



teen report

Skin Care that
Really Works

A Special Report
by Paula Begoun

Why Me?

I have asked myself this question over and over again because I was a teenager with terrible acne, and I still struggle with breakouts even now. Statistics are against teens because 85% of them are destined to get some amount of acne. Knowing they're not in this alone may be comforting to some, but for me it didn't help.

Even with all of today's modern conveniences and technologies, being a teen really isn't any easier now than it was when I was a kid. Expectations are high during these turbulent yet exciting years, which serve as the bridge between childhood and adulthood. Without question, teens must do their best to balance between preparing for the future while simultaneously trying to figure out who they are, how they want to behave, and who they want to become when they grow up. And if all of that isn't challenging and demanding enough, their hormones are raging, plus there are all the pressures of popularity and sexuality that feel confusing, melodramatic, and tragic.

It's ironic and usually depressing that, just as teens are getting to a point in their lives where appearance becomes a major part of their identity, acne rears its unattractive, red, oily, white-spotted, swollen head. Teens lucky enough to have acne-free skin (frequently the popular ones, right?) will likely still endure the occasional blemish and most likely will find it traumatic. Between school, work, family obligations, and maintaining a social life, is it any wonder that acne can be such a devastating intrusion on a young person's life? I know it was on mine.

To make matters worse, searching for treatments amidst the countless options out there is enough to make anyone break out. And companies know this, launching an endless array of anti-acne products marketed directly to teens. Happy, blemish-free teens smiling at the success of whatever product is being advertised with trendy music playing in the background are meant to seduce a teen into believing that these products must be the answer. It never quite turns out that way, and often these products just make the problem worse.

What these ads never contain are good, solid, research-based details about what works and what doesn't for problem skin. They assume teens don't want information, they just want products. And while they may be right, it is absolutely true that everyone—regardless of age—needs information so they know how to make good decisions about the products they buy. Advertisements and infomercials may be intriguing, but they aren't based on facts, they never tell the whole story, and they often mislead.

But there is good news. While acne is difficult, if not impossible to cure, there are solutions to control it, and depending on the type of acne, it doesn't have to be expensive. Once you learn some basic facts about what causes acne and what should (and should not) be done to manage it, you and your teen will be far ahead of the game. Becoming aware of the many myths surrounding this stubborn skin problem, as well as informing yourself and your teen about which products claim to "cure" the condition but may end up only making matters worse (and there are a lot of those out there) are great ways to start. The information provided in this report will help you play an active role in finding solutions that work. But be forewarned, there is rarely a quick fix, and it will take educated experimentation to find out what will work best for the teen in your life.

What Causes a Pimple?

There is very little mystery about how a pimple is created. Hormones (which are wildly out of control for both boys and girls during the teenage years due to changes caused by puberty) stimulate the oil glands to become more active. The hormonal interaction comes primarily from androgens (male hormones present in both men and women), which have corresponding receptor sites at the bottom of the pore lining. (Receptor sites are contact areas for substances such as hormones that tell a specific part of the body what to do.) When androgens hook up to the receptor sites on the pore, they communicate excess production of sebum (oil) which starts the formation of a clogged pore that, with the presence of a specific bacteria, can cause a blemish. (Source: *Clinical Dermatology*, September-October 2004, pages 360-366.)

Excess hormones communicate an increase in the production of sebum (oil) in the sebaceous gland (oil gland), which causes a backup in the pore. This oil being created (which is more solid than typical fluid inside the pore) is unable to move freely and evenly through the pore's opening, resulting in a blockage that leads to a clogged pore. This may be due to an abnormally shaped pore lining (the pore lining is made of skin cells that can build up and close off access to the surface), or a defect in the kind of sebum being produced.

Complicating matters is a specific type of bacteria that's naturally present in our pores called *Propionibacterium acnes* (*P. acnes*). This bacterium subsists and flourishes on our dead skin cells and oil. When oil and dead skin cells back up in the pore lining, it's as though this bacterium is first in line at an all-you-can-eat buffet. The "gorging" the bacterium does results in an inflammatory response which, coupled with the bacterium's gluttonous nature, causes it

to proliferate. Guess what the result is? A red, raised, often swollen pimple (Sources: *Drugs*, 2003 volume 63, issue 15, pages 1,579-1,596 and *Advances in Dermatology*, January 2003, pages 1-10). There are other factors that may contribute to acne. It is suspected that other growth hormones and insulin-like growth factor may play a role in the prevalence of teen acne (Source: www.emedicine.com). There is also research looking at the presence of certain fatty acids in sebum that may trigger breakouts. What remains a complete mystery is why one pore gets a blemish and not another, and why some people have acne erupt from what seems to be every pore on their face.

