definitely worth the risk of a wart or two.

• GENITAL WARTS

Here is one key fact you should know about genital warts. In a study of 97 people who had intercourse with partners known to have genital warts, 64 percent developed such lesions themselves within nine months.

Genital warts are contagious. Perianal warts can accompany genital warts through local spread. Genital warts in children are sometimes an indication of sexual abuse and should be carefully investigated—however, bear in mind that warts of the nongenital subtype can occur in genital areas in children through diaper changing and other normal handling by individuals with common warts.
CATCHING WARTS

- **Plantar warts** can be caught in a swimming pool or on the floor of the shower room (water-softened skin is more susceptible to wart virus infection).
- **Common warts** may spread around fingers through nail biting; shaving may spread warts over beard area.
- **Genital warts** are most common at sites of highest friction.

Genital warts should not be viewed with the same laissez-faire attitude as other warts. They can be associated with other genital infections, so a thorough examination and follow-up is required. Regular Pap smears and gynecologic exams are essential for women documented to have human papilloma virus (HPV) since it is a risk factor for cervical cancer.

**WHAT IT IS**

Genital warts are one of the most common sexually transmitted infections. One estimate suggests that about 30 percent of sexually active adults have the virus. Genital warts are transmitted by skin contact with an infected person, usually during sexual activity. Once transmitted, the virus multiplies in the skin cells, forming small bumps on the labia, vagina, penis, or in the anal region. Because these bumps are usually painless and flesh-colored they often go unnoticed. In addition to increasing the risk of cervical cancer, in rare cases HPV can increase the risk for penile or anal/rectal cancers.

**TREATMENT**

Although genital warts can be identified fairly accurately by their appearance, your doctor may perform a biopsy in order to be certain of the diagnosis. Sometimes, if the extent of the warts is not obvious because they are subtle and fade into the surrounding skin, a test called aceto-whitening can be done. By soaking the area in a weak solution of vinegar for a few minutes, subtle warts can be identified.

Because of the risks presented by genital warts, they should be treated. Topical therapies include a compound called Aldara (imiquimod) and...
TO LASER OR NOT?

When skin lasers became popular more than a decade ago, there were claims that this new method would be ideal for treating warts. Along with many other doctors, I treated thousands of lesions believing that this new technique would minimize scarring and be more comfortable for patients. Our experience did not bear this out. The carbon dioxide laser that we used causes a burn. Wound care was critical and some discomfort was inevitable. Patients did get scars and warts recurred. The reason for this is that warts are caused by a virus that is detectable more than 1 centimeter away from the obvious growth. For this reason, we treat what we can see but we don't kid ourselves into thinking that the virus—and thus the risk for new growths—has been eliminated. To laser or not? Ask your doctor for the least painful, most effective option he or she has.

Condylox (podophyllin), which is painted on the warts by the patient. Scraping and burning or freezing are also options, and laser treatment may be helpful in resistant cases.

In situations where all these approaches fail, or where the warts are too widespread, there is evidence that interferon injection can help. Interferon, a compound manufactured naturally by the body, is now used as an immune modifier. The side effects of interferon include a mild flulike syndrome, but it can be controlled by taking Tylenol prior to injection.

PREVENTION

Although condoms are by no means fail-safe, they can help prevent the spread of genital warts. Since condoms do not cover all areas that may be affected by genital warts, if you have an outbreak of HPV, the best thing to do is to tell your partner and abstain from sex during the course of treatment. In addition, all women with genital warts and all women whose partners have genital warts must be monitored closely by their gynecologists with routine Pap smears to make sure there is no evidence of cervical cancer.
• **Fungal Infections**

Fungal infections are no picnic, particularly because they love to feast on the top layers of your skin. These infections can be very uncomfortable and in many cases keep coming back like a bad penny. The good news is that they are rarely dangerous and often can be treated at home, without even a visit to the doctor.

A picnic is a good metaphor to understand superficial fungal infections of the skin. Fungal skin infections can be broken down into three different groups based on what they eat: proteins, carbohydrates, or lipids (fats). The group of fungus infections that go by the name *tinea* are germs that eat keratin, the protein that makes up nails, hair, and the dead top layer of skin. Yeast infections caused by candida occur in moist areas, especially in people with high blood sugar (people with diabetes or those on oral steroids such as prednisone), because yeast eats glucose, our natural blood sugar (a carbohydrate). Another type of superficial yeast infection known as *pityriasis versicolor* (formally known as *tinea versicolor*) completes the fungal menu by subsisting on fats from our sebaceous (oil) glands. This infection is usually first seen in the teenage years, when the oil glands that accompany the hair follicles blossom.

