



A REVIEW ON ACNE

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ABSTRACT

Acne is a cutaneous pleomorphic disorder of the pilosebaceous unit involving abnormalities in sebum production and is characterized by both inflammatory (papules, pustules and nodules) and non-inflammatory (comedones, open and closed) lesions. Propionibacterium acnes and Staphylococcus epidermidis are common pus-forming microbes responsible for the development of various forms of, acne vulgaris. Common therapies that are used for the treatment of acne include topical, systemic, hormonal, herbal and combination therapy. It is the sequelae of the disease that are the distinguishing characteristics of acne in skin of color, namely post-inflammatory hyperpigmentation and keloidal or hypertrophic scarring. Although often perceived as a self-limited disease of adolescence, its prevalence remains high into adulthood. Nearly 90% of teenagers have acne, and half of them continue to experience symptoms as adults. By age 40 years, 1% of men and 5% of women still have lesions. Recent analyses show an increasing prevalence of acne in children, perhaps because of pubertal onset. Although the medical and surgical treatment options are the same, it is these features that should be kept in mind when designing a treatment regimen for acne. In recent years, due to better understanding of the pathogenesis of acne, new therapeutic modalities are designed. Availability of new treatment options to complement the existing armamentarium should help to achieve the successful therapy of greater numbers of acne patients, ensure improved tolerability and fulfill patient expectations. Successful management of acne needs careful selection of anti-acne agents according to clinical presentation and individual patient needs.

INTRODUCTION:

Acne vulgaris is a disease of the pilosebaceous follicle characterized by non-inflammatory (open and closed comedones) and inflammatory lesions (papules, pustules, and nodules). Its pathogenesis is multifactorial - the interplay of hormonal, bacterial, and immunological (inflammatory) factors results in the formation of acne lesions. Although acne is not a life-threatening condition, it can have detrimental effects on the quality of life of affected individuals. Fortunately, acne is readily responsive to the wide-range of available medications, with the goals of therapy being to clear the lesions, prevent scarring, and limit any treatment-related side-effects and psychosocial sequelae. Newer fixed-dose combination products target multiple acne pathogenic factors and offer simplified dosing regimens, which may potentially enhance both efficacy and patient adherence when compared with single agent therapy.

The term acne is derived from Greek word—acme which means —prime of life. Although generally considered to be a benign, self-limiting condition, acne may cause severe psychological problems or disfiguring scars that can persist for a lifetime. It is a pleomorphic disorder and can manifest at any time during life but it most commonly presents between ages of 12-24, which estimates of 85% of population affected. But many adult women do have acne in the days before their menstrual periods. Acne is most common in teenagers, but it can happen at an age, even as an infant. Three out of four teenagers have acne to some extent, probably caused by hormonal changes that stimulate oil production. However, people in their 30s and 40s may also have acne. Acne vulgaris affects the

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In recent years multifactorial nature of acne has been elucidated. In patients who are hypersensitive to *Propionibacterium acnes* that colonize follicles, inflammatory lesions may develop from the micro comedones. Papules and pustules may be superficial or deep and scarring depending on the vigor of hypersensitivity. Nodules are inflammatory lesions >0.5–1 cm in size. Nodules may develop into abscesses, which have incorrectly been termed “cysts”. The term “nodulocystic acne” is incorrect, but probably too deeply

ensconced to readily fall from use. Conglobate lesions are intensely inflamed neighboring nodules that merge into a loculated abscess. Secondary lesions such as scars, keloids, sinus tracts, and true cysts may follow in the most inflammatory disease.

PATHOGENESIS:

The pathogenesis of acne is currently attributed to multiple factors, such as increased sebum production, alteration of the quality of sebum lipids, androgen activity, proliferation of *Propionibacterium acnes* (*P. acnes*) within the follicle and follicular hyperkeratinization. Increased sebum excretion contributes to the development of acne. Neutral and polar lipids produced by sebaceous glands serve a variety of roles in signal transduction and are involved in biological pathways. Additionally, fatty acids act as ligands of nuclear receptors such as PPARs. Sebaceous gland lipids exhibit direct pro- and anti-inflammatory properties, whereas the induction of 5-lipoxygenase and cyclooxygenase-2 pathways in sebocytes leads to the production of pro-inflammatory lipids. Furthermore, hormones like androgens control sebaceous gland size and sebum secretion. In cell culture, androgens only promote sebocyte proliferation, whereas PPAR ligands are required for the induction of differentiation and lipogenic activity. On the other hand, keratinocytes and sebocytes may be activated by *P. acnes* via TLR, CD14, and CD1 molecules. Pilosebaceous follicles in acne lesions are surrounded by macrophages expressing TLR2 on their surface. TLR2 activation leads to a triggering of the transcription nuclear factor and thus the production of

cytokines/chemokines, phenomena observed in acne lesions. Furthermore, *P. acnes* induces IL-8 and IL-12 release from TLR2 positive monocytes. All these events stimulate the infra-infundibular inflammatory process, follicular rupture, and perifollicular abscess formation, which stimulate the wound healing process.

Acne develops as a result of interplay of the following 4 factors:

- 1) Follicular epidermal hyperproliferation with subsequent plugging of the follicle.
- 2) Excess sebum production.
- 3) The presence and activity of the commensal bacteria *Propionibacterium acnes*.
- 4) Inflammation.

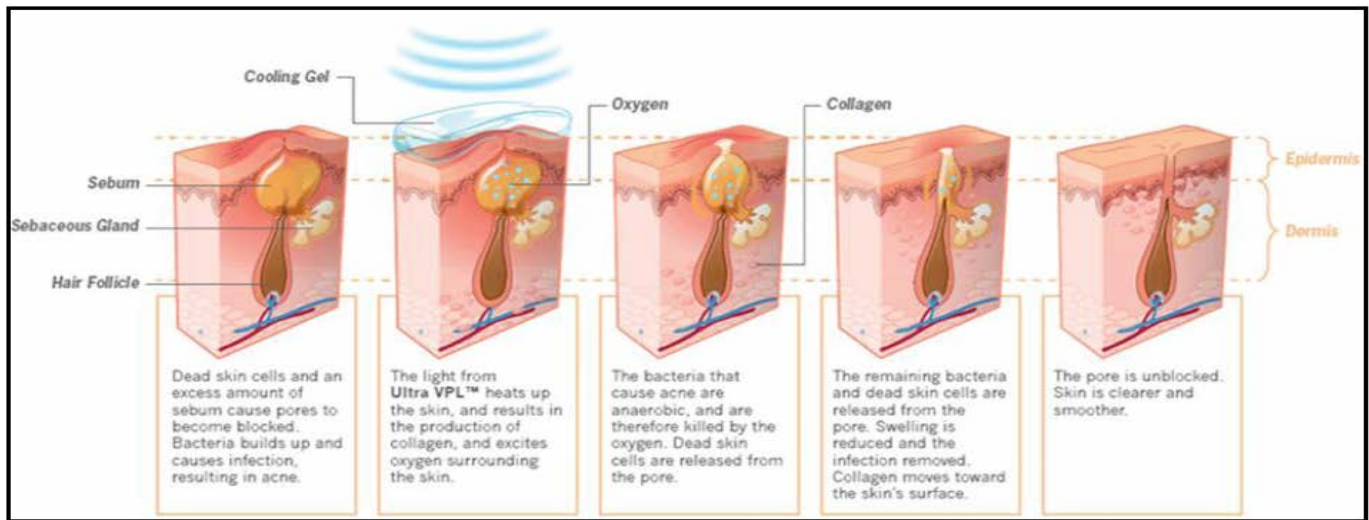


Figure 1:

CAUSES:-

During puberty your skin gets oilier. This can cause pimples. There are many myths about cause of acnes, but there are only 3 main causes:-

1. **HEREDITY** – Acne can run in families. If your mom or dad had severe acne as a teen, there may be a chance you'll get it soon.
2. **PLUGGED OIL DUCTS** – Small Whiteheads or Blackheads can form when the oil in your skin get plugged with oil cells. They can turn into hard and bumpy pimples of acne.
3. **HORMONE** – Certain hormones, called, androgens trigger the oil glands on face, back, shoulder to begin producing more oil. Androgen levels rise when a human becomes an adolescent. Rising androgen levels make the oil glands under your skin grow; the enlarged gland produces more oil. Excessive sebum can break down

cellular walls in your pores, causing bacteria to grow. Some studies indicate that susceptibility to acne could also be genetic. Some medications which contain androgen and lithium may cause acne.

Pregnancy may cause acne to either develop for the first time, or to recur. However, their acne clears up soon after the birth of the baby. Newborn babies have acne at times as well. This can be due to the stress of birth or because some hormones from the mother may have permeated the umbilical cord and passed to the baby.

TYPES OF ACNE SCARS:

Type #1: Depressed or atrophic acne scars: About 80 to 90% of people with acne scars have this type. During the skin's healing process, too little collagen is deposited to fill up the holes, leaving indents.

There are 3 kinds of depressed scars. Sometimes people have all 3 forms of atrophic scars.



Figure 2:

(a) **Ice Pick Scars:** Ice pick scars are deep, very narrow scars that extend into the dermis. The skin looks as if it has been pierced by an ice pick or sharp instrument. Ice pick scars seem to make a small, deep "hole" in the skin. Some may look like a large, open pore. Ice pick scars develop after an infection from a cyst or other deep inflamed blemish works its way to the surface. Skin tissue is destroyed, leaving a long column-like scar. Ice pick scars can be treated with punch excision or punch grafting.