There are several types of pimples that comprise acne, as well as blackheads (technically referred to as open comedones) and whiteheads (closed comedones), bumps that are filled with sebum but are not inflamed or filled with fluid. They are as follows:

Papules are the mildest type of acne lesion, though “mild” is a relative term because these red bumps may be quite painful. They result from the pore lining becoming swollen as a result of bacterial inflammation and too much oil being present in the pore. This is the easiest form of acne to manage and over-the-counter products can prove extremely helpful.

Pustules form from papules, and occur when the pore lining ruptures, thus spilling its contents into the swollen, red bump at the base of the pore. Pustules tend to be larger and more painful than papules. Most teens dealing with acne will have an assortment of papules and pustules. It often takes a mixture of over-the-counter and prescription-only products to manage this condition.

Cysts are the largest, most painful, and difficult to treat type of acne lesion. They reach deep into the sebaceous gland and, if left untreated (and even sometimes with proper treatment) often result in scarring because they stretch and damage surrounding skin and its support structure. If this type of acne is prevalent, dermatologist treatment is mandatory as no over-the-counter products can address the cause.

Blackheads form when oil and dead skin cells trapped in the pore lining make their way to the pore opening. The oil oxidizes at the surface, forming the recognizable black dots that are most commonly seen on the nose. Contrary to common perception, blackheads are not related to dirt! It is also important to note that blackheads are not caused by bacteria. As such, they do not respond to topical disinfectants (benzoyl peroxide, sulfur, alcohol, topical antibiotics).

Whiteheads (not the pimple kind, but hard, white bumps some skin types get) also result from the mixture of excess oil and dead skin cells, but do not oxidize because they are

covered by a thin layer of skin. They resemble white to slightly translucent bumps, and are often seen on the forehead and cheeks. Whiteheads may lead to inflammatory acne if *P. acnes* bacteria get involved.

Don't Make Matters Worse!

At any age the question about removing or squeezing blemishes is a contentious one. Some say doing so will only make matters worse so they are best left alone. Others say removing the contents of a blemish helps healing and improves appearances in the long run. It turns out both points of view are accurate. You definitely can make acne worse by attacking the lesions—making sores and scabs, damaging skin, rupturing the pore, which spreads oil and bacteria in areas it doesn't belong, and making skin more inflamed—thus impairing the healing process. Such obsessive, overzealous behavior actually has a name, **acne excoriee**, and the result is almost always red or dark discolorations, which can lead to permanent scarring. None of that is desirable. On the other hand, white, pus-filled bumps on the face don't look or feel great either. The issue is one of degree. If the contents of a blemish can be gently (the operative word being *gently*) removed without injuring skin or creating a sore, then it can help heal the blemish faster and reduce swelling (after all, it's usually the matter trapped inside the pore that's causing the inflammation). If not, then the blemish should be left alone.

Another type of acne you and your teen should be aware of is **acne cosmetica**. Some individuals have sensitivity to makeup—particularly foundation or emollient moisturizers—as these products sometimes are formulated with ingredients that can trigger breakouts. Hair-styling products also can trigger acne-like eruptions, especially when used in great amounts around the hair line or if the hair hangs on the face. Fluoride toothpaste or the mint/peppermint/wintergreen flavorings are other culprits. Those who tend to break out around their mouth and chin may want to talk to their dentist about avoiding fluoride toothpaste or products containing these flavorings for a period of time to see if that clears up the problem.

While acne cosmetica rarely causes large breakouts, it isn't fun to deal with and can be persistent. To avoid this problem it is critical to make sure your teen removes all makeup every night, and never sleeps in makeup. Also, make sure your teen avoids moisturizers or other skin-care products that are thick or emollient as these almost always contain ingredients that can clog pores and cause eruptions.

Pressure or friction against certain areas of the face or body may cause blemishes to emerge. This skin condition is called **acne mechanica**. With this form of acne, simple everyday

behavior—resting the chin on hands, rubbing cheeks frequently, vigorously wiping the face with hands or a towel while sweating (as opposed to dabbing at the face with a towel), tight jeans (causing breakouts on thighs and buttocks), sports gear etc.—can result in breakouts. Helping your teen eliminate these behaviors or changing clothing fabrics (softer rather than tougher materials and less restricting fabrics) can go a long way to improving conditions.

