

Acne Information

WHY DO I HAVE ACNE/PIMPLES?

The medical term for "pimples" is acne or acne vulgaris (*vulgaris* means "common"). Most people get some acne. Acne does not come from being dirty; rather, it is an expected consequence of changes that occur during normal growth and development. Hormones, bacteria, and your family's tendency to have acne may all play a role.

» What about STRESS?

Stress does not "cause" acne but it can make it worse. Make sure you get enough sleep and daily exercise!

» What about FOODS/DIET?

Try to eat a balanced, healthy diet. Some people feel that certain foods worsen their acne. While there aren't many studies available on this question, severe dietary changes are unlikely to help your acne and may be harmful to the health of your skin. If you find that a certain food seems to aggravate your acne, you may consider avoiding that food. Discuss this with your physician!

WHAT CAUSES MY ACNE?

There are four contributors to acne—the body's natural oil (sebum), clogged pores, bacteria (with the scientific name *Propionibacterium acnes*, or *P. acnes*, for short), and the body's reaction to the bacteria living in the clogged pores (which causes inflammation). Here's what happens:

- » Sebum is produced in the normal oil-making glands in the deeper layers of the skin and reaches the surface through the skin's pores. An increase in certain hormones occurs around the time of puberty, and these hormones trigger the oil glands to produce increased amounts of sebum.
- » Pores with excess oil tend to become clogged more easily.
- » At the same time, *P. acnes*—one of the many types of bacteria that normally live on everyone's skin—thrives in the excess oil and causes a skin reaction (inflammation).
- » If a pore is clogged close to the surface, there is little inflammation. However, this results in the formation of "whiteheads" (closed comedones) or "blackheads" (open comedones) at the surface of the skin.
- » A plug that extends to, or forms a little deeper in the pore, or one that enlarges or ruptures may cause more inflammation. The result is red bumps (papules) and pus-filled pimples (pustules).
- » If plugging happens in the deepest skin layer, the inflammation may be even more severe, resulting in the formation of nodules or cysts. When these types of acne heal, they may leave behind discolored areas or true scars.

ACNE TREATMENTS

Medications for acne try to stop the formation of new pimples by reducing or removing the oil, bacteria, and other things (like dead skin cells) that clog the pores. They can also decrease the inflammation or irritation response of the skin to bacteria. It may take from 4 to 8 weeks before you see any improvement and know if the medication is effective. It takes the layers of skin this long to regenerate. Remember, these medications do not "cure" the condition—the acne improves because of the medication. Therefore, treatment must be continued in order to prevent the return of acne lesions.

There are many types of acne treatments. Some are applied to the skin ("topical" medications) and some are taken by mouth ("oral" medications). In most cases of mild acne, the doctor will start with a topical medication. If acne is more severe and it does not respond adequately to a topical

SHOULD A PHYSICIAN TREAT MY ACNE?

There are a number of other skin conditions that can look like acne. If there is any question about the diagnosis, then the person should be evaluated by a dermatologist.

A physician should examine any child with acne who is between the ages of 1 and 7 years of age, as acne in this "mid-childhood" age group is not normal and may signal an underlying problem.

If a "preadolescent" (7 to 11 years of age) or "adolescent" (12 to 18 years of age) has mild acne and the condition is not bothersome to the individual, proper and regular skin care (what your doctor may call "skin hygiene") may be all that is needed at this point.

Many people do, however, need specific acne medications to help their skin look and feel its best. Your doctor will tell you if you are one of these people. If so, you may be advised to use an over-the-counter or prescription medication that is applied to the skin (a "topical medication") or if the addition of an oral medication (a medication "taken by mouth") is needed. The good news is that the medications work well when used properly!

Some specific factors that may influence the choice of acne therapy include:

- » **Severity.** The number and type of skin lesions (papules or comedones) and the degree of inflammation (mild, moderate or severe).
- » **Scarring.** Scarring is most common when acne is severe, but it can happen even in children with mild acne.
- » **Impact.** If a child is experiencing emotional complications because of the acne or is experiencing negative comments from other children.
- » **Cost** of the acne medications.
- » **The patient's skin type** ("oily" versus "dry" or "combination skin," for example).
- » **Potential side effects** of the medication.
- » **The ease or overall complexity of the treatment plan or medication.**

medication, or if it covers large body surface areas such as the back and/or chest, oral antibiotics and/or oral hormone therapy may be prescribed. In the most severe cases, isotretinoin may be used. In general, it is usually best to start with acne medications that are least likely to cause side effects but are at the same time capable of addressing the specific causes for the acne. Some patients have a good result with just one medication, but many will need to use a combination of treatments: two or more different topical agents or an oral medication plus a topical medication.

