

*I keep breaking out and drugstore medications don't help. Now I'm getting scars and I hate the way my face looks.*

*—Janine, 18, college student*

Advances in medicine in the past two decades have dramatically changed the nature of adolescence. Effective topical and oral medication can now control the effects of raging hormones that result in acne. There are even options for adult acne sufferers.

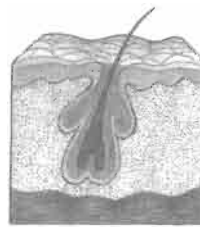
Acne is such a part of growing up that when you think about the most noticeable bodily change in the teenage years, it is acne. I think the way we commonly dismiss this as a trivial problem may have something to do with our own discomfort and unease through those difficult years. In fact, acne is a very serious problem. Having a condition that affects self-image while your self-image is being shaped is a bit like your mother drinking too much wine or smoking while she was pregnant with you: the issue isn't the drinking per se, it's that the behavior occurs at a time when it can have profound effects beyond those intended. And so it is with acne, a common medical concern but like none other I have seen in younger patients.

Acne really consists of two problems: the acute symptoms of discomfort with cystic acne and the appearance of active lesions; and second, the long-term permanent effect of facial scarring that can result when acne is not properly controlled.

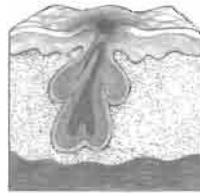
During puberty, 100 percent of boys and 90 percent of girls will have some acne lesions. There are in fact many types of acne—as many as fourteen different kinds, affecting newborns to the elderly. So if you're one of the lucky few who hasn't had acne by the time you graduate from high school, it's no guarantee you won't run into trouble.

In the last decade, about five million visits were made to dermatologists annually for acne problems, and this doesn't include all the visits to family doctors who often are the first line of treatment for this common and unsettling condition.

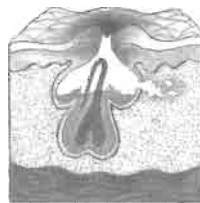
I have a special interest in early successful management of acne because in my practice I am often asked to help people with post-acne scarring, which is one of the more difficult challenges in dermatology. As with everything in life, it is far better to fix a small problem than wait for it to become overwhelming. Nowadays there are so many effective treatments for acne, from topical agents to oral medications such as Accu-



Normal hair follicle



Cells, oil, and debris from the glands and follicle clog the pore.



Acne lesion ruptures leading to red, inflamed nodule

tane, that I honestly believe that any teenager who does not pick at his or her face should not have scarring of any significant degree. In this way, acne scarring should be considered preventable. The trick is to diagnose the condition early, jump on it with the whole range of treatment options, and stay on top of the problem until the body chemistry has changed and the hair follicle oil glands, no longer pumped up and frenetic, slide into a more comfortable and less antagonistic relationship with their host.

*Acne vulgaris* is the most common type of acne (*vulgaris* in fact means “common”), which plagues the vast majority of teenagers. *Acne vulgaris* has several different subtypes, so sufferers may experience some or all of the following lesions: *comedonal* (pronounced koh-me-DOAN-ul), papular, pustular, or cystic.

Any form of acne, whether in a teenager, adult, or child, can range from mild to severe. People like Janine are subject to *acne vulgaris* (95 percent of people will have at least one outbreak of it) in their teen years but adults are also at risk for at least one outbreak in their lifetime. Adult types of acne include perioral dermatitis and *acne rosacea*. These can make people as upset as any teenager in the throes of *acne vulgaris*.

## ▪ ACNE VULGARIS

*Acne vulgaris* is a natural consequence of what makes men as we know them. That’s because one of the key factors that lead to *acne vulgaris* is increased sebum production, a direct result of increases in the male hormone—in both men and women—during puberty.