• **Athlete’s Foot**

Athlete’s foot is officially called *tinea pedis*. *Tinea* is derived from a Latin term referring to insect larva (as though hearing about pus wasn’t enough for you!). Old concepts seep into the language of skin and remain long after science should have eliminated them. In this case, these infections were once thought to be spread by insects.

Athlete’s foot is a fungal infection that can be either very bothersome or hardly annoying at all. It occurs between the toes or on the soles where you might see a scaly, pink rash. If the toenails get infected, they can become thick, yellow, and brittle. Occasionally, if the space between the toes gets worse, a bacterial infection can also result.

**What It Is**

The athlete’s foot fungus is often acquired in public showers (though you can contract it in a private shower), since it likes to grow in warm, moist environments. As athletes tend to use communal showers, they have
a special predilection for contracting it. In one study comparing the kind of shower use to the rate of infection, 9 percent of day school students, 22 percent of boarding school students (who share showers), and 90 percent of miners (who share industrial showers) had tinea pedis.

Believe it or not, athlete's foot has a favorite set of toes—it occurs most frequently between the fourth and fifth toes. This happens because these toes tend to press closely against each other, providing a location of maximum moisture and warmth. Athlete's foot may, however, cover the sides or the soles of the feet.

Athlete's foot occurs most often in young men (again, it's not being an athlete that is the risk factor; it's the use of communal showers or pools, as well as sweating and wearing shoes that don't "breathe"). About 80 percent of men in industrialized nations will develop athlete's foot at some point. In some respects, tinea pedis is a penalty for wearing shoes. In cultures in which sandals or no shoes are worn, tinea pedis is rare.

WHAT IT LOOKS LIKE

Many first-timers, unfamiliar with athlete's foot, initially mistake the fungus for dry and flaky skin. Flaky skin between any of your toes or on the sides or soles should in fact make you suspicious that the fungus may be lurking and warrants at least a call to your doctor. Scaling and cracking of the skin in these areas are definite signs of athlete's foot. In more extensive cases even small blisters might form.

TREATMENT

A number of over-the-counter products are effective. These include creams, sprays, and powders that contain the antifungal ingredients clotrimazole, miconazole, and more recently terbinafine, which is arguably the most effective topical antifungal cream available with or without a prescription. When you use one of these products, you should use it daily, continuing for at least a week after the condition has disappeared in order to avoid the chance of recurrence.

If the condition does not clear up with the use of an over-the-counter treatment over a two- to four-week period, you should make an appointment to have your doctor examine your feet to check for other skin conditions, such as psoriasis, eczema, or an allergic reaction. Additionally, if a
case of athlete’s foot has been treated incorrectly or not treated at all, it may become complicated by a secondary bacterial infection; this may required the addition of an antibiotic. For fungal nail infection, known as onychomycosis, there is now oral medication that is proven effective but it requires a prescription.

**PREVENTION**

There is no way to ensure 100 percent protection against athlete’s foot. It’s an infection, and people do get infections. Nevertheless, there are plenty of precautions you can take.

Because athlete’s foot is so highly contagious, your first line of prevention is to wear sandals when you shower or use a pool in a public place. Also, never share a towel with anyone.

In addition, dry your feet carefully after every shower or swim, and change your socks if they are wet. Depending on how prone you are to the infection and/or how obsessive you are about unsightly skin infections, you may also want to wash your feet thoroughly with an antibacterial soap once or twice daily. (Remember to dry them carefully.)

- **RINGWORM**

Ringworm is officially referred to as *tinea corporis* (tinea of the body), *tinea cruris* (tinea of groin), and *tinea capitis* (tinea of the scalp). Though commonly referred to as ringworm, you’ll be glad to know worms play no part in this fungal infection.