(b) **Boxcar Scars:** Boxcar scars are round or oval depressions with steep vertical sides. Wider than ice picks, boxcar scars give the skin a pitted appearance. When an inflammatory breakout destroys collagen, tissue is lost. The skin over this area is left without support, and a depressed area is created. Boxcar scars may be superficial to severe, depending on the amount of tissue lost. Treatments for boxcar scars include punch excision or elevation, dermal fillers, and laser resurfacing.

(c) **Rolling Scars:** This type of scarring causes rolling or "wave-like" undulations across otherwise normal-looking skin. Rolling scars arise when fibrous bands of tissue develop between the skin and the subcutaneous tissue below. These bands pull the epidermis, binding it to deeper structures of the skin. It is this pulling of the epidermis from within that creates the rolling appearance of the skin. Rolling scars are best treated with subcision.

Type #2:- Hypertrophic or Keloid Scars: - A hypertrophic scar looks like a raised, firm mass of tissue. These types of scars often grow larger than the original wound. Hypertrophic scars caused by acne are most often found on the torso, especially in men. Unlike ice pick or boxcar scars, hypertrophic scars are not caused by a loss of tissue. Rather, they develop because of an overproduction of collagen. Steroid (cortisone) creams, tapes, or injections are used to help shrink and flatten the scar. Interferon injections are also used to soften scar tissue.



Figure 3:

TYPE#3: Comedonal Scar: - comedonal acne is all about clogged pores. "This is usually found in people whose skin doesn't turn over as quickly or as well," . "They tend to have little bits of oil or waxes under the skin." This looks like tiny bumps all over the skin, but often concentrated in the T-zone. Can treat it over the counter by using products that contain salicylic or glycolic acid to exfoliate the top layer of your skin. "Make sure you are compliant with washing your face twice a day and using cleansers and treatment products that contain exfoliants.



Figure 4:

TYPE#4:- Inflammatory acne :- these consist of raised, red lesions and are what many people think of when they hear the word "pimples" or "zits." These pimples can have white, pus filled centers.



Figure 5:

TYPE#5:- **Cysts**:- Acne that is deep, appears big, and is pus filled, is called a cyst. It is quite painful to touch and needs immediate attention from a doctor. This is a type of localized inflammation (abscess) formed when oil ducts become clogged and subsequently rupture. Cystic acne is most common in the teenage years. Treatment includes topical and systemic antibiotics, topical retinoids and isotretinoin, a systemic retinoid. Cystic acne can cause permanent scarring in severe cases.



Figure 6:

TYPE#6:- **papules**:- papules represent the phase beyond whiteheads, when the presence of bacteria, sebum, and dead skin cells under the skin have caused inflammation, you should know papules by their redness and swelling—not to mention, the absence of pus. Relatively speaking, they're small to medium in size. Since inflammation and irritation are the symptoms of a papule, it's best not to apply anything that will dry it out further. The goal is to soothe and calm the area until the medication helps subside it.



Figure 7:

TYPE#7:- **Nodules**:- This is one of the more severe types of acne which is much larger than papules or pustules. A nodule is a painful and inflamed bump. It doesn't have pus and is hard to the touch. This can only be cured by proper medical treatment and usually requires the use of strong medicines.



Figure 8:

TYPE#8:- **PUSTULES**:- Pustules are similar to papules, but they've got pus—which hopefully makes the name easy to remember! Because they contain whitish or yellowish-looking pus, they can look a lot like bigger, “angrier” whiteheads, and they may feel painful to the touch. It's tempting to want to squeeze them right away but you could pay for it later with a post-breakout scar. Patience is a virtue when it comes to pustules as you should wait until a whitehead is visible.



Figure 9:

TYPE#9:- **Acne Fulminans:** - is a severe form of the skin disease, acne, which can occur after unsuccessful treatment for another form of acne, acne conglobata. The condition is thought to be an immunologically induced disease in which elevated level of testosterone causes a rise in sebum and population of Propionibacterium acnes bacteria. The increase in the amount of P acnes or related antigens may trigger the immunologic reaction in some individuals and lead to an occurrence of acne fulminans.



Figure 10:

TYPE#10:- **Acne Mechanica:** - It originates as a result of excessive heat and friction between the skin. It is usually seen in people involved in sports or those who wear helmets, caps or sports gear for prolonged periods of time on a regular basis.



Figure 11:

TYPE#11:- **Pyoderma Faciale:** - Pyoderma faciale is an unusual skin condition occurring in young adult women. It is also called 'rosacea fulminans'. defined as inflamed cysts localized on the face of females. It typically affects women in their early 20s and severe scarring may result in untreated cases. Large erythematous papules, pustules and nodules characterize pyoderma faciale.



Figure 12:

TYPE#12:- **Acne Conglobata:** - This is the severest type of acne which is seen in both male and females. It appears as a large lesion on the skin which is interconnected and usually affects the chest, upper arms, face, thighs and buttocks. This is a rare type of acne and often leads to skin damage and permanent scars.



Figure 13:

TYPE#13:- **WHITEHEADS** :- they're pretty much exactly what they sound like: small blemishes with whitish "heads," which result when the follicles get plugged with sebum and dead skin cells. Sebum is another word for oil but don't be alarmed. Your skin needs a certain amount of natural oil to protect and nourish your skin. It's only when there's excess sebum and dead skin cells that you risk clogged pores.

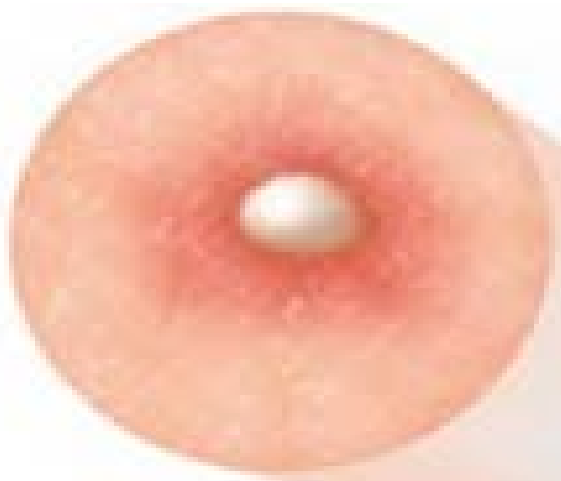


Figure 14:

TYPE#14:- **BLACKHEADS** :- blackheads are, dermatologically speaking, classified as comedones. But unlike whiteheads, which are closed, blackheads are open, hence the black appearance—it's what happens when the debris inside the follicle becomes oxidized. Comedones are another term for clogged hair follicles (pores). So if it's clean and clear, call it a pore; if it's clogged, call it a comedo or the plural, comedones.



Figure 15:

Table 2: QUALITATIVE SCARRING GRADING SYSTEM

Grades of Post Acne Scarring	Level of disease	Clinical features
1	Macular	These scars can be erythematous, hyper- or hypopigmented flat marks. They do not represent a problem of contour like other scar grades but of color.
2	Mild	Mild atrophic or hypertrophic scars that may not be obvious at social distances of 50 cm or greater and may be covered adequately by makeup or the normal shadow of shaved beard hair in men or normal body hair if extrafacial.
3	Moderate	Moderate atrophic or hypertrophic scarring that is obvious at social distances of 50 cm or greater and is not covered easily by makeup or the normal shadow of shaved beard hair in men or body hair if extrafacial, but is still able to be flattened by manual stretching of the skin (if atrophic).
4	Severe	Severe atrophic or hypertrophic scarring that is evident at social distances greater than 50 cm and is not covered easily by makeup or the normal shadow of shaved beard hair in men or body hair if extrafacial and is not able to be flattened by manual stretching of the skin.

ACNE DIAGNOSIS :- Acne is very simple to diagnose. No medical tests are required to diagnose it. A physical exam and a medical history will suffice. Doctors decide the severity of the acne by using a graduated scale. They compare a patient's acne with a standardized set of photographs to see if the acne is mild (1 on the scale) or very severe (12 on the scale). However, doctors do conduct various examinations and tests to rule out the possibility of the acne being a symptom of an underlying medical condition. These tests include:-

(1) Microbiological biopsy of an acne lesion to check if:

- 1 The bacteria, such as Propionibacterium acnes, react to the antibiotics prescribed by the doctor.
- 2 The culture obtained shows the presence of yeast or gram-negative bacteria, as this implies that the lesions are a symptom of either folliculitis or dermatitis.

(2) For women suffering from acne, doctors routinely suggest blood tests to check for abnormal levels of hormones (for example, testosterone). Hormone tests will help:

1 To determine whether there are abnormally high levels of prolactin in the body.

2 To check for excessive secretion of testosterone, the predominantly male hormone

3 To check for the possibility of pregnancy, in which case the treatment would have to be cancelled .

4 To rule out Cushing's syndrome

Tests, which should be taken in the morning during the first fifteen days of the women's menstrual cycle, include:-

1. Free androgen index (FAI)

2. Dehydroepiandrosterone sulfate (DHEAS)

3. Dexamethasone suppression test

4. Luteinising hormone and Follicular Stimulating Hormone Test

(3) A pelvic ultrasound to rule out the presence of tumors

(4) Apart from the tests mentioned above, physicians perform these blood tests to monitor their patient through the course of the prescribed therapy or treatment:

- A test to measure liver functioning

- Total blood count test

- Test to check for the levels of cholesterol and triglycerides in the body

The diagnosis of acne is based on history and examination. Factors to consider when taking a history include:-

1. Age of onset and its duration.

2. Menstrual and Oral contraceptive history in females.

3. Skin sensitivity and dryness.

4. Use of topically applied products such as ; cosmetics, sunscreens, hair products and moisturizers that might be irritant or occlusive.