Abnormal blockage of the hair follicle opening may be the causative factor that is *acne*’s smoking gun. This blockage is thought to result from an increased amount of “sticky” keratin due to hormonal changes and the increase in sebum production. These keratin cells accumulate in the hair follicle canal directly above the opening of the oil gland duct, resulting in a plug formation known as a *microcomedone*. This *microcomedone* then enlarges just beneath the surface of the skin in the pore itself. Later it becomes visible as a *closed comedone*, or whitehead, which is a firm white papule. If, however, the pore dilates, an *open comedone*, or blackhead, will

### ACNE MYTHS

All of the following ARE NOT TRUE:

- ***Chocolate and greasy foods cause acne.*** Oil in your follicles helps cause acne, not tasty food in your tummy.
- ***Sun helps acne get better.*** There is no proof of this.
- ***Not washing your face causes acne.*** Acne is not caused by dirt.
- ***Masturbation causes acne.*** Truly a myth.

## CONCEALING

Concealing stubborn lesions is OK, but follow these rules:

- Use as little concealer as possible.
- Make sure the product is labeled non-comedogenic (won't cause pimples).
- Remove it when you no longer need it.
- Try to use a concealer that has an active ingredient, like salicylic acid or sulfa.

occur. Further enlargement of the open comedone can cause the pore to enlarge further, resulting in the large pores often seen in patients with acne. Although these open and closed comedones, blackheads, and whiteheads themselves are not inflammatory, they set the stage for inflammatory lesions that may occur.

Another important cause of acne is a bacterium known as *Propionibacterium acnes* (often referred to simply as *P. acnes*). This tiny germ normally lives happily in the oil gland yet plays a significant role by producing substances that contribute to the inflammation of acne. As this bacterium incites inflammation in the follicle, the wall of the hair follicle becomes thinner and eventually may rupture. When this happens, you get yet another manifestation of acne: the red, hot bump, or papule. Once it actually ruptures, a bit like a volcano in turmoil, a much larger inflammatory red papule or pustule may develop, a lesion that can be exquisitely tender.

But acne is not exclusively an “inside” job. Oil-based makeup and hair gels, hormonal changes that occur in the premenstrual period, and pregnancy can make things worse, as can frequent manipulation of skin lesions. In fact, one of the commandments of dermatology is: *Do not pick*. Picking your face can make acne lesions worse and, of greater concern, can lead to discoloration and even scarring.

## ▪ TREATING ACNE VULGARIS

I mentioned earlier that acne vulgaris is eminently treatable, and treated it should be. Remember, untreated acne may leave scars that will last a lifetime. The cost of treating acne, whether you have insurance or not, should not be an impediment to therapy. An entire year of topical therapy for mild to moderate acne may cost as little as \$30 to about \$200.

**UH-OH! I HAVE A RED-HOT PIMPLE THAT WON'T GO AWAY AND I HAVE A RED-HOT DATE**

For large acne cysts that get inflamed, injection with a steroid solution can provide rapid relief. Often, the cyst will begin to subside within twelve hours. While this treatment should not be used routinely, it is a reliable emergency approach that dermatologists frequently use.

Occasionally, once the cyst has calmed down, excision may be the only way to ensure that it does not rear its ugly head again.

If you have more severe acne and require Accutane, treatment is more expensive—including medication costs, blood tests, and doctor visits, it can run about \$2,000 for a twenty-week course. On the other hand, if it works, the nice thing about Accutane is you may never need treatment again.

In treating acne, an extensive history is taken to determine how you wash your face and what substances you have been putting on it, since several of these can irritate your skin and worsen the acne. Next, an exam of your skin will result in an inventory of the type of acne lesions you have. That will help in rating the severity and developing a treatment plan. In general, in this area of dermatology, we do not use an elephant gun to kill a flea. However, if you fall into a more severe category with the larger papules, nodules, and cysts, the most aggressive appropriate therapy should be undertaken.