Another treatment used for acne may include corticosteroid injections, which are used to help relieve pain, decrease the size, and encourage the healing of large, inflamed acne nodules. Also, dermatologists sometimes perform "acne surgery," using a fine needle, a pointed blade, or an instrument known as a comedone extractor to mechanically clean out clogged pores. One must always weigh the risk for inducing a scar with the potential benefits of any procedure. Prior treatment with topical retinoids can "loosen" whiteheads and blackheads and make it easier to physically remove such lesions.

Heat-based devices, and light and laser therapy are being studied to see whether there is any role for such treatments in mild to moderate acne. At this time, there is not enough evidence to make general recommendations about their use.

TOPICAL ACNE MEDICATIONS

- » Benzoyl peroxide (BP) helps to fight inflammation and is anti-microbial (kills bacteria, viruses, and other microorganisms) and is believed to help prevent resistance of bacteria to topical antibiotics. A benzoyl peroxide "wash" may be recommended for use on large areas such as the chest and/or back. Mild irritation and dryness are common when first using benzoyl peroxide-containing products. Be careful because benzoyl peroxide can bleach towels and clothing!
- » Retinoids (such as adapalene, tretinoin, or tazarotene) unplug the oil glands by helping peel away the layers of skin and other things plugging the opening of the glands. Mild irritation and dryness are common when first using these products. Facial waxing and other skin procedures can lead to excessive irritation and should be avoided during retinoid therapy.
- » Antibiotics fight bacteria and help decrease inflammation. Topical antibiotics commonly used in acne include clindamycin, erythromycin, and combination agents (such as clindamycin/benzoyl peroxide or erythromycin/benzoyl peroxide). Mild irritation and dryness are common when first using these products. Typically, topical antibiotics should not be used alone as treatment for acne.
- » Other topical agents include salicylic acid, azelaic acid, dapsone, and sulfacetamide. Mild irritation and dryness can also occur when first using these products.

RECOMMENDATIONS WHEN USING TOPICAL ACNE MEDICATIONS

- » Apply your medication to clean, dry skin. Topical medications may lead to significant dryness of the affected areas. To minimize this, wait 15-20 minutes after washing before applying your topical medication.
- » The medications work by preventing new breakouts. Spot treatment of individual pimples does not do much. When applying topical medications to the face, use the "5-dot" method. Start by placing a small pea-sized amount of the medication on your finger. Then, place "dots" in each of five locations of your face: Mid-forehead, each cheek, nose, and chin. Next, rub the medication into the entire area of skin - not just on individual pimples! Try to avoid the delicate skin around your eyes and corners of your mouth.
- » The medications are not vanishing creams (they are not magic!) They take weeks if not months to work. Be patient and use your medicine on a daily basis or as directed for six weeks before asking if your skin looks better. Try not to miss more than one or two days each week when using your medications.

EXTRA INFORMATION FOR PREADOLESCENT ACNE

Isn't my child too young to have acne?

Acne most commonly affects teenagers, but it is not just a condition of adolescence. Acne is often seen in children as young as 7 years of age. In many preadolescent children, acne may be the first sign of puberty (sexual development). For example, in a girl, acne may be seen before the development of breasts, pubic and underarm hair, and first menstruation (period). In a boy, acne can occur before the testicles and penis enlarge, pubic and underarm hair appear, or the voice deepens.

Occasionally, acne can even develop in babies or very young children. When this occurs, it is particularly important that a health care provider evaluate the condition. A physician should evaluate any child with acne that starts between the ages of 1 and 7 years of age, as acne in this "mid-childhood" age group is not normal and may signal an underlying problem.

Does acne look different in preadolescents than in teenagers/adolescents?