Treating the Problem

Now that you're aware of the basic types of acne lesions and blemishes and what can cause them to occur, let's go over the necessary steps to take in order to get things under control from a skin-care perspective. For optimal results when fighting blemishes and acne, the three necessary steps are:

1. Reduce oil to eliminate the environment that acne-causing bacteria thrive in
2. Exfoliate the skin's surface and within the pore to improve the shape and function of the pore
3. Disinfect the skin to eliminate acne-causing bacteria living inside the pore

Ways to accomplish each of these goals are presented below. It is critical to stress to your teen that **compliance and consistency are key** to any successful anti-acne routine. Keeping acne under control demands sticking to a reliable routine and not getting complacent once things begin to improve. Bottom line: Managing acne takes patience, persistence, and educated experimentation.

Reducing Oil Production

Reducing oil is perhaps the hardest part of dealing with acne because oil production is hormonally generated, and there are no topical agents that can inhibit the male hormones that cause excess sebum production. It can become an endless battle that is commonly approached in an overzealous manner by the overuse of excessively drying and irritating skin-care products. Battering the skin in such a way results in damage to the skin's protective outer barrier, which impairs the skin's healing process and increases bacteria growth. It may seem logical to try and scrub away acne, or to dry it up with products that burn and tingle, but any perceived benefit is short term, and in the long run these products will only make the problem worse.

It is also important to remember that, save for the prescription drug Accutane or oral hormone blockers (discussed later in this report), any means of reducing oil is temporary. Skin-

care products and cosmetics cannot permanently change the amount of oil the oil gland produces. Workable options to temporarily reduce oil include charcoal or clay masks (but be sure they do not contain irritants such as menthol, camphor, peppermint, or SD-alcohols which can negatively affect skin) and, oddly enough, plain Milk of Magnesia. The main ingredient in this liquid antacid is magnesium hydroxide, which happens to be an excellent absorbent for excess oil.

Cleansing

The gentlest, most effective way to reduce surface oil daily, keep redness at a minimum, and help skin heal is the daily use of a mild, non-drying, non-irritating, water-soluble cleanser in the morning and evening. Make sure your teen avoids any cleansers that contain menthol, peppermint, camphor, eucalyptus, citrus, or other ingredients that prompt a cooling or tingling sensation. They are incredibly common in anti-acne products, yet do nothing but irritate skin. Don't mistake that tingle as a sign the product is working. It's working to cause irritation—not to make acne any better—and these ingredients can't change oil production.

Tip: At night, especially if your teen wears foundation or face powders, rather than using a scrub-type cleanser, it can be far more effective to use a clean washcloth with the cleanser to help mechanically exfoliate the skin's surface, and it saves having to use two cleansers instead of just one. And many scrubs contain ingredients that just aren't helpful for any skin type.

It is also imperative to avoid emollient cleansers and bar soaps or bar cleansers of any kind. These types of cleansers often have pore-clogging ingredients, rinse poorly, and, in the case of bar soap, can raise skin's pH level, encouraging the growth of acne-causing bacteria (Sources: *Skin Pharmacology and Physiology*, July 2006, pages 296-302 and *Dermatologic Therapy*, February 2004, Supplement, pages 16-25 and 26-34).

You'll come across a lot of anti-acne cleansers that claim to be medicated. Although they typically contain active ingredients such as triclosan (a topical disinfectant), benzoyl peroxide, or salicylic acid, they are essentially wasted in a cleanser because their contact with skin is so brief that almost all of the benefit is rinsed down the drain. In addition, medicated cleansers should not be used around the eyes or mucous membranes, which make them trickier to work with.

The goal is to find a water-soluble cleanser that is gentle yet dissolves excess oil and removes makeup without leaving a greasy residue or film. The following cleansers are recommended for this purpose:

Alpha Hydrox Foaming Face Wash (\$6.99 for 6 ounces)

Cetaphil Daily Facial Cleanser for Normal to Oily Skin (\$6.99 for 8 ounces)

Clinique Liquid Facial Soap Mild Formula (\$14.50 for 6.7 ounces)

Neutrogena Liquid Neutrogena Facial Cleansing Formula Fragrance Free (\$9.09 for 8 ounces)

Paula's Choice One Step Face Cleanser Normal to Oily/Combination Skin (\$12.95 for 8 ounces)

Paula's Choice Skin Balancing Cleanser Normal to Oily/Combination Skin (\$12.95 for 8 ounces)

Note: If your teen is removing stubborn or waterproof makeup or mascara, she may need to also use a makeup remover.