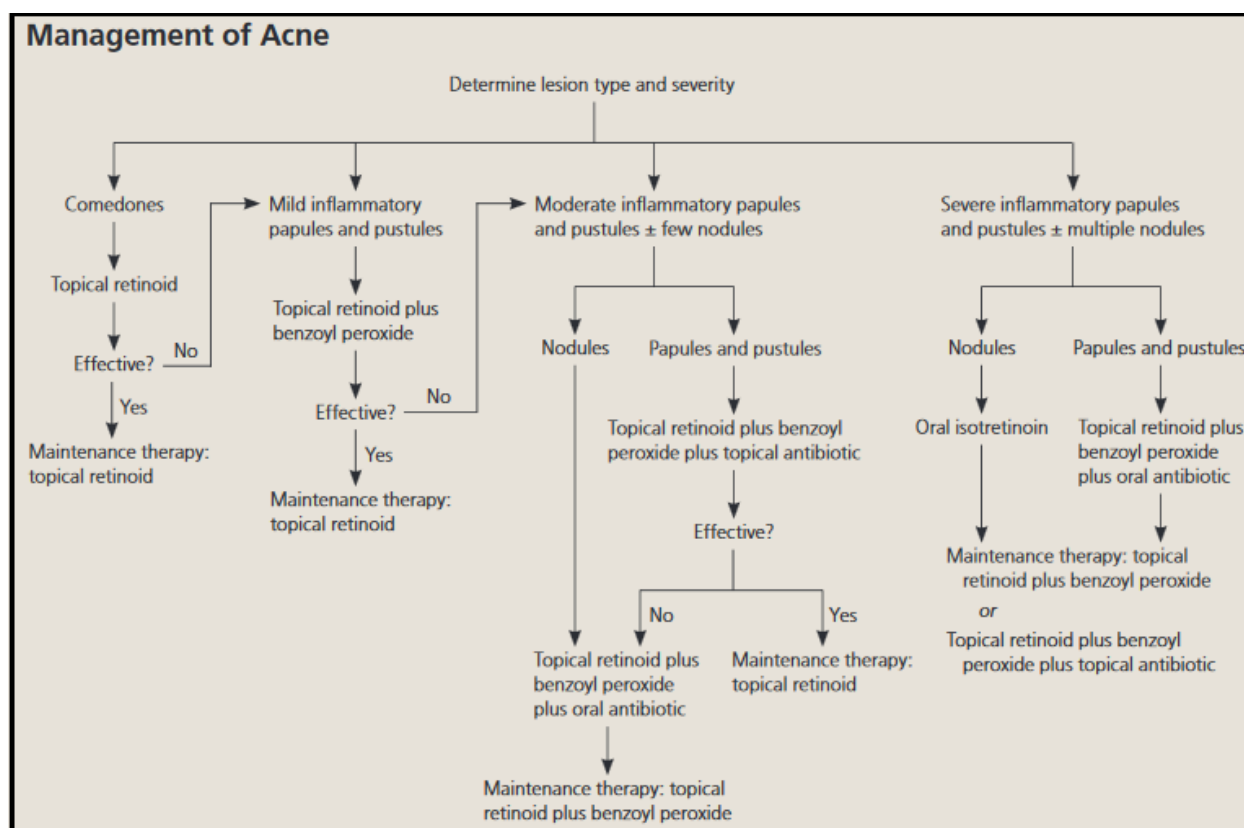
5. Use of other topical products, especially corticosteroids preparations.

6. Prescription and over-the-counter acne medicines used and their side effects.

7. "Recreational" use of steroids e.g. gym use

8. Presence of depression and poor self-esteem.

Table 3: MANAGEMENT OF ACNE



SYMPTOMS: Acne signs and symptoms vary depending on the severity of your condition:

- Whiteheads (closed plugged pores)
- Blackheads (open plugged pores — the oil turns brown when it is exposed to air)

- Small red, tender bumps (papules)
- Pimples (pustules), which are papules with pus at their tips
- Large, solid, painful lumps beneath the surface of the skin (nodules)

- Painful, pus-filled lumps beneath the surface of the skin (cystic lesions)

Acne Due to Medicines: -

It is widely accepted that acne can be caused or aggravated by the intake of certain medications or drugs. Research firmly supports this. These are some of the drugs that can cause acne:

Hormonal Medicines: Several hormonal supplements have been known to cause acne. They raise the level of hormones in the body, upset the endocrine system and act on the sebaceous glands in the skin. The hormonal supplements that may cause acne are:

☐☐ Testosterone supplements: An increase in testosterone levels in the body can stimulate the sebaceous glands to produce greater quantities of sebum. This ultimately results in acne.

☐☐ Oral steroids: These cause steroidal acne.

☐☐ Anabolic Steroids- Anabolic steroids, such as danazol and stanozolol, are known to cause severe acne, such as acne conglobata and acne fulminans. Acne due to the intake of anabolic steroids is mostly seen in athletes, who take steroids to build muscles.

Other Types of Medicines: - Some of the other medicines that may cause acne are -

- 1 Antidepressants such as lithium and amoxapine
- 2 Anti-tuberculosis drugs like ethionamide, isoniazid and rifampicin.
- 3 Halogens like iodides, chlorides, bromides and halothane.
- 4 Vitamin B12 (Cyanocobalamin).
- 5 Antiepileptics like carbamazepine, phenytoin and Phenobarbital

TREATMENT:

Topical (or external) treatments for acne include one or more creams, washes, or gels that include :-

- Antibacterial agents and antibiotics such as benzoyl peroxide, clindamycin, erythromycin, sulfur, sodium sulfacetamide, and azelaic acid.
- Retinoids – vitamin A-derived products such as tretinoin, tazarotene, and adapalene.

Oral treatments may include:

- Antibiotics such as tetracycline, minocycline, doxycycline, erythromycin, ampicillin, clindamycin, trimethoprim-sulfamethoxazole, azithromycin, or cephalosporins.
- Oral contraceptives and spironolactone have been found to help regulate hormones.
- Isotretinoin, a strong drug with many side effects, for severe acne unresponsive to the above treatments.

Procedures:

- Special "blue light" treatments are being investigated to treat acne but are usually not covered by insurance.
- Several types of laser treatments also help acne and are often used with other treatment methods; treatments are expensive, must be repeated for several months, and have variable efficacy. Insurance may not cover laser therapy.
- Laser resurfacing, plastic surgery, and/or dermabrasion may help reduce the prominence of old acne scars.

HOME REMEDIES FOR ACNE:



Figure 16:

1. Mixture of Azadirachta Indica and Basil Paste:

Azadirachta indica and Basil both are excellent antibacterial and anti-fungal agents. A paste made up of these agents when applied on the pimple and left overnight, removes the bacteria causing infection. Regular application prevents recurrence of acne and is also known to reduce blemishes and marks of pimples.

2. Aloe Vera:

Aloe Vera helps in reducing acne scars and acts as a pain inhibitor and a coagulating agent. Take a leaf of aloe Vera and cut it into two halves. Extract fresh juice from it by squeezing the jelly-like pulp and apply it gently on the acne. You can also add some lemon drops in the juice for effective results.

3. Turmeric:

curcumin has potent antioxidant, wound-healing, and anti-inflammatory properties, which may prove to be therapeutic against acne. Turmeric is considered safe in amounts found in foods and when taken orally and topically in medicinal quantities. It may cause atopic dermatitis in some people. However, pregnant women should not take medicinal amounts of turmeric because it could stimulate the uterus. Topically turmeric may cause the skin to temporarily stain yellow—especially in people with light skin tones. When used as a topical remedy, it is typically mixed with water or honey

to a pasty consistency and applied directly to the skin. Orally, dried turmeric can be mixed into liquid and consumed.

4. Fuller's Earth: Multani mitti has great adsorbent properties. This means that it can soak the extra oil and pus from the skin. You can make a thick paste of multani mitti and rose water, apply it on the affected region and let it dry. While the paste is completely dried off it starts the process of adsorption. This helps in drying of the outbursts of acne. You can add a pinch of turmeric to this paste also.

5. Mint: Mint is effective on any type of acne because of its medicinal properties. Take some fresh mint leaves and crush them. With the help of a cotton ball, apply this paste on the acne. Leave it for 20 minutes. Then, wash the face with cold water. Repeat the process after every two days. You can also apply mint juice with the help of cotton ball on acne.

6. Orange Peel Powder: Orange peel powder which can form a great skin scrub acts as a skin exfoliant and opens the clogged pores. This indirectly reduces the frequent recurrence of acne. This scrub is best against blackheads which affects the overall skin appearance. Put some orange peels in the sun to dry out. Grind these dried peels into powder. Add water in the powder to make a paste. Apply the paste gently on the acne. Leave it for fifteen minutes and wash it off with warm water. Vitamin C present in orange helps in treating the acne on the face. It also helps in getting rid of pigmentation, blackheads, wrinkles, and dark spots.