**WHAT IT IS**

Ringworm is a contagious fungal infection that may appear anywhere on the body, though it is most often seen on the arms, legs, back, and chest. The fungus that causes ringworm is usually transmitted by human contact or by contact with animals, especially young cats and dogs. Ringworm patches spread to about two to three inches in diameter and may appear in clusters on one part of the body. This fungal infection occurs most often in children.
WHAT IT LOOKS LIKE

The ringworm fungal infection got its common name because it appears as a ring-shaped lesion. The lesions have a slightly elevated border. When they appear on the scalp, they infect the hairs and produce redness, flaking, and often hair loss. And anywhere they appear—they itch.

What makes self-diagnosis of this infection difficult is that the fungus may easily be confused with eczema, psoriasis, or other common skin problems.

TREATMENT

Unless ringworm appears on the scalp, it can easily be treated with over-the-counter antifungal medications, just like athlete’s foot and other minor fungal infections. However, just as self-diagnosis is difficult, so self-treatment may easily fail. If the lesions and redness on your skin persist, see your doctor for a professional look. Your dermatologist will probably take a scraping of the fungus to confirm the diagnosis. Correct medication can then be prescribed.

PREVENTION

It’s hard to prevent ringworm because there are so many ways it may be transmitted. Sharing combs, brushes, or towels, standing on a bath mat after an infected person has done so, and wearing someone else’s hat or gloves are all ways the fungus that causes ringworm can be transmitted. The fact that children share everything, from hats to napping mats, is a major reason ringworm is so common among the younger set. You can do your best to keep individual wardrobes and personal possessions separate, clean, and disinfected, but into many a family’s life some ringworm does enter.
• **JOCK ITCH**

Jock itch is also called *tinea cruris* (ringworm of the groin), and anyone who has had it knows how it got its nonscientific name. It itches (and burns) and can be a painfully unpleasant experience.

**WHAT IT IS**

Jock itch is a common fungal infection occurring in the groin area. Although it is more prevalent in men, a small number of women suffer from it. As with almost all fungal infections, this one loves the excessive heat and moisture trapped in the groin area by tight underwear or athletic gear, where the fungi multiply very quickly. For this reason, jock itch occurs mostly in warmer weather.

**WHAT IT LOOKS LIKE**

Jock itch appears as a scaly rash in the groin region and sometimes on the inner thighs. It rarely affects the scrotum. Because it itches, burns, and is uncomfortable, this fungal infection is fairly easy to identify.

**TREATMENT**

Over-the-counter antifungal creams and powders usually eliminate jock itch within two weeks. If such self-treatment isn’t effective, call your doctor. As with other fungi, jock itch can be confused with more serious skin conditions, and a skin scraping may be necessary to confirm the diagnosis.

**PREVENTION**

Easy ways to prevent jock itch include wearing loose underwear and outer clothing in warm weather, changing underwear often in warm weather, changing athletic clothing immediately after exercising, washing towels frequently, and not sharing towels.

Check your feet to see whether you have athlete’s foot or toenail fungus—these are common sources for recurrent jock itch infections. If you think you have tinea on your feet or nails, put your socks on first, in order to prevent picking up unwanted hitchhikers as you put on your underwear.
You may also want to wash your groin area with an antibacterial soap (such as Phisohex) during the warm weather. Dry the area carefully after washing.

**PARONYCHIA**

Paronychia, a painful infection around the fingernails, can be caused by yeast or bacteria. In this common condition there is an acute swelling of the tissues around the nail, mainly just before the nail fold. The swelling, which can be tender and painful, is caused by separation of the nail plate from the tissue underneath it and from the infection. Usually nail separation is due to trauma and infection is facilitated by excess moisturizing of the fingers from constant exposure to water.

Paronychia occurs most often in bartenders, waitresses, nurses, and others who wet their hands frequently in the course of work. The moist grooves of the nail become invaded by bacteria and yeast.

In the case of yeast the most common cause is *candida albicans*, whereas *staphylococcus* and *streptococcus* are the bacterial causes. If there is a green tinge to the area it is likely that *pseudomonas aeruginosa*, yet another bacterium, is the culprit.

The best treatment for bacterial paronychia is incision and drainage when the condition is acute, followed by antibiotics. Keeping the fingertips dry is essential.