Exfoliating

All skin types can benefit from exfoliating, but this is especially true for those with oily, blemish-prone skin. The best time to apply an exfoliant is after cleansing. Although topical scrubs abound, they are merely average options when compared to the clinically significant impact a well-formulated alpha hydroxy acid (AHA) or beta hydroxy acid (BHA) product has on acne-prone skin. Also, just as with anti-acne cleansers, many topical scrubs labeled for acne-prone skin are loaded with irritants that won't improve matters, or the scrub particle is too harsh and scratches skin. As I mentioned before, even a gentle washcloth is preferred to a topical scrub.

Glycolic acid and lactic acid are the most common and well-researched AHAs. There are others, but these two provide the best penetration and proven results. Both work to dissolve the bonds that hold dead skin cells to the surface, allowing them to shed normally. As dead skin cells mix with excess oil in the pore and find their way to the surface, they tend to stick around longer than they should and prevent other surface skin cells from shedding properly, creating a dull complexion while at the same time worsening already-clogged pores.

Salicylic acid is the only BHA ingredient. It is a long-established, anti-acne ingredient that has several distinct advantages over AHAs. BHA is oil-soluble so it penetrates into the pore lining to help dissolve clogs an AHA product can't reach; it has antibacterial properties so it can kill off acne-causing bacteria in the pore; and it is anti-inflammatory due to its close relation to aspirin (aspirin is acetyl salicylic acid), which helps to reduce the redness and swelling that acne causes. If your teen is allergic to aspirin, you will most likely need to avoid purchasing a salicylic acid product for them. In this instance, an AHA exfoliant is your next best option.

AHA products work best in 8% to 10% concentrations and BHA products work best in 1% to 2% concentrations. A key element for both AHAs and BHA to assure effectiveness is the pH level of the product. In order for the AHAs or BHA to function optimally as exfoliants, the products containing them must have a final pH value of 3-4. A lower pH will also work, but dipping below a pH of 3 tends to be too irritating for skin. As the pH value rises above 4, the exfoliant becomes ineffective (Source: *Journal of Chromatography*, August 2004, pages 255-262). Most companies selling AHA or BHA products do not indicate a pH, so I encourage you to consider the options suggested below, all of which I've tested and are formulated in the correct pH range to work as indicated:

Alpha Hydrox Enhanced Lotion (\$10.89 for 6 ounces); contains 8% glycolic acid

Alpha Hydrox Oil-Free Formula (\$10.89 for 1.7 ounces); contains 8% glycolic acid

Neutrogena Healthy Skin Face Lotion (\$12.59 for 2.5 ounces); contains 8% glycolic acid

Neutrogena Rapid Clear Acne Defense Face Lotion (\$7.39 for 1.7 ounces); contains 2% salicylic acid

Olay Total Effects Anti-Aging Anti-Blemish Daily Moisturizer (\$18.99 for 1.7 ounces); contains 1.5% salicylic acid

Paula's Choice 1% Beta Hydroxy Acid Lotion or Gel (\$15.95 for 4 ounces); contains 1% salicylic acid

Paula's Choice 2% Beta Hydroxy Acid Liquid, Lotion, or Gel (\$15.95 for 4 ounces); contains 2% salicylic acid

Paula's Choice 8% Alpha Hydroxy Acid Gel (\$15.95 for 4 ounces); contains 8% glycolic acid

Peter Thomas Roth AHA 12% Ceramide Hydrating Repair Gel (\$48 for 2 ounces); contains a 12% combination of lactic and glycolic acids

ProActiv Clarifying Night Cream (\$28.75 for 1 ounce); contains 1% salicylic acid

Eliminate Acne-Causing Bacteria

A topical antibacterial agent is essential for fighting blemishes. It is practically the only way—from a skin-care product point of view—to eliminate acne-causing bacteria. Alcohol (as in SD-alcohol or isopropyl alcohol) shows up in many anti-acne products in amounts high enough to disinfect skin, yet it is exceedingly irritating and therefore, can cause more problems than it solves because irritation can trigger more blemishes. Sulfur is another potential disinfectant but it is rarely used in over-the-counter products because of its ir-

irritating, drying tendencies. Plus the high pH of sulfur can encourage bacteria growth. Tea tree oil is a potential option, but its results are not as impressive as those for benzoyl peroxide, and the necessary strength of 5% is rarely, if ever, seen in anti-acne or other commercially available skin-care products (Sources: *Medical Journal of Australia*, October 1990, pages 455-458 and *Die Pharmazie*, March 2005, pages 208-211).