7. Soda (Baking Soda): Soda which is called sodium bicarbonate scientifically is an anti-infective agent. This means it will prevent skin infections and reduce acne. Soda is also effective in reducing skin inflammation caused due to infection. You can add 1-2 drops of water to a teaspoon of soda, make a paste and apply specifically on the acne. Baking soda acts as a natural exfoliator for the skin. It is known for removing the dead cells and maintaining pH balance of the skin. With its anti-inflammatory and antiseptic properties, it is one of the best remedies for healing acne. Take 2 tablespoons of baking soda. Add 1 teaspoon of cinnamon powder and some drops of lemon juice. Then, add 5 teaspoons of honey. Stir the mixture well. Apply the mix directly on the face. Rinse it off after five minutes. Baking soda can also be used with water to treat acne. Add some water to baking soda and apply it on the infected area. Leave it for five minutes and then, wash it off.

8. Garlic Clove of Garlic Juice: - Garlic is anti bacterial in nature. It is beneficial in number of health problems,

along with being antibacterial in nature; garlic also reduces the excessive oil content of the skin. For application on the skin, crush few garlic cloves and apply this crushed mixture on to the affected skin, secure it with a band-aid and leave for 40-45 min for best results. Garlic therapy is one the best and most effective remedy. Garlic consists of zinc, sulphur, allicin, and calcium, due to which, it acts as an anti-fungal and antibiotic for cleansing the skin. For curing acne fast, crush some raw garlic cloves and make a paste. Apply this paste directly on the acne to see the results. Garlic can also be used as a facial mask. Add some egg yolk in the garlic juice. Stir it well and apply it on face, covering the infected area. Leave it for twenty minutes. Wash it off with clean water and dry your face with a clean towel.

9. Drink Loads of Water and Fluids: - We must drink ample of water throughout the day, and along with it make a practice of consuming fresh vegetable juices which also balances the body's water balance. Now water in the body helps in flushing out toxins from body and moisturizes the skin. When the toxins are flushed out, your skin will become healthy and development of acne is reduced.

10. Tomatoes: - Tomatoes are known for its antioxidant properties and are rich in Vitamin C, A and K. All these properties help in drying out the acne. For healing acne, take one tomato and slice it. Put one slice directly on the troubled area. You can also make a paste by grinding a tomato. You are required to apply the paste as a facial mask.

11. Potato: - Potato possesses bleaching properties and is a natural remedy for acne on face. All you need to do is to use a boiled potato on the infected area. This will not only remove the hyper-pigmentation, but also prevent wrinkles and make the skin brighter. You can use a raw potato also. Slice a potato and put one slice on the acne. Leave it for 10 minutes. The potato will act as an anti-bacterial agent and defeat the infecting bacteria. One of the other ways to use boiled potato is to mash it and add 2 teaspoons of milk powder to it. Mix it firmly to form a paste. Apply it on the face. After 15 minutes, clean the face with water.

12. Cinnamon and Honey: - Honey is known as the anti-bacterial and anti-inflammatory agent and is one of the best home remedies for acne. It kills the infecting bacteria and prevents acne. For effective results, use it with cinnamon. Take some cinnamon powder and add honey to it to make a paste. Apply it on the face as a mask, covering the infected area. Leave it over night. Next morning, wash it off with water. It will help in getting rid of pimples from its roots.

13. Lemon Juice: - Lemon is a wonder solution for the treatment of acne. The citric acid present in lemon is a natural cleanser that helps in opening the blocked pores and soothing the skin. Take one lemon and squeeze it in a bowl. Now, take one cotton ball and dip it in the lemon juice. Place it directly on the acne.

Alternatively, take a slice of lemon and rub it gently on the face. Leave it for a few minutes and then, rinse it off. You can also use lemon juice with groundnut oil. Add a few drops of lemon juice in someone tablespoons of groundnut oil. Apply it on the blackheads.

14. Apple Cider Vinegar: - It helps in balancing the pH of the skin. Apple cider vinegar is rich in malic and lactic acids. It acts as an exfoliator and softener for the skin. Add vinegar in water in the ratio of 1:3. With the help of a cotton ball, apply the solution on the infected area. Leave it for ten minutes. Rinse the face thoroughly. For best results, practice the method for several times a day.

15. Olive Oil: - olive oil is an effective home remedy for healing acne. Olive oil is recognized for its anti-bacterial, antioxidant, and anti-inflammatory properties. Olive oil is used with lemon juice for removing acne. All you need to do is to add 1/8 teaspoon of lemon juice in ¼ teaspoon of olive oil. Apply the mixture on the face directly. You can also add a pinch of salt in some olive oil. Apply it on the face and wash it off with warm water.

16. Cucumber :- Cucumber is known for moisturizing and removing extra oil from the skin. It also helps in removing the dead cells from the skin. Cucumbers can be used as a face wash. Crush a cucumber and add some water to it. Mix it well and apply it directly on the face. Cucumber juice, mixed with carrot juice, can also be used to remove acne. Regular intake of these juices also helps in alleviating the problem.

17. Toothpaste: - It is one of the best and simplest home remedies for acne. Simply apply some toothpaste on acne and leave it overnight. The toothpaste will effectively reduce the swelling of acne. It will also dry out the acne. For its effective results, practice the method daily and see the difference in two or three days.

18. Indian Lilac (Neem):- Indian lilac or neem is known for its medicinal properties. It is an antifungal, antibacterial, anti-inflammatory, and antiseptic herb. You are required to make a paste of few neem leaves by adding a little quantity of water. Put some turmeric powder in the paste and mix it well. Gently apply the paste on the infected area. After it gets dried, rinse it off with warm water.

19. Fenugreek (Methi):- One of the best home remedies for severe acne is fenugreek. Both the leaves and seeds of

fenugreek are effective for the treatment of acne. Take some fenugreek leaves and grind them. Add some water to form a paste. Apply it directly on the affected area. After 10-15 minutes, wash it with clean water. For best results, try the method thrice a week. You can also use fenugreek seeds. Take two tablespoons of fenugreek seeds. Wash it well and soak it overnight in a glass bowl. Now, crush the seeds to form a thick paste. Add some aloe Vera gel in the paste. Stir it well and apply it on the acne. Rinse it off with lukewarm water.

20. Nutmeg (Jaiphal):- Nutmeg possesses anti-fungal and anti-bacterial properties. It is a herbal remedy for curing acne. Take a nutmeg and grind it into powder. Add unboiled milk or water to form a paste. Now, apply it on acne and leave it for twenty minutes. Wash it off when it completely gets dried.

To remove acne scars, nutmeg powder can also be used with honey. It will reduce the acne swelling.

21. Rose Water and Sandalwood: - The pack of sandalwood and rosewater is considered to be very soothing for face. The anti-microbial properties of sandalwood help in cleaning the face and maintain its flawless glow. Put 2 tablespoon of sandalwood powder in a mixing bowl. Add pure rosewater to make a pack. Mix it carefully to avoid lumps. Now, wash your face with clean water and apply the pack, gently. Let it dry for 20 minutes. Clean your face with cold water and pat with a towel. You can also pour a few drops of glycerine to boost the curing process.

22. Ice: - Rubbing ice cubes on the face will decrease the size of acne and helps in healing the acne pain. You are required to take a few ice cubes and wrap them in a clean cloth. Now, rub it gently on the face, specially covering the infected area until the area becomes insensitive. If you have a lot of acne, you can hold ice for five minutes on the infected area. This will minimize the redness and inflammation of acne.

23. Herbal Tea: - A cup of tea is not only meant to relieve from stress, but also helps in treating acne. Herbal tea or green tea has been proven to be the best remedy for several health problems. Drink two cups of Chasteberry tea per day when acne pops up before menstruation period. Alternatively, take some organic tea leaves and place them in a bowl. Now, add boiling water in it and let the leaves steep for some time. After five minutes, when the solution cools down at room temperature, dip a cotton ball in the solution. Place it directly on the acne.

24. Alum: - Alum is an antiseptic agent, which acts as a styptic and natural deodorant. Take a piece of alum and rub it gently on acne. This will effectively speed up the

healing process. Alum is beneficial for oily skin. Alum is one of the natural home remedies, which is effective for back acne.

25. **Yogurt:** - Yogurt is helpful in healing acne, naturally. Apply some yogurt on the affected area. Leave it for 10-15 minutes. Yogurt contains lactic acid, which acts as an exfoliator and rejuvenates skin in a natural manner. This remedy will reduce the irritating acne breakouts. Another remedy is to add a little milk and a few drops of honey in yogurt. Stir the mixture finely. Gently massage the mixture on the face for 20 minutes. After some time, clean your face with water and dry it with a towel.

26. **Papaya:** - Papaya is a natural remedy for the acne problems. It is an essential ingredient in various beauty products. Raw papaya, when used on face, removes dead cells and extra oil from the skin. The enzyme papain in papaya helps in preventing the formation of pus. Mash some papaya pulp and apply it on the face. Leave it for 15-20 minutes. Rinse your face with clean water and pat dry.

27. **Egg White:** - Egg whites are a natural remedy for reducing excess oil from skin and draw out impurities from the pores. Wash your face with lukewarm water. Crack one egg and separate yolk from its white part. Take out the white part in a bowl and mix it firmly until the bubbles are formed. Apply it on the face and cover it with tissue papers. Let it dry for 20 minutes. Then, remove all the tissue papers. Wash your face with water.

28. **Strawberries:-** Strawberries are natural scrubbers, which have a high quantity of salicylic acids. These acids help in opening the blocked pores and remove the impurities. All you need to do is to crush 2-3 strawberries and add a few drops of honey in it. Mix it well and apply it directly on the face. Leave it for twenty minutes. Wash off your face with water.