**PERLECHE**

*Perleche* (pronounced purr-LESH) is a yeast infection that occurs in the corners of the mouth. Most often it occurs where the folds of the mouth get deeper with aging—saliva and moisture pool in the area during sleep. *Candida albicans*, a common yeast that can cause vaginal infections as well as yeast infections around the fingernails, sets up house in that environment because it likes it.

People who have little fissures or cracks in the corners of their mouth can get perleche as well. (A common cause of the fissuring may be ill-fitting dentures.) Children who lick their lips, drool, or suck their thumbs may also develop perleche.

A standard treatment is a topical anti-yeast cream such as ketoconazole. If the person has diabetes, the condition may persist until the diabetes is brought under control. An alternative solution might be to try to
improve the fissuring in the corners of the mouth by adjusting dentures or even by surgically tightening the skin in the area or by injecting Zyplast collagen to fill out the area.

In resistant cases, where bacteria may be growing as well, a combination of anti-yeast and antibacterial cream may be effective.

- **PARASITES**

Although many bacteria that live on our skin are friendly and helpful, the same cannot be said for larger microbes known as parasites. Just the term *parasite* can send shivers down the spine—at this moment you might even feel like throwing this book down and running to the shower. Take a deep breath. This book is parasite-free. Reading about these tiny troublemakers will only help should they come knocking some day. The distinguishing thing about parasites, microbial and otherwise, is that they are “takers” rather than “givers.” Like an ungrateful relative, they live off you without returning anything of benefit. To extend the analogy, they do so in a very irritating way.

- **LICE**

Mention lice to any parent of young children and you’ll get responses that vary in intensity from moans and groans, through expressions of horror, to cries of “Stay away from me and my child.” Lice do not discriminate. They show up in public schools, homeless shelters, and the most proper and pristine boarding schools (well, maybe not so pristine after all!). Only a privileged few of us who have raised children have managed to avoid at least one or two bouts with head lice.

**WHAT IT IS**

Lice are parasites that thrive on the blood of their hosts. (If you’re feeling queasy, think of them as tenacious mosquitoes, and this discussion may become easier.) They are tiny—so small that finding them is like locating the proverbial needle in a haystack. Lice are wingless insects, black mites that look as if they might fly but never will. That’s why they stick to your body, whether your scalp, eyebrows and eyelashes, or groin.

This is not the worst of it, though. Lice eggs, or nits (guess where the word *nitpicker* came from), are equally horrible culprits and more subver-
They are smaller than the head of a pin and can be mistaken, even by an experienced observer, for ordinary dandruff. Nits are the terrorists of the parasite set and they're what may keep a lice problem chronic. If someone in your family has lice, you must search for nits assiduously and treat your whole house and your car as a potential nit-infested area.

**TREATMENT**

Treatment of head lice must eradicate both the lice and their nits. Permethrin Crème Rinse or lindane (Kwell) shampoo must be massaged into the scalp for four or five minutes, rinsed out, and dried. Any remaining nits must be individually removed with special combs and tweezers. The wash should be repeated in one week. (Keep in mind that pregnant women should not use lindane.)

Combs and brushes should be washed or replaced. Family members should be treated. Sometimes a sulfa antibiotic may be used because it kills the bacteria in the guts of the adult lice, and without these bacteria, the lice die.

Pubic lice can be treated with lindane or permethrin cream, lotion, or shampoo. The area should be retreated after ten days. Sexual partners should be simultaneously treated, regardless. If these lice are on the eyelashes, petroleum jelly should be applied thickly each morning and evening for eight days. After this, remove remaining nits mechanically. Clothing should be machine-washed and dried.

Body lice, also known as vagabond's disease, is the most easily treated. That's because body lice do not live on the skin, but in the seams of clothing. Simply laundering the clothing and taking a bath usually solves this problem.

**PREVENTION**

If someone in your family or one of your friends has head lice, don't share combs and brushes, and use a shampoo treatment yourself.

- **MITES AND SCabies**

Mites do not make right. Worse, they can cause a painful infestation called scabies.
WHAT IT IS

Scabies, from the Latin verb that means "to scratch," is an infestation caused by a microscopic mite. The female mite (Sarcoptes scabiei) burrows into the skin and causes an allergic response. Once firmly embedded, the mite happily lays its eggs, enjoying the warmth you provide.