Basic management steps include washing with gentle soaps or nonsoap cleansers such as Cetaphil and decreasing the frequency of moisturization. Remember, one of the causes of acne is the oil your own glands produce. Why import extra oil to the scene of the potential disaster? It's okay to use moisturizers, but they must be specifically designed for people with acne. Such products will often say "non-comedogenic" (won't cause pimples) or "oil-free" on their labels.

Several topical agents can correct the abnormal accumulation of keratin in hair follicles; this decreases the amount of follicular plugging, thus getting at one of the causes of acne. Such compounds include Retin-A (tretinoin, a form of vitamin A that has been chemically altered); Differin (adapalene gel); and benzoyl peroxide, which comes in many formulations and a range of brands. Benzoyl peroxide, in low concentration, is available over-the-counter while Retin-A and Differin require a prescription. Ben-

### IF WE KNEW THEN WHAT WE KNOW NOW

While we believe that the treatments being used for acne today are safe and will stand the test of time, when medicine was not as sophisticated, technology we did not fully understand was used to treat this frustrating and widespread disease.

More than fifty years ago, X-ray was used to treat acne. It was thought it would dry up the oil glands. It was even used to remove facial hair. And it worked. Fast-forward to today and guess what? Patients who received radiation to the face for these purposes now have an increased incidence of skin cancer. Everything in medicine is a trade-off, but today we do not consider skin cancer a reasonable risk in the treatment of acne.

zoyl peroxide kills the bacteria of acne better than any topical or oral antibiotic, and because it kills *P. acnes* by producing oxygen (*P. acnes* cannot live with oxygen), the bacteria never develops resistance to it. Benzoyl peroxide is the cheapest, most effective over-the-counter acne remedy.

*Salicylic acid* can be used alone or along with a sulfur product. Salicylic acid works as an anti-inflammatory agent and is an excellent first-line choice for mild acne. It is the active ingredient in many over-the-counter drying agents.

For treating severe acne a cousin of Retin-A, isotretinoin, known as Accutane, is extremely effective. Isotretinoin helps to markedly diminish sebum production, normalize the growth pattern in the follicle, and also may work to diminish the activity of *P. acnes*.

A warning about Accutane: isotretinoin can cause birth defects. Unfortunately, many of the people who would benefit most from Accutane are women of child-bearing age, so special precautions are needed when using this drug. Other side effects of Accutane, which must be thoroughly explained to you by your doctor and weighed against the drug's benefits include changes in night vision, hair loss, headaches, dry eyes, dry mouth with cracked lips, dried nasal lining that could lead to nose bleeds, and even calcification of the Achilles tendon and other musculoskeletal problems. Accutane can increase blood lipids, so it's very important that these be monitored throughout therapy. The side effects clear up when the standard twenty-week course of treatment is completed.

Oral antibiotics are a good approach to managing acne because they

## ACNE RULES

- **Don't pick.** If you find that you are tempted to pick your lesions, go find something else to do with your hands. Peel an apple, knit, play the drums.
- **Do not overwash.** Wash your face once a day with a gentle nonsoap cleanser. Do not use abrasives: sandpaper is for wood and the bottom of birdcages.
- **Do not put a lot of stuff on your face.** Avoid oils, creams, and other agents that are oily and can plug up follicles.
- **Take your medication as prescribed.**
- **DON'T PICK.**

seem to strike at *P. acnes*, the bacterial instigator of the problem. Tetracycline, the old standby, is inexpensive and works well, but some patients develop sun sensitivity. Minocycline, a once-a-day medication (which makes it easier to remember to take), can be very effective, but does have rare side effects such as discoloring the skin and dizziness. If you will benefit from minocycline, most dermatologists consider these side effects well within the reasonable risk-benefit ratio.

Tetracycline and minocycline also possess anti-inflammatory properties apart from killing bacteria, which may play a role in calming down inflamed acne lesions. Whatever your treatment plan, none of the medications will work if they stay in your medicine cabinet. Managing acne is a daily task. Your body makes new acne lesions daily, so it makes sense to fight it daily with total compliance with the prescribed plan. And remember: Don't pick!!!