Without question, the gold standard in topical antibacterial products for acne is benzoyl peroxide (Source: *Skin Pharmacology and Applied Skin Physiology*, September-October 2000, pages 292-296). The amount of research demonstrating benzoyl peroxide's effectiveness is exhaustive and conclusive (Sources: *American Journal of Clinical Dermatology*, April 2004, pages 261-265 and *Journal of the American Academy of Dermatology*, November 1999, pages 710-716). Among benzoyl peroxide's attributes is its ability to penetrate into the hair follicle to reach the problem-causing bacteria and kill it with a low risk of irritation. Furthermore, it doesn't pose the problem of bacterial resistance that some prescription topical antibacterial agents (antibiotics) do (Source: *Dermatology*, January 1998, pages 119-125). As with all anti-acne products, many of those that contain benzoyl peroxide couple this active ingredient with irritants such as alcohol or menthol. Below is a list of recommended benzoyl peroxide products, ranging from 2.5%-10% concentrations. It is best to start with the lower percentage and see how your teen's skin responds before considering stronger versions, which may prove more irritating:

Clean & Clear Persa-Gel 10, Maximum Strength (\$4.99 for 1 ounce); contains 10% benzoyl peroxide

Clearasil Ultra Vanishing Acne Treatment Cream (\$9.99 for 1 ounce); contains 10% benzoyl peroxide

DDF Benzoyl Peroxide Gel 5% with Tea Tree Oil (\$21 for 2 ounces)

Neutrogena On-the-Spot Acne Treatment (\$6.59 for 0.75 ounce); contains 2.5% benzoyl peroxide

N.V. Perricone Outpatient Therapy Acne Treatment Gel Cream (\$55 for 2 ounces); contains 5% benzoyl peroxide

Oxy Lotion, Vanishing Acne Medication (\$5.69 for 1 ounce); contains 5% benzoyl peroxide

Oxy Lotion, Vanishing Acne Medication, Maximum (\$6.49 for 1 ounce); contains 10% benzoyl peroxide

PanOxyl Aqua Gel, Maximum Strength Acne Treatment (\$4.99 for 1.5 ounces); contains 10% benzoyl peroxide

Paula's Choice Blemish Fighting Solution (\$14.95 for 2.25 ounces); contains 2.5% benzoyl peroxide

Paula's Choice Extra Strength Blemish Fighting Solution (\$14.95 for 2.25 ounces); contains 5% benzoyl peroxide

Peter Thomas Roth BPO Gel 5% (\$24 for 3 ounces)

Peter Thomas Roth BPO Gel 10% (\$26 for 3 ounces)

ProActiv Repairing Lotion (\$21.75 for 2 ounces); contains 2.5% benzoyl peroxide

Stridex Power Pads (\$6.99 for 28 pads); contains 2.5% benzoyl peroxide

*Note: Benzoyl peroxide negates the effectiveness of retinoids (discussed later in this report), such as Retin-A or Tazorac, and therefore should not be used at the same time. Your teen can enjoy the benefits of both treatments by using the benzoyl peroxide product in the morning and the retinoid product at night. The exception to this is prescription Differin (adapalene). It has been shown to remain stable and effective when used at the same time as benzoyl peroxide (Source: *British Journal of Dermatology*, October 1998, page 139).

The routine described in this report (cleansing, exfoliating, disinfecting, and absorbing excess oil) should keep most cases of teen acne under control. However, if your teen's acne proves resistant to these over-the-counter options, prescription or medically-supervised anti-acne treatments are the next step. These are almost always used in conjunction with the steps previously described.

Prescription Options— When to See a Dermatologist

After about six months or so of trying a variety of over-the-counter treatments (following the guidelines discussed in this report), consider taking your teen to see a dermatologist, or talk to your family physician about prescription acne treatments. A doctor can offer a grab bag of options—often a combination of treatments—that, combined with a gentle skin-care routine, can finally achieve the results you and your teen want.