Once those eggs have been laid, it takes about a week to ten days before the allergic response to the mites occurs. This is when severe itching usually begins. The rash scabies causes often progresses from tiny red bumps to larger and scattered lesions that are scaly and crusty.

WHAT IT LOOKS LIKE

The first sign of scabies is usually a bunch of small scaly bumps that are often ignored. When the itching starts, there can be no ignoring these bumps. Once scratched, the bumps scale, crust over, and often turn red.

Burrows also indicate scabies; they occur most frequently in the web spaces between the fingers, on the inner wrists, on the penis, scrotum, nipples, and on the ankles. Burrows are very thin raised lines, less than one-quarter inch in length, with a telltale black dot at one end. To confirm that you have scabies, your dermatologist will typically look for burrows and place a drop of mineral oil at the end of it. He or she will then lightly scrape the surrounding skin onto a glass microscope slide, which will be examined for the mite or its telltale signs.

TREATMENT

Scabies should be treated immediately, and you ought to enlist your doctor's help. Prescription drugs such as lindane lotion (Kwell) or permethrin cream (Elimite) work well against scabies. Every member of your household should use the prescription to avoid passing the infestation back and forth. Apply the medication at night from the neck down (include the head when treating children). Then wash it off in the shower the next morning. Ivermectin, an oral medication, is available for less difficult cases.
PREVENTION

No matter how good your hygiene, if you come in contact with a person who already has scabies or touch their clothing, towels, or washcloths, you can contract the infestation. Scabies are a problem in group homes and nursing homes, so in these settings be alert to the possibility if you walk into a common room and notice everyone is scratching.

• TICK BITES

Many types of ticks bite humans, but it is the deer tick we fear the most. The deer tick has achieved celebrity status because it is the carrier of Lyme disease—an easy disease to contract and a hard disease to cure. Another dangerous disease that can be carried by another type of tick is Rocky Mountain spotted fever.

WHAT IT IS

Ticks live in the woods, in the grass, on bushes, and on animals. Although the bite of a tick may seem innocuous, some ticks are more dangerous to humans than others. You might not even feel the bite, but ticks may carry toxins, viruses, or bacteria that cause infection and illness.

WHAT IT LOOKS LIKE

Lyme disease: The deer tick causes Lyme disease, which got its name from a town in Connecticut where the disease was first described by Yale infectious disease experts in the 1970s. You may assume that anywhere deer are or have been, there may be deer ticks. The rash associated with Lyme disease is bright, red and resembles a bull’s eye—the central area is clear with a dot in the middle and a circle of red surrounds it. However, Lyme disease is not always associated with a rash, and even when a rash occurs, it doesn’t have to be this classic one.

Rocky Mountain spotted fever: Once you have been bitten by a tick carrying Rocky Mountain spotted fever, you will notice a rash that starts on the soles and palms that consists of small, purple or red spots. It will then spread to other parts of your body.
TREATMENT

If a rash resembling those described above begins to develop, it is imperative that you see a doctor. If you suspect that the rash you have may be the result of a bite from a tick infected with Rocky Mountain spotted fever, and you can't reach your doctor, go to an emergency room. Immediate attention may save your life. If dealt with promptly with a seven- to ten-day course of antibiotics, Rocky Mountain spotted fever is not dangerous.

If your case is particularly severe, intravenous administration of antibiotics may be necessary. Rocky Mountain spotted fever is particularly dangerous for the elderly.

Lyme disease exposure may also come to your attention because after some time outdoors you notice a tick clinging tightly to your skin. At first glance, it might look like a tiny mole. In the Northeast, it is not unusual for people to come to their doctor's office with the culprit neatly wrapped in tissue paper for purposes of identification. One tick that is often offered up is the wood tick, a relatively benign creature but a parasite nonetheless.

If your doctor confirms a diagnosis of Lyme disease, you will be treated with a course of antibiotics (usually ten days), such as doxycycline, amoxicillin, tetracycline, or cefuroxime (Ceftin). If the disease is discovered in its later stages, you may have to take antibiotics for a prolonged period.

One of the alarming aspects of Lyme disease is that it can cause so many different symptoms, including neurologic changes, cardiac malfunction, arthritis, and fatigue. There are blood tests available to confirm whether you have Lyme disease, but no test is foolproof and interpretation is dependent on the expertise of your doctor.