Once acne lesions clear they may leave behind either scars or a dark or light patch on the skin. The scarring that results from acne can often be bothersome and permanent, so it is best to get your acne under control while the getting is good. (For a discussion of how dermatologists treat scarring, see chapter 18.) The dark and lighter discoloration in the skin is a result of the skin's reaction to the inflammation of the acne lesions. This discoloration often does fade, but it may take many months to do so. It does not indicate that the acne is still active. Very often, after the acute acne flare settles down, redness may persist for many months, depending on your skin type. If you are fair, redness would not be surprising; if you are more darkly complected hyperpigmentation may result.

## ▪ SPECIAL CONSIDERATIONS IN PEOPLE OF COLOR

There is a significantly lower incidence of inflammatory acne in blacks than in whites. However, when it does occur, it can have a range of unwanted manifestations that can last a lifetime, and from a cosmetic point of view, post-inflammatory hyperpigmentation is an important issue.

*Pomade acne* is a variety of acne that is often seen in darker-skinned individuals. It results from the oils, greases, and waxes used in hairstyling that address the unique features of black hair. Some of these agents clog up hair follicles, stimulating the production of acne lesions. Because they clog up hair follicles, these compounds are called comedogenic. Acne lesions usually develop in the immediate area of the hairline. The acne can spread anywhere on the face if the grease, wax, or oils come in contact with facial skin.

To correct the problem, refrain from using such oily products as much as possible. Given the hair “issues” you may be facing, it’s unreasonable to suggest giving up your favorite products altogether. One compromise would be to use nongreasy pomades. For example, agents that contain glycerin or silicon oils may be less acne-causing. Apply hair grease every other day, if possible, and pursue a regimen for acne prescribed by your dermatologist. Washing with an acne cleanser that contains salicylic acid may be helpful as well. But don’t overdo or you’ll simply irritate the skin and cause yourself more skin problems.

## ▪ ACNE ROSACEA

*Acne rosacea* (pronounced row-ZAY-shah) is an acnelike eruption seen most often in fair-skinned individuals of northern European extraction. Although it may look like typical acne, it lacks one of the classic features of acne—the comedone. You may have acne rosacea if you have redness of the forehead, cheeks, and nose; a mild swelling of the face; papules and pustules; and dilated blood vessels, also known as telangiectasias. People with rosacea often have a history of flushing or blushing easily.

Some patients with rosacea have the redness, papules, and pustules; some have only redness and telangiectasias; and still others have a combination of all of these features. The condition is chronic, with periods of exacerbation and remissions. In its extreme form, it gets deep into the many oily follicles of the nose and the inflammation can result in thicken-

ing of the end of the nose. This condition is known as rhinophyma. In roughly half of all patients with acne rosacea the eye can be affected, with such symptoms as conjunctivitis, soreness, decreased tear production, and redness and scaling of the eyelids.

The exact cause of acne rosacea is a mystery, but it is known that certain factors can exacerbate it by dilating facial blood vessels. Among the things that can make rosacea worse are alcohol ingestion, sun exposure, and warm drinks. It is also felt that a mite named *Demodex folliculorum*, which lives in the hair follicles, may be in on the act; in some individuals with acne rosacea, the concentration of such mites is significantly increased.

Treatment of acne rosacea must be customized to the person. For very mild cases, Metrocream or Noritate, brands of topical metronidazole cream has been shown

to be effective. For moderate to severe cases, an oral antibiotic such as tetracycline or minocycline might be required. These medications are used for many months to keep the problem, once

tamed, under control. Combinations of oral antibiotics and topicals are also very popular. Another topical agent is sulfacetamide and there are several commercially available preparations with this antibiotic in tinted form to minimize the redness. For the most severe cases, isotretinoin is sometimes prescribed.