Retinoids are perhaps the best tricks dermatologists have up their sleeves. Retinoids are compounds derived from vitamin A. Their importance to skin care, especially for those with acne, is due to their fundamental role in the way the body makes skin cells and regulates their healthy, normal growth. Not only are retinoids known for improving skin cell function for all skin types but there is ongoing research looking at how retinoids can reduce or prevent skin cancers.

Because of their ability to regulate skin cells (a completely different physiological mechanism than BHA or AHAs),

prescription-strength retinoids can improve the shape of the pore lining, allowing oil and dead skin cells to flow unimpeded to the surface. Several prescription-strength retinoids are available, including tretinoin (found in Retin-A, Retin-A Micro, Avita and also in generic brands), Differin (adapalene, available as a cream or gel), and Tazorac (tazarotene). The amount of research showing these active ingredients to be formidable weapons against acne is immense (Sources: *Journal of Drugs in Dermatology*, September 2006, pages 785-794; *Pediatrics*, September 2006, pages 1188-1199; *Cutis*, July 2006, pages 12-8, supplemental; and *Journal of the American Medical Association*, August 11, 2004, pages 726-735).

Depending on your teen's skin type, retinoids may be used once or twice daily. Most people do well with a once-per-day application in the evening but some sensitive skin types may do better building up to daily use by starting with every-other-day application. Retinoids may be used with an AHA or BHA product to enhance effectiveness, with the exfoliant being applied before the retinoid.

Note: Retinoids (and BHA and AHAs) can make skin more sun-sensitive so making sure your teen is sun-smart is very important. That means religiously using an SPF 15 or higher rated sunscreen with the UVA-protecting ingredients of either titanium dioxide, zinc oxide, or avobenzone. For teens with oily skin who don't like using sunscreen lotions, there are foundations that contain sunscreen (Revlon is at the top of the game in this arena) or pressed powders.

Topical Antibiotics are also viable contenders and should be considered if benzoyl peroxide doesn't prove effective. Topical antibiotics include such drugs as clindamycin, erythromycin, and tetracycline. These have limitations because they have difficulty penetrating into the pore lining and the fact that long-term use can lead to bacterial resistance, meaning they stop being as effective as they once were. Some topical prescription antibiotics containing benzoyl peroxide are available. Studies have shown that when used together, benzoyl peroxide and topical antibiotics demonstrate greater benefit than when either is used alone (Source: *Journal of Cutaneous Medical Surgery*, January 2001, pages 37-42). Examples of such combined therapy drugs include Benaclin and Clindagel.

Azelaic Acid, the ingredient found in prescription-only medications such as Azelex and Finacea, occurs naturally in wheat, barely, and rye. It has an antibacterial and exfoliating action on skin, which definitely gives it purpose in the battle against blemishes. In addition, azelaic acid tends to be better tolerated than retinoids for persons with sensitive skin. Research has shown that pairing azelaic acid with benzoyl peroxide (either over-the-counter or mixed with a prescrip-

tion topical antibiotic) is preferred to using either active ingredient alone (Source: *Journal of the American Academy of Dermatology*, August 2000, Supplemental, pages 47-50). Prescription Azelex contains 20% azelaic acid, while Finacea contains 15%. Both are effective against acne so which one to choose depends on individual preference for the cream texture of Azelex or the gel texture of Finacea.

Oral Antibiotics are a typical recommendation in the treatment of acne to kill acne-causing bacterium, but I have strong reservations about this. While there are several studies showing that using antibiotics in combination with topical retinoids and exfoliation can control and greatly reduce breakouts (Sources: *Cutis*, June 2004, pages 6-10 and *International Journal of Dermatology*, January 2000, pages 45-50), this doesn't address the issue of building up bacteria resistance, which means that in 6 months or so the antibiotic would lose efficacy and the acne would return and require a different antibiotic to treat it (Sources: *British Journal of Dermatology*, August 2005, pages 395-403 and *Journal of the American Medical Association (JAMA)*, August 11, 2004, pages 726-735). While short-term oral antibiotic use may be an option, according to the JAMA study "Long-term topical or oral antibiotic therapy should be avoided when feasible to minimize occurrence of bacterial resistance."

The most common oral antibiotics prescribed for acne are tetracycline, minocycline, doxycycline, and, if the -cycline family of drugs is not tolerated or advisable, erythromycin. Tetracycline is generally not prescribed for patients younger than age 13 because it can cause permanent discoloration of dental enamel. Drugs in the -cycline family may cause increased sensitivity to sunlight.