The advent of a Lyme disease vaccine promises hope of preventing Lyme disease in those people especially at risk. However, multiple inoculations are required, the protection is not permanent, and the benefit is not fully known at this time. Like so many advances in medicine, this innovation is sure to be refined and improved over time.

PREVENTION

Whenever you are in a wooded or grassy area, wear long pants, long sleeves, shoes, and high socks so that no areas of skin are exposed. When gardening, always wear gloves. This is especially important if you live in an area known to harbor the deer tick.
THE RIGHT WAY TO REMOVE A TICK

Although Mom or Dad may have told you to remove a tick by lighting a match behind it, this will only aggravate the problem because the tick will respond by burrowing into the skin more deeply. The tick secretes a substance that hardens to form a super-glue hold between its mouth and your skin.

The best way to remove a tick is to take a pair of tweezers, grab the tick as close to the skin as possible, and pull back. If ticks are removed within twenty-four hours of contact, it is very unlikely that you will get Lyme disease, even if the tick was a carrier.

SEXUALLY TRANSMITTED DISEASES

The number of cases of sexually transmitted diseases (STD) or infections is increasing at an alarming rate all over the world. In the United States alone, there are 20 million new cases of STDs diagnosed every year. Almost every sexually transmitted infection is accompanied by symptoms that affect your skin—this is one more very important reason to value your skin as the source of important clues to the status of your overall health.

Persistent itching or burning sensation in the genital area should send you to your doctor. Itching in the pelvic area is often a symptom, in women, of candida albicans infection. This yeast infection is usually associated with oral antibiotic use, poorly managed diabetes, and pregnancy. While candida vaginitis is less frequently sexually transmitted, it still can be; however it is transmitted, it needs to be treated. Men can also get candida infection of the penis, so-called candida balanitis, and transmit it during intercourse.

Itching may be caused by pubic lice (or crabs) and scabies. As discussed earlier in this chapter, both infections may be transmitted through infested towels, washcloths, bedding, or shared clothing, but they may also be sexually transmitted.

Painful urination is often the first symptom of a sexually transmitted infection in men, but women suffering from an STD may also experience painful urination. While this symptom may be associated with a bladder infection from another cause, it can be caused by STDs such as gonorrhea or chlamydia. The pain is caused when the infection enters the urethra, the tube that leads from the bladder.

Both gonorrhea and chlamydia (the fastest growing sexually transmitt-
ted infection in the United States) are treated with antibiotics and cause no permanent damage if attended to promptly. If neglected, however, either disease may affect fertility. If untreated, chlamydia may lead to other complications, such as pelvic inflammatory disease (PID).

Genital sores are frequently a symptom of an STD. Genital sores are most commonly a symptom of genital herpes, syphilis, or chancroid (a highly infectious disease caused by a spore-producing bacterium.)

SYphilis

The one general statement that can be said about syphilis, once in the purview of dermatology, is that it is decreasing in incidence. The reason syphilis had long been the focus of dermatology is that in its different stages it shows classic skin signs. Some of the skin sores that patients with syphilis get are infectious to touch. For this reason, doctors must know what syphilis looks like on the skin or in the genital area and take appropriate precautions.

Genital Herpes

Genital herpes is caused by the herpes simplex II virus. After initial contraction of the infection, the virus resides in the skin and can be reactivated. The classic sore is preceded by a tingling or pain in many cases. While the herpes infection is active it is contagious and sexual contact should be strictly avoided. Antiviral medications such as Famvir and Valtrex are available to decrease the healing time. In people prone to many outbreaks of genital herpes, preventive doses of this type of medication may be prescribed.
BITES, STINGS, AND OTHER NASTY THINGS, OR HOW TO DEAL WITH BITES WHEN YOU CAN'T BITE BACK

CREATURES WITH WINGS

Most stings from flying bugs hurt for a while and become a memory, having conditioned us to stay away from the hive or nest, which is exactly what the aversive conditioning of the bug was intended to achieve. However, I wouldn't be including this section in this book if bee, wasp, and hornet stings weren't also potentially deadly. In fact, more than half the deaths caused by bites from venomous animals are attributable to bee and wasp stings.