29. **Banana Peel:** - It is very interesting to know that banana peel is effective for curing acne. Lutein, present in banana peel, acts as an antioxidant, which increases the growth of cells. Peel a banana and use its peel directly on the face. Massage your face with the peel in a circular motion. After 30 minutes, when it gets dried, rinse off your face with clean water.

30. **Sugar Scrub:** - Sugar is a natural exfoliator, which easily opens up the clogged pores. Take 1½ cup of white sugar and 1½ cup of brown sugar. Add 2-3 tablespoons of coarse sea salt. Also add a half cup of olive oil. Add one whole vanilla bean and ten tablespoons of vanilla extract. Mix all the ingredients well and store it in a jar.

31. **Chilli Peppers:** - chilli peppers helps in reducing the acne swelling. Crush some chillies into powder and add water in it. With a cotton swab, apply chilli water on acne.

32. **Almond Powder:** - Almond powder is a natural remedy for curing acne and blackheads. Take some almond powder in a bowl. Add rosewater in it to make a paste. Apply this paste on problematic areas. Wash it with clean water after 15 minutes.

NATUROPATHY REMEDIES FOR ACNE:-

1. **Amaranth:** Amaranthus seeds and leaves have been used effectively as an astringent and also make a good wash for skin problems ranging from acne and eczema to psoriasis. The main constituents are saponins.



Figure 17:

2. **Asparagus:** The fleshy roots and seeds have been used for medicinal purposes. Roots contain inulin, fructo oligosaccharides, glycoside bitter principles (officialisins I and II), β -sitosterol, steroidal glycosides (asparagosides A to I) and asparagusic acid, yamogenin. Home remedies containing the shoots extracts are used as topical application to cleanse the face and acne form.



Figure 18:

3. Calendula: used for the treatment of various skin ailments and to facilitate healing and reduce inflammation. The herb contains flavonoids (quercetin), triterpenoidsaponins (arvenoside A), essential oils and polysaccharides.



Figure 19:

4. Jojoba Oil: Jojoba seeds produce 50% by weight colourless and odourless oil, which is used in cosmetic application. The oil is composed of straight chain monoesters of C-20 and C-22 acids and alcohols with 2 double bonds. The oil is of value in management of Acne and Psoriasis



Figure 20:

5. Lavender: Fresh flowering tops are collected and essential oil is distilled or extract is obtained by solvent extraction. Extract have been used to treat conditions ranging from acne to migraine. Flower contains 1-3% Of essential oil. The oil is a complex mixture of more than 150 compounds, the most abundant of which is linaloyl acetate (30-55%), linalool (20-35%), cineole, camphor, beta ocimene, limonene, caproic acid, caryophyllene oxide and tannins (5-10%).



Figure 21:

6. Rhubarb: The main constituents include potassium, calcium and lesser amount of phosphorus. The anthraquinones present are rhein,emodin, chrysophanol in rhubarb are useful to relieve theitchness and pain accompanying psoriasisas well as Acne vulgaris



Figure 22:

7. Soapwort: Soapwort has been administered topically for the treatment of acne, psoriasis, eczemaand boils. It contains water-soluble steroidal saponins (saponoside D) found in all parts of the plants and act sas surface-active agent to facilitate cleaning.



Figure 23:

8. Arnica: useful in the treatment of acne, bruises, sprains, muscle aches and as a general topical counterirritant. The plant contains a number of sesquiterpene, lactones (helenalin, dihydrohelenalin, arnifolin and the arnicolides), flavonoid, glycosides and about 0.3% of a volatile oil. The essential active principles are helenalin and dihydrohelenalin esters, which have been shown to have strong antimicrobial, antioedema and anti-inflammatory properties.



Figure 24:

ALLOPATHY REMEDIES FOR ACNE:-

TOPICAL PRODUCTS: -

- Benzoyl peroxide
- Retinoid analogues
- Topical antibiotics
- Azelaic acid

1. RETINOID ANALOGUES: - Isotretinoin is a retinoid (a family of ingredients that are derived from vitamin A) that inhibits your sebaceous gland function (oil production). With the exit of Accutane®, isotretinoin is also prescribed under the names of Amnesteem®, Claravis™ or Sotret®.

Isotretinoin is a prescription-only medication, which is taken orally. It works by reducing the size of the skin's sebaceous glands, as well as the amount of oil they produce. It also evens the process of sloughing off old skin cells, ultimately helping to prevent comedones from forming. It's usually prescribed for severe acne, and then only after all other treatments have failed. This is because, although effective, isotretinoin is associated with very serious side effects. Common side effects include bone pain, dry skin, fever, hair loss, headaches, sweating, itching, nausea, tiredness and vomiting. More serious (though rare) side effects caused by allergic reactions include rashes, hives, breathing problems, swelling of the mouth, voice changes, dizziness, hearing loss, heart attack, bleeding, vision changes and changes in menstrual flow. Keep in mind this list does not cover everything, so ask your doctor if you are experiencing any unusual reactions at all. "A special warning to women: DO NOT use isotretinoin if you are pregnant, planning to become pregnant, or breast-feeding. Serious birth defects can occur in pregnant women who are using Isotretinoin. Increased risks of miscarriage and premature births have been reported. Because the risk is so severe and so serious".

Tretinoin (topical vitamin A acid) *Availability – wide variety of dosage forms and concentrations, including Retin-A-Micro * Dosing – applied once nightly *Side Effects – skin irritation, erythema, peeling, increased sensitivity to sun exposure, wind, or cold.

Adapalene (Differin) *Availability – 0.1% gel, cream, alcoholic solution, and pledgets *Dosing - applied once daily at night or in the morning * Side Effects – minimal irritation.

Tazarotene (Tazorac) * Availability – 0.05% and 0.1% gel or cream * Dosing – applied once nightly *Side Effects – irritation, erythema, burning, stinging.

8 Things to Know About Using Topical Retinoids for Acne:-

1. **IT TENDS TO BE HARSH.** Though highly effective in fighting certain types of acne, tretinoin is known to cause irritation in sensitive skin types. If tretinoin is prescribed to you, it's always a good idea to follow your physician's instructions for use to a T—and it can never hurt to perform a patch test on the skin behind your ear to help gauge how you'll react.

2. **BUT 'RETINOL' ISN'T ONE OF THEM.** Topical retinoids should not be confused with retinol. Retinol becomes retinoic acid – or Tretinoin – after it is converted by special enzymes.

3. **IT DOES HAVE SOME ASSOCIATED SIDE EFFECTS.** Side effects of tretinoin include bone pain, dry skin, fever, hair loss, headaches, sweating, itching, nausea, fatigue and vomiting.

4. **IT'S NOT FOR USE DURING PREGNANCY.** Tretinoin may be dangerous to use while pregnant. As is the case with any prescription, skin care product or acne treatment, it's wise to speak openly and honestly with a medical professional before trying anything new.

5. **DOUBLING DOWN IS NOT ADVISED.** If you try tretinoin and see stellar results right away, you might be tempted to up your dosage in some way. Our word of advice is simple—don't! Do not use more of it, do not use it more often, and do not use it for a longer time than your doctor ordered. Do so, and you'll risk causing serious irritation to your skin.

6. **WHEN IT COMES TO APPLICATION, CAUTION IS KEY.** Don't apply the medicine to wind burned skin, sunburned skin, or on open wounds, and don't use it in or around your mucus membranes—that's your eyes, your lips, and your nostrils. After you apply, wash your hands.

7. **IT CAN BE ESPECIALLY IRRITATING ON WET SKIN.** If at all possible, try to wait 20 to 30 minutes after washing your face before you apply tretinoin.

8. **IT'S RECOMMENDED THAT YOU USE IT IN CONJUNCTION WITH SUNSCREEN.** Given the nature of tretinoin, it can increase your skin's sensitivity to the sun—so it's very important that you use a daily SPF. To be perfectly honest, though, you should be using a daily SPF no matter what. Thankfully, there are plenty of non-acnegenic, non-comedogenic, and oil-free formulations available today that won't break you out.

Table 4: SELECTED RETINOIDS FOR ACNE TREATMENT

Agent	FDA pregnancy category	Adverse effects	Available formulations	Estimated cost generic (brand)*
Adapalene (Differin)	C	Local erythema, peeling, dryness, pruritus, stinging	Cream, lotion (0.1%) Gel (0.1%, 0.3%) Adapalene/benzoyl peroxide (Epiduo) gel (0.1%/2.5%)	\$125 (\$363) NA (\$269)
Tazarotene (Tazorac)	X	Local erythema, peeling, dryness, pruritus, stinging	Cream, gel (0.05%, 0.1%)	NA (\$240)
Tretinoin (Retin-A)	C	Local erythema, peeling, dryness, pruritus, stinging	Cream (0.025%, 0.05%, 0.1%) Gel (0.01%, 0.025%, 0.05%) Microsphere gel (0.04%, 0.1%)	\$27 (\$130) \$24 (\$19 to \$105) NA (\$170)

2. BENZOYL PEROXIDE: - Benzoyl peroxide is an over-the-counter bactericidal agent that comes in a wide array of concentrations and formulations. No particular form has been proven better than another. Benzoyl peroxide is unique as an antimicrobial because it is not known to increase bacterial resistance. It is most effective for the treatment of mild to moderate mixed acne when used in combination with topical retinoids. Benzoyl peroxide may also be added to regimens that include topical and oral antibiotics to decrease the risk of bacterial resistance. Salicylic acid is present in a variety of over-the-counter cleansing products. These products have anticomedonal properties and are less potent than topical retinoids, but there have been only limited high-quality studies examining their effectiveness.