One more point, a study involving more than 600 participants described in the *Lancet*, December 2004, pages 2188-2195, found benzoyl peroxide the most effective treatment for treating blemishes when compared to oral antibiotics (such as tetracycline), topical antibiotics (such as erythromycin), or combination treatments. (Oral tetracycline suffered in the comparison because of the common problem of eventual bacteria resistance to antibiotics.)

Photodynamic Therapy is a relatively new procedure, also known as Light Therapy. It has been shown to be somewhat successful for treating acne (Source: *Journal of Cosmetic Laser Therapy*, June 2004, pages 91-95). This medical treatment uses a topical medication known as aminolevulinic acid in conjunction with non-skin-damaging lasers or a special blue light source (Source: www.aad.org). After the topical medication is applied, the patient sits in front of the light source for 15-30 minutes. Anywhere from 3-5 sessions over a period of time are necessary before results are seen, making this a treatment that requires time, patience, and

cost. However, if no response is observed in these initial sessions, ongoing treatments are unlikely to improve matters. Light Therapy's effect on acne has to do with its impact on porphyrins, which are by-products of acne-causing bacteria. Porphyrins are highly sensitive to certain wavelengths of light (specifically, blue light). Exposure to this light causes a chemical reaction that is toxic to acne-causing bacteria, thus destroying it without damaging skin (Source: *European Journal of Dermatology*, September 2006, pages 340-348).

Devices such as the ClearLight system have been FDA-approved for the treatment of mild to moderate inflammatory acne (Source: www.fda.gov/fdac/departs/2002/602_upd.html#acne). It is important to note that Light Therapy does not improve blackheads, whiteheads, or cystic acne, nor does it reduce oil or pore size, so any claims of this nature are false and not demonstrated in the literature.

Lasers are also an option for acne treatment. There is increasing research showing that treatments with the Smooth-Beam Laser (a 1,450-nanometer diode laser) can significantly improve acne, possibly by affecting the sebaceous gland and killing acne-causing bacteria, thus reducing the number of acne lesions. A series of treatments (usually 4-6) is needed, but one study showed that patients maintained clear skin 12 months after the last treatment (Sources: *Journal of the American Academy of Dermatology*, July 2006, pages 80-87 and *Lasers in Surgery and Medicine*, September 18, 2006).

Non-ablative lasers are options as well, though their effect has primarily been linked to reducing inflammation rather than acne lesion counts (Source: *British Journal of Dermatology*, October 2006, pages 748-755). There may be potential as more research is done, but for the time being what has been published involves studies exploring treatments on small groups of people. Even when laser therapy has shown positive results, it is noted that patients were continuing topical treatments (prescription or not) and therefore the laser alone was likely not wholly responsible for the benefit (Source: *Seminars in Cutaneous Medicine and Surgery*, June 2005, pages 105-112).

Keep in mind that if you decide to try laser treatments to control your teen's acne it is a costly endeavor, with a standard series of treatments, ranging from \$2,500-\$5,000 depending on where you live.

Accutane (active substance isotretinoin) is the only medication or skin-care treatment of any kind that has the potential to cure acne. If your teen's acne persists after trying most of the suggested treatments discussed in this report, it may be necessary to consider this powerful oral medication derived from vitamin A. Success with Accutane can be nothing less than astounding—eliminating any signs of acne or oily

skin for a long period of time and sometimes permanently. It would be a primary consideration, but unfortunately, it has serious side effects that need to be reviewed by you and your teen's physician. Most of the side effects are limited to the duration of treatment, but they can still be daunting while your teen is experiencing them. In short, this is not a drug to be considered lightly.

Accutane works by halting the production of oil in the oil glands, and in the process, it shrinks those glands to the size of a child's. This prevents oil from mixing with dead skin cells in the pore lining, eliminating the environment that promotes acne-causing bacteria growth. Accutane is particularly helpful for those dealing with cystic acne because shrinking the oil gland eliminates the deep plugs that can rupture the pore lining, leading to severe inflammation and scarring. Normal oil production usually resumes when Accutane therapy is completed. However, the oil glands rarely grow to the size they were before treatment began and usually continue to function normally. A course of Accutane generally lasts 4-6 months, and in some cases a second course may be needed. As successful as Accutane can be, its use does not mean your teen will never break out again. However, any breakouts that do occur after taking Accutane are likely to be very responsive to conventional treatments.