All the venomous stinging insects are from the Hymenoptera order. The specific insects are honeybees, hornets, fire ants, paper wasps, and yellow jackets. Any sting from one of these insects is venomous, but only the honeybee leaves its venomous stinger behind. A honeybee stinger should be removed immediately. Avoid using a tweezers when removing the stinger, because this may cause more venom to be released. Instead, use a flat edge of a credit card or table knife and, pressing it against the skin, swipe it across the sting area. This method minimizes the chances that more venom will be released.

After a sting or multiple stings, the victim may experience an immediate or delayed reaction. In all cases, after someone has been stung, you should monitor the person's breathing closely. (Allergic reactions to stings often include swelling, followed by blockage of the airways.)

Local reactions to stings include itching, swelling, and reddening of the area, as well as pain. These reactions usually subside in a few hours—unless the person experiences an allergic, or anaphylactic, reaction. Anaphylactic reactions usually occur within the first half hour after a sting has occurred. The sooner such a reaction occurs, the more severe it will be. An anaphylactic reaction involves internal swelling and breathing problems and is caused by a hypersensitivity to an antigen—in this case, venom. In such cases, call 911 immediately. While waiting for help to arrive, remove all restrictive clothing and jewelry, monitor the person's breathing and circulation, and be prepared to administer cardiopulmonary resuscitation (CPR). A severely allergic person should carry an emergency medical kit. The kit should include a syringe, a tourniquet, epinephrine (EpiPen), and an oral antihistamine. Family members of a severely allergic person should be skilled in CPR.

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If the reaction to a sting is only local, the area should be washed with soap and water. Additionally, all restrictive clothing and jewelry should be removed. A baking soda paste, made with baking soda and water, may relieve the itching, or you may want to use an over-the-counter ointment or cream containing hydrocortisone. An ice pack can also relieve pain. Should a sting occur in the mouth, sucking on an ice cube or a drink of cold water will help to relieve pain and swelling. Even in a nonallergic person, a sting in the mouth or throat or on the tongue may cause enough swelling to block the airways. Thus, you should monitor the breathing of any person who has been stung there.

**OCEAN CREATURES**

Marine animal stings can be very dangerous, both because there are many lethally venomous marine animals and the chances of drowning increase dramatically due to disabling cramps and shock from the venom.

The most common marine animal stings are jellyfish stings. These stings range in seriousness, depending on the type of jellyfish. The venom from a poisonous jellyfish retains its potency even after the tentacles that carry it have been severed and after the jellyfish is dead.

Probably the most infamous of the venomous marine invertebrates is the Portuguese man-of-war. It is a bluish, bladderlike float, or jellyfish, with long stinging tentacles found mainly in tropical waters. Stingrays are similarly dangerous.

In all cases of marine animal stings, attend to the victim immediately. If the victim is having a severe reaction or if he or she has been stung many times, get emergency assistance at once.

**IS IT A HUMAN BITE OR LESS DANGEROUS KIND OF ANIMAL?**

Any emergency room doctor will attest that bites by humans are much more common than you think. I'm not talking about toddlers and older kids who don't play well with others—in these cases, grown-up is not synonymous with adult.

Bites by humans actually have a lot in common with those of other animals. The mouths of all animals contain a multitude of bacteria and sometimes viruses. Thus if the bite breaks the skin, an infection may develop. The only difference here is that a bite by a dog, or other nonhuman animal may carry the risk of rabies in addition to other diseases.
If a fellow *Homo sapiens* or dog bites you, check first to ascertain if the bite has broken the skin. If it hasn’t done so, wash the area thoroughly with water and an antibacterial soap to avoid infection. Next apply a cold compress or ice pack to avoid contusions or bruising. When an animal bite has broken the skin, you must see your doctor. Make sure you tell the doctor whether the animal, human or otherwise, was a stranger to you.

**• CREEPY CREEPING CREATURES**

**BEDBUGS**

A flat wingless insect, the bedbug is darkish brown and lives on furniture and floors. It is found most often in beds, hence the name. These nasty little things do come out at night to bite humans, so the old nighttime blessing “Don’t let the bedbugs bite” is no joke.

If you are bitten by a bedbug, you’ll notice itching in the area soon after the bite. A lesion then develops, usually with a hemorrhagic mark in the center. Since the bedbug sucks blood from several sites, a small cluster of lesions may occur. The bite or bites will then redden and perhaps blister, particularly in children. The lesion usually subsides in a matter of hours. The bites may appear anywhere the body touches the bed. These bites are generally harmless, unless they become infected.