Role in Acne Treatment:

Non-antibiotic antibacterial agent that is bacteriostatic against P. acnes

Increases the sloughing rate of epithelial cells and loosens the follicular plug structure

proven effective in the treatment of acne

Availability:

Available in a wide variety of dosage forms (e.g., soaps, lotions, creams, washes, and gels) and dosages (e.g., 2.5% to 10%)

Dosing:

to limit irritation and increase tolerability, begin with lowest concentration and increase either the strength or application frequency

Patients should apply the product to cool, clean, dry skin no more than twice daily.

Common Side Effects:

Dryness and irritation

May bleach or discolor some fabrics

The Basics: 9 Things To Know About Benzoyl Peroxide:-

1. **It's been shown to help reduce inflammatory lesions (mild to moderate acne) and the skin's oil production.** Oily-skinned acne-sufferers.
2. **It helps to 'unclog' pores, too.** It does so by clearing dead skin cells from follicles, thereby reducing the possibility of blockages. By helping prevent pores from becoming blocked *and* targeting the bacteria that cause acne, it works to prevent breakouts before they occur.
3. **It works best when used continuously.** Benzoyl peroxide works to treat acne by helping to kill the existing *P. acnes* bacteria inside your pores. It does **not** increase body's ability to fight the bacteria when not using it. That's why it's best to use it continuously—for the treatment of existing blemishes, and the prevention of new ones.
4. **It doesn't work overnight.** Using benzoyl peroxide for acne, it's important to be patient. It might take a few weeks (longer, in some cases) to see improvement. For most, it proves to be well worth the wait.
5. **It's best to ease into it.** To help mitigate irritation when you start an acne regimen that uses benzoyl peroxide, start slowly—may be every other day—to see how your skin reacts. Some minor irritation is normal. If a product causes burning, swelling and itching that worsens with each use, it could signal an allergic reaction, and you should stop using it immediately and notify your physician.
6. **Less than 5% of people are allergic to benzoyl peroxide.** To help provide context for this fact, the percentage of those allergic to penicillin is similar. Benzoyl peroxide allergies are usually characterized by itching and redness—if you're allergic, consult a dermatologist.
7. **More isn't necessarily better.** Benzoyl peroxide acne treatments leverage a range of concentrations, from 2.5% to 10%. However, clinical studies have shown that lower concentrations of benzoyl peroxide are just as effective as higher concentrations—and cause less skin irritation than their more potent counterparts.
8. **It's tenacious.** Heard of "antibiotic-resistant" strains of acne? The term applies to certain cases of acne that stop responding to antibacterial or antibiotic treatments. In many studies, benzoyl peroxide has continued to treat the bacteria that cause acne without becoming resistant.
9. **Generally speaking, its associated side effects are manageable.** Some common side effects people might experience with benzoyl peroxide include dryness and redness. Adding an oil free moisturizer to your regimen can help keep these symptoms in check. As for the bleaching of fabrics, this one's true—benzoyl peroxide can bleach your towels and clothing. We've found that

using white pillowcases and white towels is the best way to proceed.

3. TOPICAL ANTIBIOTICS: - Topical antibiotics are used predominantly for the treatment of mild to moderate inflammatory or mixed acne. Clindamycin and erythromycin are the most studied. They are sometimes used as monotherapy, but are more effective in combination with topical retinoids. Because of the possibility that topical antibiotics may induce resistance, it is recommended that benzoyl peroxide be added to these regimens.

Role in Acne Treatment:

Both erythromycin and clindamycin have demonstrated efficacy and are well tolerated

Availability:

- Wide variety of dosage forms and concentrations
- Also available in combination with benzoyl peroxide

Dosing:

- Erythromycin – applied once or twice daily
- Clindamycin – applied once or twice daily
- In combination with benzoyl peroxide – applied once or twice daily
- Common Side Effects
- Development of resistance by *P. acnes*

CLINDAMYCIN: -

Clindamycin is a topical antibiotic used to treat inflammatory acne. Topical clindamycin works by killing the bacteria that cause acne. It also has anti-inflammatory effects. Usually, you'll start seeing improvement of your skin within 4 to 6 weeks. Clindamycin is also used in its oral form for acne treatment, but is usually prescribed for topical application. Topical antibiotics like clindamycin are used to treat mild to moderately severe inflammatory acne. They come in a variety of forms, including lotions, gels, pads (pledgets) and toner-like solutions. Just like oral antibiotics, topical antibiotics inhibit the growth of bacteria. A chief cause of acne is the proliferation of the acne-causing bacteria *Propionibacteria acnes*, or *P. acnes*. Depending on which form you're using, this medication will be applied once or twice daily to clean skin. Clindamycin is often used in conjunction with other medications, like benzoyl peroxide or a topical retinoid. Your doctor may prescribe an oral acne medication as well. Using another acne treatment along with your topical antibiotic can help boost its effects. Topical antibiotics alone aren't the best way to treat acne. They work really slowly when compared to other topical acne treatments available. Clindamycin is also known as Cleocin-T, ClindaMax, Clinda-Derm, Clindagel, ClindaReach, Clindets, and Evoclin. Some topical

medications that contain clindamycin include Acanya, Benzaclin, Duac, Z-Clinz and Ziana (clindamycin phosphate).

Before applying this medicine, thoroughly wash the affected areas with warm water and soap, rinse well, and pat dry. When applying the medicine, use enough to cover the affected area lightly. You should apply the medicine to the whole area usually affected by acne, not just to the pimples themselves. This will help keep new pimples from breaking out. Topical clindamycin will not cure your acne. However, to help keep your acne under control.

For patients using the topical foam form of clindamycin:

➤ After washing or shaving, it is best to wait 30 minutes before applying this medicine. The alcohol in it may irritate freshly washed or shaved skin. This medicine contains alcohol and is flammable. Do not use near heat, near open flame, or while smoking.

To apply this medicine:

- Do not dispense clindamycin topical foam directly onto your hands because the foam will begin to melt on contact with warm skin.
- Remove the clear cap. Align the black mark with the nozzle of the actuator.
- Hold the can upright and press firmly to dispense. Dispense amount that will cover the affected area(s) directly into the cap or onto a cool surface.
- The can may be placed under cold running water, if they can seems warm or the foam seems runny.
- A small amount of topical foam should be picked up with your finger tips and massaged gently into the affected areas until the foam disappears.
- Unused medicine that was removed from the can should be throw away.
- Since this medicine contains alcohol, it will sting or burn. In addition, it has an unpleasant taste if it gets on the mouth or lips. Therefore, do not get this medicine in the eyes, nose, or mouth, or on other mucous membranes. Spread the medicine away from these areas when applying. If this medicine does get in the eyes, wash them out immediately, but carefully, with large amounts of cool tap water. If your eyes still burn or are painful, check with your doctor.

For patients using the topical solution form of clindamycin:

➤ After washing or shaving, it is best to wait 30 minutes before applying this medicine. The alcohol in it may irritate freshly washed or shaved skin.

➤ This medicine contains alcohol and is flammable. Do not use near heat, near open flame, or while smoking.

- To apply this medicine:

➤ This medicine comes in a bottle with an applicator tip, which may be used to apply the medicine directly to the skin. Use the applicator with a dabbing motion instead of a rolling motion (not like a roll-on deodorant, for example). Tilt the bottle and press the tip firmly against your skin. If needed, you can make the medicine flow faster from the applicator tip by slightly increasing the pressure against the skin. If the medicine flows too fast, use less pressure. If the applicator tip becomes dry, turn the bottle upside down and press the tip several times to moisten it.

➤ Since this medicine contains alcohol, it will sting or burn. In addition, it has an unpleasant taste if it gets on the mouth or lips. Therefore, do not get this medicine in the eyes, nose, or mouth, or on other mucous membranes. Spread the medicine away from these areas when applying. If this medicine does get in the eyes, wash them out immediately, but carefully, with large amounts of cool tap water. If your eyes still burn or are painful, check with your doctor.

➤ It is important that you do not use this medicine more often than your doctor ordered. It may cause your skin to become too dry or irritated.

Dosing: - The dose of this medicine will be different for different patients. Follow your doctor's orders or the directions on the label. The following information includes only the average doses of this medicine. If your dose is different, do not change it unless your doctor tells you to do so. The amount of medicine that you take depends on the strength of the medicine. Also, the number of doses you take each day, the time allowed between doses, and the length of time you take the medicine depend on the medical problem for which you are using the medicine.

- For topical dosage form (foam):
 - For acne: Adults and children 12 years of age and over—Apply once a day to areas affected by acne. Infants and children up to 12 years of age—Use and dose must be determined by your doctor.
- For topical dosage forms (gel, solution, and suspension):
 - For acne: Adults and children 12 years of age and over—Apply two times a day to areas affected by acne. Infants and children up to 12 years of age—Use and dose must be determined by your doctor.

