



Acne: A Lifelong Problem



Simone Fahim, MD, FRCPC

Acne is the most common skin disease treated by physicians. It affects all age groups, but it is primarily a disorder of adolescence. A family history of acne increases the risk of the new generation having more inflammatory nodules or retentional lesions which might be difficult to treat or to control.¹ Clinicians should be aware of the physical scarring acne has on patients and the emotional distress that it can cause. A patient's symptoms should not be dismissed as trivial.²

How does acne develop?

There are four factors that are responsible for the pathogenesis of acne:

- 1) Epithelial hyperproliferation
- 2) Excess sebum
- 3) Inflammation of sebaceous glands
- 4) Action of propionibacterium acnes

What are the types of acne lesions?

Microcomedones are the precursor of other acne lesions such as:

- open and closed comedones,
- papules,
- pustules and
- nodules.

Susan's Acne

- Susan, 34, presents to the dermatology clinic with multiple lesions on her face, chest, shoulders and back. She had mild acne as a teenager but her acne has worsened over the last three years.
- She noticed an increase in the number of painful lesions, which resolve with hyperpigmented macules. She has been very frustrated and appeared teary-eyed.
- The physical examination revealed multiple inflammatory papules and pustules on the chin, the neck, the shoulders, the back and along the jaw-line. Present were multiple brown hyperpigmented macules.
- She had a tubal ligation after the delivery of her second child.
- Susan was started on:
 - spironolactone, 100 mg, daily,
 - topical tretinoin cream (0.025%) with sunscreen on her face every morning,
 - benzoyl peroxide gel every night.



Clinical tips

- 1) Start acne treatment with topical combination therapy. If this fails, systemic treatment is recommended.
- 2) Severe nodular acne, or scarring acne, warrant treatment with oral isotretinoin. A full 20-week course produces significant improvement in about 80% of patients. The effect usually lasts at least one to three years and some patients experience permanent improvement.
- 3) Avoid the use of concomitant oral and topical therapy of dissimilar antibiotics (*i.e.*, topical clindamycin with oral tetracycline) when treating acne to avoid bacterial resistance.
- 4) Oral tetracyclines should be given for a longer period of time and in higher doses. They have no effect on oral contraceptive agents.
- 5) Sub-minimal inhibition concentration (MIC) doses of doxycycline have recently proven to be as effective as higher doses, with a less likely risk for drug resistance, photosensitivity or yeast infection.⁴ The dose is 20 mg, twice a day, which is not equivalent to 50 mg, once a day, because the latter dose is above the MIC.
- 6) Oral contraceptive agents with cyproterone acetate combined with ethinyl estradiol or oral contraceptive agents with ethinyl estradiol with drospirenone synthetic progestin (which is the equivalent to 25 mg of spironolactone) have been used successfully in acne treatment.⁵ It is important to always rule out a personal and/or a family history of coagulopathy.
- 7) Intermittent application, or pulse-therapy, reduces local irritation to topical retinoids.⁶ Retinoids could be applied every other day until daily application is tolerated. They can also be applied in short-contact therapy, in which they are applied for five minutes, twice a day and then they are washed off.



Dr. Fahim is an Assistant Professor, Division Dermatology, Department of Medicine, University of Ottawa, Ottawa, Ontario.

Are only teens affected by acne?

Acne affects all age groups. Approximately 85% of youth between the ages of 12 and 14 will suffer from acne. Twelve per cent of women and three per cent of men will continue to have acne until the age of 44.

Neonatal acne occurs in more than 20% of infants at two weeks of age and disappears within three months of life. It appears as inflammatory papules on the cheeks and across the nasal bridge.

Infantile acne presents at three to six months of age and resolves within one to two years. Comedones and the occasional nodule will occur and this will eventually lead to pitted scars.

Hormonal imbalance, due to an elevated luteinizing hormone and elevated dehydroepiandrosterone, is the leading cause of infantile acne. Maternal hormones play a minimal role in its development. Benzoyl peroxide and topical retinoids can be used to prevent scarring.

Teens' acne can present as facial acne or it can affect the shoulders, the chest and the back. It varies from mild acne with few comedones or inflammatory lesions to severe acne with inflammatory nodules and scarring.

Adult acne is defined as acne that develops after the age of 25. Two types are recognized:

- 1) **Persistent acne** begins in adolescence might be due to excessive sebum excretion and changes in end-organ response to androgens.

2) **Late onset acne** occurs for the first time in adulthood and deserves an endocrine evaluation. This type of acne usually affects the jaw-line, the chin and the neck area. It is exacerbated by stress and the individual's menstrual cycle.