To take care of the redness and telangiectasias, once the acne rosacea is under control, laser surgery can be quite effective and results in a high degree of patient satisfaction. Although there is no proof that laser does anything other than remove the broken blood vessel, or has an effect on the flushing that comes with rosacea, in some patients I have noticed a decreased need for topical medication after several laser treatments. (It could just be coincidence.)

For treatment of rhinophyma, resculpting the nose with the carbon dioxide laser, or even the less sophisticated but equally effective wire loop cautery, can result in remarkable improvement.

### MONEY CAN'T BUY HAPPINESS

J. P. Morgan, the famous banker and richest man of his day, suffered terribly from a form of acne rosacea called rhinophyma. Morgan was so devastated by his appearance that he curtailed his social life on account of it.

Rosacea of the eyelids responds nicely to oral antibiotics, but before that is even tried, wiping the eyelid edges daily with Johnson's Baby Shampoo applied with a Q-tip can clear up the mildest cases.

## ▪ PERIORAL DERMATITIS

Perioral dermatitis, another acnelike eruption with a distinct pattern, occurs mainly in young women. It is by far one of the most frustrating forms of acne, because it occurs not long after a person thinks she was through with acne forever. Just when she thinks she's out of the woods, whammo! The follicles, like the Terminator, are back for more. But don't despair—good therapy abounds.

Perioral dermatitis distinctively occurs most often around the mouth, the nostrils, and sometimes the outside corners of the eyes. In these areas there is a background of redness, sometimes scaling, and studding with tiny pinpoint pustules.

The exact cause of this eruption is not known. It has been postulated in the past that the frequent use of moisturizing creams in these areas can significantly worsen the condition. Although the application of a mild topical corticosteroids has been shown to improve perioral dermatitis, stronger steroid creams may worsen it.

Treatment includes a several-week course of anti-inflammatory oral antibiotics such as tetracycline or erythromycin. Use of moisturizing creams or any topical corticosteroids in the affected areas should also be discontinued. Once the eruption has cleared, the dosage of the antibiotics can often be lowered and then stopped. For resistant cases, however, long-term oral antibiotics are sometimes needed.

## ▪ FOLLICULITIS

Folliculitis—a very common condition—is an inflammation of the hair follicles that can result from an infection, chemical irritation, or mechanical irritation. The inflammation in the hair follicle may be either close to the surface of the skin or deeper down within the hair follicle.

A superficial folliculitis often manifests on the skin as a tiny pustule with a rim of redness. Such a lesion heals without scarring, although it may leave behind an area of hyper- or hypopigmentation. A deeper folliculitis can show up as a larger red nodule under the skin that can be tender and swollen; it may eventually form a pustule and will leave scarring as it clears up.

Infectious folliculitis can be caused by bacteria such as *Staphylococcus aureus*, yeast such as candida or *Pityrosporum ovale*, or mites such as *Demodex folliculorum*. One can also develop a bacterial *Pseudomonal* folliculitis on the trunk after spending time in a hot tub that has not been properly sanitized. (Be wary of getting in hot tubs with lots of froth—the froth is produced by dead skin protein, upon which such bacteria feast!)

Folliculitis from chemical irritation can develop on skin that has been covered with plastic dressings or casts, or after the application of topical ointments such as petroleum jelly. Also, cooks exposed to a lot of cooking grease tend to develop folliculitis.

Frictional and mechanical injury to the skin can also result in folliculitis, commonly seen in athletes who accumulate sweat under heavy pads and other sports equipment. Another type of mechanical folliculitis is *pseudofolliculitis barbae*. This results from a foreign-body reaction to one's own hair and is most commonly seen in people with hair that curls back and digs into the skin after shaving. For this reason, it is most commonly seen on the beard and neck area; the scalp, armpits, pubic areas, and legs are other areas often affected.