Accutane is controversial for many reasons, but principally because of its most insidious side effect: It has been proven to cause severe birth defects in nearly 90% of babies born to women who were pregnant while taking it. Female patients (including teenagers, be they sexually active or not) must consent to at least two forms of birth control while taking Accutane. In terms of other side effects, the most commonly experienced are dry skin and lips, mild nosebleeds, mild hair loss, aches and pains, sensitivity to sunlight, itching, fragile skin, and increased cholesterol levels.

One more point to be aware of is the correlation between Accutane and feelings of depression and/or suicide attempts. Although the FDA's determination is that there is inconclusive evidence implicating Accutane as a causative factor for either of these issues, Hoffman-La Roche, the manufacturer of Accutane, agreed to put a warning statement in the product information insert.

Debunking Acne Myths

Most of us are familiar with the most common myths surrounding acne, whether we know they're myths or not (and many people genuinely believe them, often as a result of coincidental personal experience). ALL of the statements below are false; see how many of them you thought were true, either presently or in the past:

Acne is caused by poor hygiene. (There is no evidence showing this to be true, but proper skin care can reduce the problem once you have it.)

Acne is something you will eventually outgrow. (Generally, this is true for men, but not for women. While men's hormones calm down after the age of 20, women's continue to fluctuate, and that can perpetuate or even trigger acne where no problem existed before.)

Acne is caused by a reaction to certain foods, such as chocolate or fried foods. (There are no specific foods that cause acne for everyone. The only time diet plays a role is if you are allergic to certain foods, such as nuts, iodine, gluten, milk, etc.)

Acne is caused by stress. (A great deal of research has shown how emotionally upsetting acne can be for people, but there is no link between stress and acne. Stress levels for those people without acne have not been shown to be different than for those with acne.)

Acne is caused by psychological problems. (Please see comments about stress.)

Acne is caused by masturbation or impure thoughts. (I know people used to believe that one, but to say the least it doesn't have a modicum of fact behind it, and is a complete fallacy.)

Getting or maintaining a suntan clears acne. (Getting tan may help skin look better for a short time, but it doesn't heal acne, prevent bacteria growth, or inhibit oil production. And keep in mind that down the road, unprotected sun exposure and getting a tan is a major cause of wrinkles, discoloration, and skin cancer.)

Drinking sugar-rich carbonated beverages causes acne. (Please see the comments about diet.)

Acne is contagious. (Not in the least. The kind of bacterium that causes acne, *P. Acnes*, is anaerobic—meaning it doesn't like air or sunlight, lives far below the skin's surface, and doesn't ever leave or it would die—therefore, it can't be transferred. And you certainly can't catch someone else's hormone development.)

Cleansing the face several times per day helps clear acne. (Too much cleansing can actually cause more acne by breaking down the skin's external barrier, increasing bacteria growth, and inflaming the skin, causing an irritant response and triggering breakouts.)

You can dry up a blemish to help it go away quickly. (Blemishes aren't wet, and drying skin causes irritation and can make matters worse. Absorbing oil is helpful, but this is a different process from "drying up" skin.)

Steaming the skin helps clear clogged pores. (Heating up the skin can cause inflammation, break surface capillaries, and make skin look redder; none of that is helpful for any skin type.)

Now that you have a greater understanding of what is fact and fiction, as well as an outline of various treatment protocols, you will be able to take charge of determining how to treat your teen's acne and help them manage it. Remember, compliance with a routine that is producing good results is fundamental to its success. Encourage your teen not to become discouraged when something isn't working, or may not be working as well as it once did. It stands to reason that as acne comes under control, the results will seem less impressive than at the onset. And remind your teen that there is no single "best" anti-acne routine. Rather, educated experimentation is necessary, and in almost every case, a combination of therapies produces the most gratifying results. With perseverance and knowledge based on substantiated proof, you can help make acne a minor blip on the radar of teen life—an accomplishment that will make life easier for all concerned, most importantly your teen!

Other sources used for this report: *Journal of Cosmetic Science*, March-April 2006, pages 203-204; *Postgraduate Medical Journal*, August 2006, pages 500-506; *Skin Pharmacology and Physiology*, May 2006, pages 283-289; *International Journal of Pharmaceutics*, March 2005, pages 187-194; *Drugs Under Experimental and Clinical Research*, March 2003, pages 101-105; and *American Journal of Clinical Dermatology*, April 2003, pages 473-492.



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