Bedbugs may be eradicated by using an insecticide. Use an insect bomb but also wash all clothes and sheets and dry them on HOT.

**SPIDERS**

Spider bites are usually not dangerous. However, two species of spiders are responsible for most of the serious spider bites in the United States: the widow spider—most notoriously, the black widow—and the brown recluse or band spinning spider.

*Brown recluse spider:* It is as antisocial as its name implies. The brown recluse spider lives in dark, warm areas like attics or sheds. It has markings on its back that resemble a fiddle. Originally found mostly in the midwestern United States, it is not so antisocial that it has limited its travel—it can be a problem in the eastern United States as well. Within twelve to twenty-four hours after the bite, there is a dull, aching pain. In the next twenty-four hours, a blue-gray blister that contains blood forms. Over the next three days the skin around it gets red, hard, and swollen.
It takes about five months for complete healing. Antivenin that will neutralize the brown recluse spider venom is under development. If you think you have been bitten by the brown recluse, get medical attention immediately.

**Black widow spider:** You will know the black widow by her look. She has a large crimson shape like an hourglass on her belly. Her bite causes swelling, redness, and limb pain within twenty minutes. During the high-risk hour that follows the bite, abdominal cramps, cardiac changes, and kidney shutdown can occur. Emergency treatment with a widely available antivenin, as well as other medications, is needed.

**SCORPIONS**

There are over six hundred species of scorpions worldwide and they are of special concern in arid parts of the world such as the southwestern United States, the Middle East, India, and Mexico. The business end of the scorpion is the tail, which contains a stinger that inflicts the wound. Although the venom of scorpions varies from species to species, the poison belongs to a broad class of chemicals known as neurotoxins. The scorpion venom can cause internal problems as well as local injury in the skin itself.

In general scorpions sting when they feel threatened, and most injuries occur on the arms or legs, head or neck. At first there is a sharp burning pain at the sting location, which may be followed by numbness of the surrounding skin. Swelling can also occur. The internal symptoms include convulsions, coma, irritability, and cardiac abnormalities. Treatment of the sting consists of elevation of the area, application of ice packs, and anti-histamines to control the inflammation. Antivenin is available, but its usefulness is not definite. In the case of internal symptoms, get help immediately.

**SNACKES**

Some reptile bites can be harmless, except for the pain they cause, while others can be lethal. Although there are many kinds of snakes that can bite, fortunately, there are only four poisonous types found in the United States. Copperheads, rattlesnakes, and water moccasins (also known as cottonmouths) are all pit vipers. The coral snake is the sole non-viper in this dangerous group.
If you believe you or someone you are with has been bitten by a poisonous snake call 911 or the emergency number in your area. Do not wait for the medical team to arrive to begin treatment.

Before telling you what might be effective, let me first dispel two myths about snake bites. First, trying to suck out poisonous venom with your mouth will not help the victim and could hurt you. Never use suction on a poisonous snakebite unless instructed to do so by an emergency dispatcher. Second, cutting into the bite with a knife—the way they do in old westerns—will not help the victim and may actually hurt the victim even more by adding the risk of infection to an already traumatic situation.

When a person is bitten by a poisonous snake, the most frequent cause of death is shock. Here is what you can do to avoid shock in the victim:

1. Have the person lie down. Snakebites nearly always occur on an arm or leg. Make sure the bitten extremity is lower than heart level.

2. Remove all clothing and jewelry that may be restrictive.

3. Whenever possible, bandage the area above the bite tightly, tourniquet-style, to slow blood flow and the spread of the venom through the bloodstream. If bandages are not available, use duct tape, masking tape, a necktie, or whatever is available. Be creative—anything is better than nothing, as long as the material is not wire. The bandage should restrict circulation but should not cut it off. If the skin is very pale below the bandage, you'll know immediately that the bandage is too tight.

4. Keep a close watch on the person's breathing and circulation. Also check the pulse until help arrives.

Most medical texts also advise trying to identify and kill the snake without endangering yourself, as well as administering emergency first aid. In cases of snakebites by nonvenomous snakes, follow the same procedure as you would for any other animal bite.