To treat folliculitis the doctor must first determine the underlying cause. Cases of infectious folliculitis can be treated with oral antibiotics in combination with topical antibiotics. Yeast and candidal folliculitis are most often treated with topical anti-yeast agents and, if more extensive, an oral anti-yeast medication. Fungal folliculitis is likewise treated with anti-fungal topical agents in limited cases and oral antifungal agents in more extensive ones. Folliculitis caused by mites such as *Demodex* can be treated with topical anti-mite preparations. For folliculitis that is induced by chemical irritants, withdrawal of the agent usually results in the lesions clearing up. Lastly, folliculitis caused by mechanical trauma is best treated by eliminating the direct cause. In the particular situation of *pseudofolliculitis barbae*, for instance, it is best not to shave the hair so closely to the skin; special razors and shaving creams are available to help with this problem.

### ■ WHEN BAD THINGS COME IN THREE: ■ FOLLICULAR OCCLUSION TRIAD

A problem more common in darker-skinned individuals than others is the follicular occlusion triad. This consists of *hidradenitis suppurativa*, *acne conglobata*, and *dissecting cellulitis* of the scalp. These three conditions all have in common blockage of the hair follicle unit followed by

inflammation of the apocrine glands. These small glands are found in the area of hair follicles responsible for secreting pheromones in most mammals (however, their role in humans is not entirely clear). Hidradenitis suppurativa can be a severely debilitating condition, resulting in drainage, scarring, and discomfort. Acne conglobata, which occurs on the face, buttocks, and back, can result in scarring and nonhealing tracts or channels in the skin. Dissecting cellulitis of the scalp consists of large inflammatory nodules, and nonhealing areas that can result in hair loss and permanent scarring. In all these conditions, the first line of therapy is to use tetracycline or minocycline, two common antibiotics.

Many doctors recommend a course of Accutane (isotretinoin), but unfortunately the drug is not as effective in this problem as it is against common acne. Surgical removal of the affected skin is sometimes attempted but is not always successful.

#### ▪ ACNE KELOIDALIS NUCHAE

*Acne keloidalis nuchae*, a chronic, progressive, and scarring condition seen in black men, presents a real challenge to dermatologists. It's very frustrating to the patients, since treatment is difficult, and even surgical intervention is no guarantee of a cure. Acne keloidalis usually affects men starting in their twenties. Symptoms include small, pea-sized bumps on the back of the head that, when infected, can get much larger and tender. A common result of this inflammatory reaction is scarring with hair loss in the diseased area. The cause of this condition is not known, and although testosterone levels were elevated significantly among patients with acne keloidalis in one study the meaning of this finding is not known.

With respect to treatment, it is best to be conservative at first. While some men are fond of the shaved-head look, hair should be allowed to grow long in the affected area. Mechanical irritation caused by clothing, such as a tight collar, should be minimized. Antibiotics, either topical such as clindamycin or erythromycin or oral, such as Keflex—can be a mainstay of treatment. Benzoyl peroxide should be avoided, because, although it is an excellent medication for controlling follicular inflammation, it may bleach the hair. Hair oils and greasy skin products should be avoided at all times. Occasionally, a course of Accutane can be helpful.

Once the infection has been brought under control, the scars, the “keloid” part of keloidalis, may be managed with an injection of Kenalog corticosteroid (see “Keloids” in chapter 24, “Common Skin Conditions”).

If the keloids continue to grow and steroid injections are not helpful, surgical therapy is the next step.

If no significant improvement of lesions is obtained after half a dozen injections, excision using any surgical technique that your physician is comfortable with makes the most sense. It is important that the excision be done down through the full layer of skin into the fat and that the wound be allowed to heal naturally—although some doctors obtain good results by suturing the wounds.

At Yale, we use a regimen of radiation therapy which is supposed to inhibit the activity of the fibroblasts, or scar-producing cells, that become active during the healing phase after surgery. Superficial radiation treatments are applied to the wound area itself after the keloid has been excised. Radiation therapists believe that such radiation in young patients is not an especially great concern, given the limited treatment period of three days and the relatively low dose of radiation used.

Although laser has been touted as a magical approach to managing this problem, in my experience it provides no additional benefit over the other treatments described.