In most preadolescents, acne is a milder condition. Typically, children in this age group have whiteheads and blackheads (comedones) and sometimes red pimples (papules) in the "T-zone" of the face—across the forehead, on and along the nose, and on the chin. They may also occur on the ears. Comedones are usually small bumps and usually are not reddened (inflamed).

However, some preadolescents do have more severe acne. This may be a sign that a child will have more serious acne later on, so early intervention may be even more important.

Are acne treatments safe for preadolescents?

Most acne treatments have not been formally approved for use in pediatric patients less than 12 years of age (one product has been approved in patients 9 years of age and older). However, most acne treatments have been fully tested in adolescents and young adults and have been found to be safe and effective. These same treatments also have been used safely and effectively for many years in preadolescents.

- » If your medications make your skin too dry, try using them "every other night" or even "every third night." Gradually work up to daily.
- » The same medications often come in various forms or formulations: Creams, ointments, lotions, gels, microspheres, or foams. Use the formulation that has been recommended and don't switch to other forms unless instructed. Some forms (such as alcohol based gels) may be more drying and less tolerable for certain skin types.
- » Many tretinoin formulations should be applied at bedtime as they can be inactivated by sunlight. If a retinoid product and a benzoyl peroxide product are prescribed separately, the benzoyl peroxide should be applied during the day and the retinoid should be applied later in the evening. If a once daily routine is easier for you, ask your doctor about treatment plans.
- » Sometimes individual medications are not as effective as a combination of two or more agents. The doctor may need to try several medications or combinations before finding the one that is best for that patient.
- » Moisturizer, sunscreen, and make-up may be used in conjunction with topical acne medications. In general, acne medications are applied first so they may directly contact the skin. Ask your physician to review specific application instructions!
- » It is especially important to always use sunscreen when using a topical retinoid or oral antibiotic. These drugs can make your skin more sensitive to the sun. In general, sunscreen gets applied AFTER any acne medications.
- » Don't stop using your acne medications just because your acne got better. Remember, the acne is better because of the medication, and prevention is the key to treatment.

ORAL ACNE MEDICATIONS

Antibiotics include tetracycline-class medicines (tetracycline, minocycline, and doxycycline) erythromycin; trimethoprim-sulfamethoxazole; and occasionally cephalixin or azithromycin. These drugs may decrease bacteria and inflammation, and are most effective for moderate-to-severe acne. A product containing benzoyl peroxide should be used along with these antibiotics to help decrease the possibility of microbial resistance.

Hormonal treatment is used only in females and usually consists of oral contraceptives (birth control pills). Spironolactone is also sometimes used.

Isotretinoin, a derivative of vitamin A, is a powerful drug with several significant potential side effects. It is reserved for acne which is severe or when other medications have not worked well enough.

SIDE EFFECTS OF ORAL ACNE MEDICATIONS

- » Tetracycline, minocycline, and doxycycline are in the same class of drugs and have several possible side effects in common. If you notice any of the following, stop using the medication and notify the health care provider: Headaches; blurred vision or other changes in vision; dizziness; sun sensitivity; heartburn or stomach pain; irritation of the esophagus; darkening of scars, gums, or teeth (more often with minocycline); nail changes; yellowing of the skin (indicating possible liver disease); joint pains, and flu-like symptoms. Taking oral antibiotics with food may help with symptoms of upset stomach.
- » In addition to the tetracycline drugs, many other oral medications can cause irritation, a burning sensation (heartburn), or pain in the esophagus. To reduce the risk of these kinds of problems: (1) Always take the pills with lots of water and (2) Don't take a pill right before getting into bed—stay upright for at least one hour. Minocycline and doxycycline may be taken with food to decrease stomach upset.

For further information about acne, including information on this in adolescents and young adults:

American Academy of Dermatology:
www.aad.org/skin-conditions/dermatology-a-to-z/acne

National Institute of Arthritis and Musculoskeletal and Skin Diseases:
www.niams.nih.gov/Health_Info/Acne

SKIN HYGIENE: HOW SHOULD I WASH MY SKIN?