Who are the candidates for endocrine evaluation?

Candidates for endocrine evaluation include:

- Women with acne resistant to conventional therapy
- Women who rapidly respond to isotretinoin (within a month), but relapse within a few months after discontinuing the treatment
- Women who have sudden onset of acne in adulthood
- Women with severe seborrhea/ acne/ hirsutism/ alopecia (SAHA) syndrome.

Why is there treatment failure?

Before a treatment is labeled as a failure, details should be asked about the patient's:

- toiletries,
- cosmetics,
- occupation,
- treatment doses,
- duration and
- frequency of therapy and the patient's compliance to the therapy.

Treatment should be tailored according to the type and severity of acne in each patient.

Table 1
Topical acne treatment

Topical agent	Mechanism of action	Formulation
Retinoids Tretinoin Adapalene Tazarotene	Comedolytic and anti-inflammatory	0.025%, 0.05%, 0.1% cream; 0.01%, 0.025% gel 0.1% gel, cream 0.1% gel, cream
Benzoyl peroxide	Antimicrobial, weak comedolytic	2.5%, 4%, 5%, 8%, 10% gel, cream, solution, soap
Antibiotics Erythromycin 2% Clindamycin 1%	Antimicrobial, anti-inflammatory	Cream, gel, solution, pledgets
Salicylic acid	Anti-inflammatory, comedolytic	Cream, gel, lotion, soap
Precipitated sulfur	Comedolytic	1% to 2% powder, lotion, soap

Table 2
Systemic acne therapy

Systemic agent	Mechanism of action
Oral contraceptives	Sebosuppression
Isotretinoin	Comedolytic, anti-inflammatory, sebosuppression, indirect antimicrobial
Oral antibiotics	Antimicrobial, anti-inflammatory
Anti-androgens: • Spironolactone (androgen receptor blocker and inhibitor of 5-alpha reductase)	Sebosuppression
Cyproterone acetate (progestational anti-androgen)	Sebosuppression

► *What are the common therapies for acne vulgaris?*

There are three common therapies for acne vulgaris:

- 1) Topical therapies: (Table 1)
- 2) Topical combination therapy:
 - Retinoids and antibiotics (e.g., erythromycin and tretinoin)
 - Antibiotics and benzoyl peroxide (e.g., clindamycin/ clindamycin phosphate and benzoyl peroxide) lead to a good anti-inflammatory response and decreased bacterial resistance
- 3) Systemic therapies: (Table 2)

► *What are the new approaches to acne treatment?*

Phototherapy (PDT): Porphyrins are natural products of propionibacterium acnes that make the bacteria sensitive as targets for PDT. Open trials of blue light therapy (405 nm to 420 nm) showed a good response to this treatment in a majority of patients.

Lasers: Pulsed-dye laser (585 nm) is effective in treating inflammatory acne lesions.³ A single treatment results in the reduction of inflammatory lesions for up to 12 weeks.

► *Final note...*

Acne is a very common skin condition that is seen in all age groups. In mild facial acne, topical combination therapy is used. In moderate to severe acne that doesn't respond to topical preparations, oral antibiotics, hormonal therapy, PDT and lasers are used. Isotretinoin is an extremely effective drug for severe and scarring acne, but its side-effect profile requires a lot of patient monitoring.

cme

References

- 1) Ballanger F, Baudry P, N'Guyen JM, et al: A prognostic factor for acne. *Dermatology* 2006; 212(2):145-9.
- 2) Mallon E, Newton JN, Klassen A, et al: The quality of life in acne: A comparison with general medical conditions using generic questionnaires. *Br J Dermatol* 1999; 140(4): 672-6.
- 3) Kawada A, Aragane Y, Kameyama H, et al: Acne phototherapy with a high-intensity, enhanced, narrow-band, blue light source: An open study and in vitro investigation. *J Dermatol Sci* 2002; 30(2): 129-35.
- 4) Skidmore R, Kovach R, Walker C, et al: Effects of submicrobial-dose doxycycline in the treatment of moderate acne. *Arch Dermatol* 2003; 139: 459-6.
- 5) Shaw SC: Low dose adjunctive spironolactone in the treatment of acne in women: A retrospective analysis of 85 consecutively treated patients. *J Am Acad Dermatol* 2000; 43(3): 498-02.
- 6) Bershad S, Kranjac-Singer G, Parente JE et al: Successful treatment of acne vulgaris using a new method: Results of a randomized vehicle-controlled trial of short-contact therapy with 0.1% tazarotene gel. *Arch Dermatol* 2002; 138(4): 481-9.