Table 5: SELECTED TOPICAL ANTIBIOTICS FOR ACNE TREATMENT

Agent	FDA pregnancy category	Adverse effects	Available formulations
Clindamycin	B	Local erythema, peeling, dryness, pruritus, burning, oiliness	Foam, gel, lotion, solution (1.0%) Clindamycin/benzoyl peroxide (Benzacilin) gel (1%/5%, 1.2%/2.5%) Clindamycin/tretinoin gel (Veltin, Ziana; 1.2%/0.025%)
Erythromycin	B	Local erythema, peeling, dryness, pruritus, burning, oiliness	Gel, solution, ointment (2%) Erythromycin/benzoyl peroxide (Benzamycin) gel (3%/5%)

4. Azaleic Acid: - □ Role in Acne Treatment: - Reported to possess comedolytic, anti-inflammatory, and antibacterial properties

□ Availability: - 20% cream

□ Dosing: - Applied twice daily on clean, dry skin

□ Side Effects: - Mild transient burning, pruritus, stinging, and tingling

Oral Antibiotics: -

Role in Acne Treatment:-

□ Standard of care in the management of moderate and severe acne as well as in treatment-resistant forms of inflammatory acne

Examples:-

□ Minocycline – reserved for patients who do not respond to other oral antibiotics or topical products; superior to doxycycline in reducing P. acnes

□ Doxycycline – more effective than tetracycline

□ Tetracycline – least expensive and most often prescribed for initial therapy

□ Erythromycin – effective, but use is limited to those who cannot use the tetracyclines (e.g., pregnant women or children under 8 y.o.)

□ Trimethoprim-Sulfamethoxazole – effective, but use is limited to those who cannot use the tetracyclines or erythromycin, or in case of resistance to these antibiotics

□ Clindamycin – use is limited by diarrhea

Dosing: - □ Minocycline – 50-100mg once to twice daily

□ Doxycycline – 50-100mg once to twice daily

□ Tetracycline – 250-500mg twice to four times daily

□ Erythromycin – 250-500mg twice daily

□ Trimethoprim-Sulfamethoxazole – 160/800mg twice daily

□ Clindamycin – use is limited by diarrhea

Common Side Effects: - Vaginal candidiasis, photosensitivity, diarrhea.

Table-6 SELECTED ANTIBIOTICS FOR ACNE TREATMENT

Agent	FDA pregnancy category	Adverse effects	Dosage
Doxycycline	D	Photosensitivity, pseudotumor cerebri, esophageal irritation	50 to 100 mg once or twice per day
Erythromycin	B	Gastrointestinal upset	250 to 500 mg two to four times per day
Minocycline (Minocin)	D	Vestibular dysfunction, photophobia, hepatotoxicity, lupus-like reaction, pseudotumor cerebri	50 to 100 mg once or twice per day
Tetracycline	C	Gastrointestinal upset, photosensitivity, pseudotumor cerebri	250 to 500 mg once or twice per day
Trimethoprim/sulfamethoxazole (Bactrim, Septra)	C	Allergic reactions	160/800 mg twice per day

Things to Know About Antibiotics For Acne: - 1. Antibiotics for acne are available only through a physician—and it doesn't have to be a dermatologist. Many women actually get acne antibiotics through their gynecologist.

2. The American Academy of Dermatology (AAD) guidelines (May 2016) recommends that acne antibiotics should be used in combination with a topical therapy, such as benzoyl peroxide or a retinoid.

3. Because of progressively worsening antibiotic resistance, topical antibiotics have become less and less effective as acne treatments over time, and thus should never be used alone or in combination with oral antibiotics for acne according to experts. In fact, in 2016, with antibiotic resistance reaching the status of global public health crisis, there is little cogent argument for the continued use of topical antibiotics alone in acne.

4. Acne antibiotics don't work overnight. In fact, tetracycline-family based acne medications used in combination with other acne medications may take several weeks or months to produce visible results.

5. When your breakouts do subside as a result of antibiotics (in combination with other acne treatments) it's important to bear in mind that you are not "cured." The medicine is simply doing its job.

6. Acne antibiotics can result in some nasty side effects, which include, but are not limited to: Photosensitivity (higher risk of sunburn), Upset stomach, nausea, vomiting, diarrhea, loss of appetite, Dizziness or lightheadedness, Headaches, blurriness of vision, White patches or sores inside your mouth or on your lips, Swollen tongue or trouble swallowing, Hives, Lupus-like symptoms, Skin discoloration, In women, a higher incidence of vaginal yeast infection (itching and discharge).

7. Tetracycline is not prescribed to pregnant women or children under 12 years of age, as it can discolor developing teeth.

8. Acne antibiotics are prescribed to treat moderate-to-severe acne—not minor breakouts.

9. Certain acne antibiotics may render birth control pills less effective.

10. Certain medications may affect acne antibiotics, and vice versa. Tell your doctor about all the prescription and over-the-counter medications you use, including vitamins, minerals, herbal supplements and drugs prescribed by other doctors.

LASER TREATMENT: - Light and laser therapies can be used for the treatment of acne. Examples include visible light, pulsed-dye laser, and photodynamic therapies. There is insufficient evidence to recommend the routine use of these therapies for the treatment of acne. Studies

of these products typically lack controls, have small sample sizes, are short term, and do not compare these therapies with validated pharmacologic treatments. There are no established guidelines on the optimal dosing, device, timing, and frequency to be used.

(A) Pulsed Dye Laser: - The use of lasers for hypertrophic scars and keloids was first proposed by Apfelberg et al. and Castro et al in the 1980s and since then more lasers with various wavelengths have been introduced. The use of pulsed dye laser (PDL) has provided encouraging results in the treatment of hypertrophic/ keloidal scars over the past 10 years. PDL decreases the number and proliferation of fibroblasts and collagen fibers appear looser and less coarse. Moreover, PDL also produces an increase in MMP-13 (collagenase-3) activity and a decrease in collagen type III deposition. As a consequence, PDL flattens and decreases the volume of hypertrophic scars improves texture, and increases elasticity, usually after two to three treatments. Additionally, pruritis and pain within the scars are significantly improved.

Coconut Oil as an Acne Treatment: -

Coconut oil contains high quantities of both lauric acid and capric acid. These ingredients are antibacterial, antiviral, antifungal and antimicrobial. That's a lot of fighting power. Lauric acid is especially effective against the bacteria linked to acne (*P. acnes*) and it's also found in breast milk, which means our bodies will recognize it. Plus, those acids are medium chain fatty acids (MCFAs), which means they are quickly converted to energy that jump starts your cells' metabolism, lending strength to their detoxifying abilities.

HOMEOPATHIC REMEDIES FOR ACNE:

1. **SULPHUR :-**

- A very common remedy, especially for chronic acne
- Rough and hard skin
- Acne associated with comedones and constipation
- Acne that aggravates with water
- Pale, sickly colour of the skin
- Spotted redness of face with black pores
- Itching intensely in the evening and from warmth

SANGUINARIA:- It is another useful remedy in acne, especially in women with scanty menses and irregular circulation of blood.

- Useful remedy for acne, especially in women with scanty periods and irregular circulation of blood
- For women with sexual problems
- Burning sensations like from hot water; redness and burning of cheeks
- Sun headache especially on the right side

- Nasal polyps, coryza (inflammation of the mucous membrane) followed by diarrhoea
2. **KALI BROMATUM:-** This remedy is especially adapted to the acne simplex and the acne indurata, especially in hyperaesthetic, nervous females. Face flushed. Acne of face, pustules. General failure of mental power, loss of memory, melancholia, anesthesia of the mucous membranes. Suicidal mania with tremulousness. Itching of skin worse on chest, shoulders, and face. Anesthesia of skin.
3. **ANTIMONIUMCRUDUM:-** Long used in traditional Chinese medicine for treatment of acne, its effectiveness has been proven in homeopathic treatment of acne especially of the inflammatory type.
- Pimples on the head, face and neck
 - Styes and ulceration on the edge of the eyelids
 - Frequent urination
 - Pain in all joints
 - For women with uterine displacements
4. **NATRUMMURIATICUM :-**
- Good remedy for acne, remedy acts on sebaceous glands
 - Dry mucous membranes
 - Great weakness and weariness
 - In people with hyperthyroidism, goitre, diabetes, Addison's disease
 - Irritable, awkward, hasty, wants to be left alone, cries a lot
 - Depression, especially due to chronic disease
 - Shortness of breath, flow of tears with cough
 - Greasy oily skin
 - Nervous jerking with sleep
5. **ASTERIASRUBENS :-**
- Indicated for flabby, lymphatic constitution; also indicated in people with breast cancer
 - Disposition to pimples at adolescence
 - Red face; pimples on side of nose, chin and mouth
 - Axillary glands swollen, hard and knotty
 - Symptoms worsen with coffee, at night, or cold damp weather
6. **BELLADONA:-**
- Indicated in acne rosacea
 - Alternate redness and paleness of skin
 - Dry, hot and swollen skin
 - Restlessness; talks fast
 - Acuteness of all senses
- NUX VOMICA :-**
- Typical remedy for rather thin, quick, active, nervous and irritable person
 - Easily chilled; sensitive to all impressions
 - Don't want to be touched

- Yellowish about nose, mouth or eyes
7. **CALCAREAPHOSPHORICUM:-**
- Indicated in anemic girls at puberty
 - Headache and flatulent dyspepsia, relieved by eating
 - Skin red, prickling like nettles after bath
8. **HEPAR SULPHUR:-** Papules prone to suppurate and extend. Acne in youth. Suppurate with prickly pain. Easily bleed. Unhealthy skin; every little injury suppurates. Cannot bear to be uncovered; wants to be wrapped up warmly. Sticking or pricking in afflicted parts. Great sensitiveness to slightest touch. Constant offensive exhalation from the body Face, Yellowish complexion. Suits especially scrofulous and lymphatic constitutions that are inclined to have eruptions and glandular swellings. Unhealthy skin. Great sensitiveness to all impressions. The lesions spread by the formation of small papules around the side of the old lesion. Chilliness, hypersensitiveness, splinter-like pains, craving for sour and strong things are very characteristic.