Good skin hygiene is important to support any acne treatment plan. Here are several specific suggestions for practicing good skin hygiene and keeping your skin looking its best:

- » Everyone with acne should wash the skin twice a day: Once in the morning and once in the evening. This includes any showers you take.
- » Use a gentle cleanser or soap to wash your face (unless a medicated cleanser was recommended by your doctor.) Do not use harsh scrubs or exfoliating products with microbeads as these can cause irritation to the skin. Avoid using harsh, deodorant soaps, as well.
- » Do not scrub the skin with a washcloth or loofah as these can irritate and inflame your acne. Acne does not come from "dirt", so it is not necessary to scrub the skin clean. In fact, scrubbing may lead to dryness and irritation that makes the acne even worse and harder for patients to tolerate acne medications.
- » Over-the-counter "acne washes" often contain salicylic acid or benzoyl peroxide. These ingredients can be helpful in clearing oil from the skin and reducing bacteria, but they may also be drying and can add to irritation. Hold off using these products unless specifically recommended by your doctor.
- » Wash the skin as soon as possible after playing sports or other activities that cause a lot of sweating. Also, pay attention to how your sports equipment (shoulder pads, helmet strap, etc.) might be making your acne worse.
- » When you use makeup, moisturizer, or sunscreen make sure that these products are labeled "non-comedogenic", or "won't clog pores", or "won't cause acne".
- » Try not to "pop pimples" or pick at your acne as this can delay healing and may result in scarring or dark spots. Picking/popping acne can also cause a serious skin infections.
- » Wash or change your pillow case once to twice a week, especially if you use products in your hair.
- » Facials and other treatments to remove, squeeze, or "clean out" pores are not recommended. Manipulating the skin in this way can make acne worse and can lead to severe infections and/or scarring. It also increases the likelihood that the skin will not be able to tolerate acne medications.

MEDICATION APPLICATION INSTRUCTIONS

MEDICATIONS

BENZOYL PEROXIDE

Each morning, wash with benzoyl peroxide (you can use up to 10% wash, but the higher concentrations may be more irritating or drying); leave on the skin for 3 to 5 minutes; rinse off thoroughly. At night, you can use a mild cleanser (such as Dove, Neutrogena, Purpose, or Cetaphil). Most of the time, it should be used once a day as some people will find that using it twice a day will irritate and dry out your skin.

WARNING: Benzoyl peroxide bleaches fabrics. Don't get it on towels, clothing, upholstery, pillowcases, linens, or carpeting.

SIDE EFFECTS: Benzoyl peroxide - drying, redness, bleaching of clothes, towels and sheets, contact allergies.

TOPICAL ANTIBIOTICS (e.g. Topical Clindamycin)

Clindamycin: Apply this product once or twice a day as instructed by your physician.

NOTE: Unless otherwise instructed by your physician or unless you are allergic, always use benzoyl peroxide in your acne treatment plan if you are using topical clindamycin. Without benzoyl peroxide, the bacteria associated with your acne may develop resistance to clindamycin.

TOPICAL RETINOIDS (e.g. Adapalene, Tretinoin, Tazotene)

Tretinoin: When applying this topical medication to the face (usually at night), use the "5-dot" method. Start by placing a small pea-sized amount of the medication on your finger. Then, place "dots" in each of 5 locations of your face: mid-forehead, each cheek, nose, and chin. Next, rub the medication into the entire area of skin - not just on individual pimples! Try to avoid the delicate skin around your eyes and corners of your mouth. Don't forget to use proper sun protection while using tretinoin!

NOTE: If irritation develops, call your doctor and stop the use of this medication for a couple of days. When irritation subsides, begin applying every other night.

SIDE EFFECTS: Retinoids - dryness, redness, increased sun sensitivity.

COMBINATION PRODUCTS

When applying these topical medications to the face (usually at night), use the "5-dot" method. Start by placing a small pea-sized amount of the medication on your finger. Then, place "dots" in each of five locations of your face: Mid-forehead, each cheek, nose, and chin. Next, rub the medication into the entire area of skin - not just on individual pimples! Try to avoid the delicate skin around your eyes and corners of your mouth. Don't forget to use proper sun protection while using products.

NOTE: If irritation develops, call your doctor and stop the use of these medication for a couple of days. When irritation subsides, begin applying every other night.

WARNING: These products may bleach fabrics. Don't get it on towels, clothing, upholstery, linens, or carpeting.

DOXYCYCLINE

Take one pill ONCE or TWICE per day, as instructed by your physician.