AYURVEDIC REMEDIES FOR ACNE:-

1. Himalaya Herbal Liv-52:- It has been long believed that toxin overload can hamper the liver's ability to flush out toxins. We consume toxins everyday in the form of pesticides in vegetables, lead, mercury, smoke, pollution and other environmental toxins. Although not directly recommended for acne, Liv-52 can be your aid in cleansing the liver. Liv-52 is considered one of the best liver detoxifying ayurvedic medicines in the world. Liv-52 has often been reported to clear acne prone skin. We prefer Liv-52 tablets instead of Liv-52 syrup as the syrup is loaded with sugar. This much sugar doesn't bode well for acne or for general health. Be aware that Liv-52 syrup and tablets both contain parabens.

2. Baidyanath Rakta Shodhak Bati: - is an ayurvedic medicine from Baidyanath Ayurveda. This is a fast-acting ayurvedic acne treatment in the form of tablets. The secret of its effectiveness for acne is purified sulphur. Sulphur, either applied topically or taken internally, dries up pimples and excess oil. Apart from the blood purification action, Baidyanath Rakta Shodhak Bati seems to dry up excess oil from the skin surface, possibly because of sulphur. The effect can usually be seen within a day in terms of oiliness of the skin.

3. Himalaya Herbal Purim tablets: - Purim tablets are designed for acne prone skin. Among its other ingredients, turmeric and neem stand out. Both neem and turmeric are anti-septic and anti-acne.

4. Baidyanath Surakta syrup: - With neem, tulsi (holy basil), turmeric and manjishtha among other blood purifying ingredients, Surakta is the ayurvedic cousin of Safi. Surakta claims to regulate the functioning of the

bowel, liver and kidneys for internal detoxification. This detoxification in turn is supposed to clear the skin.

5. Divya Kayakalp Vati for Skin Disease, Acne and Pimples :- Divya Kayakalp Vati purifies blood with its mix of precious herbs like Bakuci / Bavachi, Panavad, Nimba (neem), Triphala (a combination of Haritaki, Bibhitaki & Amalaki), Khadira, Manjishtha, Katuki, Amrita, Kirata-tikta (Chirayata), Candana, Deva-daru, Haridra (Haldi), Daru-haridra, Ushba, Drona-pushpi, Laghu-kantakan, Krishna-jiraka (Kalajiri), root of Indrayana and Karanja seeds.

6. Skinelle capsules: - Aimed at premenstrual and hormonal acne vulgaris, Skinelle tablet claims to be a safe and herbal ayurvedic remedy for acne. It works by way of blood purification and suppressing the activity of acne causing bacteria. There is also a cream version of Skinelle for topical application.

7. Neem Guard capsules :- A mix of neem, giloy and triphala, Neem Guard capsules claim to be a safe, natural and effective treatment for acne. Triphala itself is a combination of 3 ayurvedic herbs including amla or the Indian gooseberry. All these ingredients work to, you guessed it, detoxify blood and enhance body's immunity in general. Neem is one of the most powerful blood purifiers and detoxifiers in the ayurvedic system of medicines.

UNANI REMEDIES FOR ACNE:-

Unani is one of the most well known traditional medicine systems and draws on the ancient traditional systems of medicine of China, Egypt, India, Iraq, Persia and Syria. It is also called Arab medicine. Unani is still popular in many Arab and East Asian countries. In fact Unani medicine and herbal products are gradually more being used in many countries where modern medicines easily available. India has accepted it as one of the alternative health care system and has given it official status. Some of the drugs available for acne in Unani system are given in tabular form. Few of the Unani prescriptions are being discussed here:-

Make a mixture of 4 grams each of fumaria indica, Chirata, Taphrosia, Globe flower, and Jujube fruit (5 in numbers). Now, boil these Unani medicines in about 200 ml. of water. Strain it and add sugar for sweeten purpose. It is suggested the patient should take it twice a day i.e. in the morning and before going to bed.

Take the sufficient quantity of cuttle fishbone. Now, rub it on stone by using water. After preparing the paste, use it over the pimples and acne. Continue it for one week to have a good result.

Take six grams each of dried rind of orange, egg shell, tragacanth gum, barley, gram, lentil, starch, kernel of almond, and kernel of sweet melon seeds. Make a fine

powder of all the ingredients. Take the necessary amount of powder and make a paste with water. Apply it before going to bed and wash it with lukewarm water in the morning. This procedure helps in removing of acne and pimples.

Take a mix of grated apple (10 gm) and honey (1 tsp). Now make a paste of it and apply on the face for over 15 minutes, followed by washing it with clean water.

Make a mix of oat meal (2 tsp), honey (1 tsp) and water. Now a make a paste of these ingredients and apply the same on the face and leave it for 10 minutes. Wash it with lukewarm water for better results.

The massage of the mix of almond powder, and castor oil helps to control acne. The massage paste should be washed after 10-15 minutes.

1. Humdard Safi: - Safi is not an ayurvedic but a Unani (Greek) medicine. Known as a blood purifier, Safi is an herbal remedy for acne and pimples. It claims to cleanse the blood of toxins mainly by way of kick starting a sluggish digestion and the functioning of liver and kidneys. Safi is loaded with sugar that does little to mask the horribly bitter taste. Those who are regular users of Safi swear by how it cleared their acne and brought a glow to the skin. It has to be used for at least a month for noticeable difference.

Most Effective Acne Treatments:-

1. Washing the Face with Water: Washing and cleansing the face twice regularly, no more and no less than that, helps to remove the dirt and unwanted oil from the face, clear the blocked pores, helps the skin to breathe and stay fresh while also avoiding acne and pimples. This is a very effective treatment for acne. Excessive washing of the face is also harmful as it dries the skin, leading to production of excess sebum which attracts the P.acne bacteria and triggers the bacterial attack on the pores of the skin, thereby causing inflammation of the pores and results in an acne breakout on the face.

2. Cleansing and Exfoliating the Skin: Dirt, dead cells and sebum clog the pores of the skin thereby initiating a bacterial attack on the skin, leading to the appearance of acne on the face. Hormonal imbalances like periods and pregnancy in women also lead to increased sebum production in the skin and consequently cause acne. This can however be avoided by regularly scrubbing and exfoliation of the skin to cleanse it and keep it free from dirt, dead cells and unwanted oil. Protecting the skin against harmful exposure to the sun is also important to keep acne away. UV rays of the sun cause sun burns, sun spots, etc, that increase the number of dead cells on the skin, thereby clogging the pores and causing acne. Use of sunscreens and SPF packed cosmetics help to combat this

issue and thus help to prevent acne and keep the skin healthy and flawless.

3. Regular Exercise and Workout: Regular walks, jogs, gym workouts and other forms of exercising are not only ways of sweating out extra flab from the body and staying fit but are also great stress busters. Acne is believed to be caused by an increased level of stress in the body as stress results in the production of a hormone called cortisol which aggravates the sebum formation in the skin to promote acne. Working out has a dual benefit of reducing stress, thus controlling sebum production, and causing sweating, which is responsible for cleaning the dirt from the clogged pores, thereby treating and preventing acne outbreaks.

4. Natural Remedies and Healthy Diet: Natural extracts like tea tree oil, potato, honey, garlic etc help cure acne naturally to render smooth and flawless skin. Maintaining a healthy diet helps to flush out toxins from the body, purify blood and prevent diseases, thereby inhibiting the growth of pimples of the face.

Proper Hygiene:-

Tip #1: Don't over-wash. Since dirt is not causing your acne, excessive scrubbing and washing won't make it go away. Try to limit yourself to two washings per day — anything more than that can leave your healthy skin dry, and your acne-prone areas irritated. Habitual over-washing, even with gentle cleansers, may also stimulate extra oil production, and that translates to more breakouts.

Tip #2: Skip harsh scrubs. It's okay to exfoliate, but be sure to use a gentle skin cleanser with small, smooth grains. Avoid cleansers with almond or apricot shell fragments. They can irritate or even tear your skin and further aggravate your acne.

Tip #3: Say no to alcohol. If you use a toner, avoid products with high concentrations of isopropyl alcohol, or common rubbing alcohol. Alcohol is a strong astringent and strips the top layer of your skin, causing your sebaceous glands to produce more oil.

Tip #4: Don't squeeze or pick. Squeezing or picking your blemishes — with fingernails, pins or anything else — can force bacteria deeper into the skin, causing greater inflammation and infection. You'll also increase the damage to the surrounding skin, so the blemish is more likely to leave a permanent acne scar.

Tip #5: P. acnes (the bacteria that cause breakouts) are a normal resident of your skin. It becomes a bad neighbor when it gets trapped inside a hair follicle. Excessive touching of your face, including rubbing or even resting your chin in your hands, can drive bacteria into your pores — where it can begin its dirty work.

Tip #6: Work out, wash off. When you exercise, your movement generates heat. The clothing you wear and the equipment you use can also cause friction. Until you shower off, heat and moisture are trapped against your skin, creating an ideal breeding ground for the spread of bacteria. So whenever you can, shower off and use an acne fighting cleanser immediately after exercising.

Tip #7: Find a regimen and stick with it. Most cases of mild acne can be improved with OTC (over-the-counter) cleansers and spot treatments. This is the stuff that doesn't require a prescription. There is a wide range of treatments available, and there's a good chance one of them will work for you. If you start treatment before your acne gets severe, you'll have a better chance of avoiding physical and emotional problems down the road. But if your acne gets worse or lasts more than a month, see a dermatologist.

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