NOTE: Always take these pills with lots of water! A pill stuck in the esophagus can cause significant burning and irritation. Avoid "popping" a pill right before bed & stay upright for at least one hour after taking a pill.

WARNING: Doxycycline increases your sensitivity to the sun, so practice excellent sun protection! If you notice any of the following, stop using the medication and notify your health care provider: headaches; blurred vision; dizziness; sun sensitivity; heartburn-stomach pain; irritation of the esophagus; darkening of scars, gums, or teeth (more often with minocycline); nail changes; yellowing of the eyes or skin (indicating possible liver disease); joint pains-and flu-like symptoms. Taking oral antibiotics with food may help with symptoms of upset stomach.

SIDE EFFECTS: Severe headaches; dizziness; sun sensitivity; irritation of the esophagus; discoloration of scars, gums, or teeth (often with minocycline); nail changes.

MINOCYCLINE

Take one pill ONCE or TWICE per day, as instructed by your physician.

NOTE: Always take these pills with lots of water. A pill stuck in the esophagus can cause significant burning and irritation. Avoid "popping" a pill right before bed and stay upright for at least one hour after taking a pill.

WARNING: Though less likely than doxycycline, minocycline may increase your sensitivity to the sun, so practice excellent sun protection! If you notice any of the following, stop using the medication and notify your health care provider: headaches; blurred vision; dizziness; sun sensitivity; heartburn-stomach pain; irritation of the esophagus; darkening of scars, gums, or teeth (more often with minocycline); nail changes; yellowing of the eyes or skin (indicating possible liver disease); joint pains-and flu-like symptoms. Taking oral antibiotics with food may help with symptoms of upset stomach.

SIDE EFFECTS: Severe headaches; dizziness; sun sensitivity; irritation of the esophagus; discoloration of scars, gums, or teeth (often with minocycline); nail changes.

Minocycline can rarely cause liver disease, joint pains, severe skin rashes, and flu-like symptoms. If you should notice yellowing of the eyes or skin, or any of the above, notify your doctor and stop using the medication immediately.

HORMONAL THERAPY: ORAL CONTRACEPTIVE PILLS

Birth Control Pill: Take your birth control pills as directed on the medication packet.

NOTE: Try to find a regular time in your day to take the pill so that you don't forget. The best time is about half an hour after a meal or snack, or at bedtime. If you do forget to take your daily pill at the regular time, take one as soon as you remember and take the next at your regular scheduled time.

WARNING: Do not take this medication until discussing it with your physician if you smoke, are pregnant (or trying to become pregnant), have a personal history of breast cancer, have a condition called Factor 5 Leiden deficiency, have a family history of clotting problems, regularly have migraine headaches (especially with aura or due to flashing lights), or have any vaginal bleeding other than that associated with your menstrual cycle.

ARE YOU HAVING PROBLEMS WITH THE MEDICINE?

You should not be able to see any of the medicines on your face. If you can see a white film on your skin after applying the medication, there is too much medicine in that area and a thinner coat needs to be applied. Be sure the medication is spread evenly on your face.

If your skin gets too dry, you can apply a light ("non-comedogenic") moisturizer on top of your medicine or you may switch to using the medicine "every other day" or "every third day" instead of daily. If your skin is still too irritated, you may need to switch to a milder medication.

If your skin is red and very itchy, you may be allergic to the medication and should stop using it. Discuss this problem with your physician at your next visit.

WHEN AND WHERE TO CALL WITH CONCERNS

If you experience any unusual symptoms or severe headaches that are not resolve with acetaminophen or ibuprofen, stop taking the medication and call your physician's office immediately.



Contributing SPD Members:

Smita Aggarwal, MD
Amanda Cyrulnik, MD
Erum Ilyas, MD
Sarah Stein, MD
Megha Tollefson, MD

Committee Reviewers:

Andrew Krakowski, MD
Aimee Smidt, MD

Expert Reviewer:

Andrea Zaenglein, MD

The Society for Pediatric Dermatology and Wiley-Blackwell Publishing cannot be held responsible for any errors or for any consequences arising from the use of the information contained in this handout. Handout originally published in *Pediatric Dermatology*; Vol. 31, No. 6 (2014).