SAVING FACE:

The Management of Acne Vulgaris

I'm a 42-year-old woman. The fact that my teenagers have acne doesn't surprise me, but why do I have it?

Acne can affect anyone from newborns to post-menopausal women. About 80% of individuals between 11 and 30 years of age will be affected, and almost everyone at least once during his/her life. Of course, a problem of this scope comes with a large price tag—the cost of acne medications and treatment, as well as the emotional toll, can be enormous. (See ***informed plus*** for acne medication costs.)

I'm going to ask my family doctor for a referral to a dermatologist, because they are the "skin doctors," right?

Primary care physicians can treat the vast majority of acne problems. Patients with severe nodulocystic acne would benefit, however, from *early* referral to a dermatologist.

If even a baby or a post-menopausal woman can get acne, what causes it?

Non-inflammatory Acne: The sebaceous glands, (*esp.* face, chest and back) normally empty oily products into ducts and then onto the surface of the skin. People with acne have higher rates of sebum production. When epithelial cells that line the duct slough off, the cells can become excessively sticky. If these "sticky" cells clog the duct, both cells and sebum accumulate upstream. Closed comedones (whiteheads) and open comedones or blackheads (black due to oxidation of melanin pigment) are the first visible signs of this blockage.

At puberty, in males especially, and at the end of each menstrual cycle and menopause in women, androgens tend to overpower estrogens, which can result in sebum overproduction and worsening acne. Severity may be linked with elevated androgen levels (testosterone, DHEAS or androstenedione) in 5% to 10% of women. Androgenic disorders, such as polycystic ovary syndrome, should be considered if acne is associated with irregular menses, hirsutism and virilization. In men, the connection with androgen levels is not clear.

Inflammatory Acne: If the glands rupture deep into the skin, inflammation results because of a combination of sebaceous materials and *Propionibacterium acne. P. acne* is a bacterium present in small numbers on normal skin, but in higher counts in people with acne. This inflammation appears as papules, pustules, and nodules (cysts). Scarring (often the most emotionally traumatic aspect of acne) may occur as a result of an exaggerated healing process. Early intervention can reduce the likelihood of scarring.

I've heard that stress makes acne flare up. What are some things that may make acne worse?

✓ Genetics

✓ Oil-based comedogenic cosmetics, sunscreens and hair products

✓ Scrubbing of the skin

✓ Drugs
- Oral contraceptives with low or no estrogen or a strong androgenic progestin
- phenytoin, isoniazid, trazodone, lithium, rifampin and haloperidol (and others)
- anabolic steroids

✓ Stress may have an effect

Food, (other than kelp) has **never** been proven to cause acne.

This article has been peer-reviewed.

*Acne Treatment By Predominant Type of Lesion**

Lesion Type	Medications	Use (Goal)	Unsatisfactory Results
COMEDONES closed or open *Non-Inflammatory*	• topical retinoid • adapalene • salicylic acid • tazarotene	▸ qhs or bid ▸ qhs ▸ qhs or bid ▸ qhs	**Consider:** • increase strength or change medication
MILD (MIXED) scattered papules or pustules; few comedones	• topical retinoid + topical antibiotic • topical retinoid + benzoyl peroxide (10-12 hours apart) • topical retinoid alternate with benzoyl peroxide + topical antibiotic (10-12 hours apart) • sulfacetamide-sulfur	▸ qhs / qam ▸ qhs / qam ▸ od ▸ od / bid	**Consider:** • topical retinoid + oral antibiotic **Typical Oral Dosages:** • tetracycline/ erythromycin: 500–1000 mg daily • doxycycline/minocycline: 50-200 mg daily
MODERATE papules and pustules	• benzoyl peroxide • topical antibiotic • benzoyl peroxide + topical antibiotic • sulfacetamide-sulfur	▸ bid ▸ od ▸ od / od ▸ od / bid	**Consider:** • resistance/ super-infection • hormonal therapy (if applicable)
SEVERE widespread nodular cystic (or sub-optimal response)	• Oral antibiotics + treatment for mixed • Consider referral		**Consider:** • isotretinoin • r/o endocrinopathy • additional courses of isotretinoin • hormonal therapy • corticosteroid injection • referral
OTHER Acne fulminans, Pyoderma faciale, Acne conglobata	→ **Referral:** Dermatology		

Inflammatory

* *Assuming no iatrogenic causes*

Three Goals of Treatment in Acne Control

1 Decreasing Sebum Production

Soaps and astringents remove sebum from the surface only—they have no effect on production.

Three types of medications for *severe acne only:*

Antiandrogens, such as cyproterone acetate and spironolactone, may be used in women only. The usual dose is 100-200 mg/d, although 25-50 mg/d may be effective in older women or with premenstrual flares. Birth control should be used. A combination cyproterone acetate-ethinyl estradiol pill is available.

Oral contraceptives, also for women only. An equivalent of >50 μg ethinyl estradiol or low-dose estrogen with a nonandrogenic progestin (norgestimate or desogestrel) may be used for three to four months (minimum). In general, prolonged therapy (years) is usually needed.

Oral isotretinoin profoundly reduces sebum production. The usual starting dose is 0.5 mg/kg per day for two to four weeks, with a maintenance dose of 0.1 to 1 mg/kg per day for a total of 12 to 16 weeks. Remission (usually 3 to 6 months) is more likely with a total cumulative dose of 120 mg/kg and can be permanent.

Because of teratogenicity, effective birth control is *essential* in women. The main side-effects are initial exacerbation of acne, dry skin and mucous membranes, bone pain (15%), depression, decreased night vision and temporary increase in hair loss. Regular monitoring of lipids and liver enzymes is suggested. Patients should avoid alcohol, vitamin A supplements and some antibiotics (tetracycline and minocycline) because of the risk of pseudotumour cerebrii. High impact exercise and shearing activities (e.g. hair waxing) should also be avoided. (Contact the manufacturer for monitoring program.)

2 Decreasing Epithelial Cell Turnover

Tretinoins (trans-retinoic acid) are available in creams, gels and liquids (in order of progressive drying effect and potency). They should be introduced two to three times/week, gradually increasing to nightly, and applied 30 minutes after gentle cleansing (a small pea size dab for entire face). Because local irritation can occur, start with the lowest-strength preparation. Maximum clinical effect may not be evident for three to four months. There is a synergistic effect with applying benzoyl peroxide in the morning. A non-comedogenic sunscreen should be used. *One* study has shown it is unlikely that topical retinoids are teratogenic. It may be prudent, however, to counsel women to practise effective birth control when using these agents.

Adapalene (a retinoid-like compound) acts similarly to tretinoins, but is thought to be less irritating. (See above)

Antibiotics (topical or systemic) act indirectly by decreasing numbers of *P. acne* .

Salicyclic acid may be useful in those unable to tolerate tretinoins. It should be applied once or twice daily. It can cause skin dryness and irritation.

Isotretinoin in both oral and topical forms acts to decrease cell turnover. Topical isoretinoin (without the systemic side-effects of the oral form) is effective in mild to moderate acne. Women should use contraception.

Tazarotene is particularly effective with comedonal acne. It is available in a gel form (0.5% to 1.0%). Precautions and usage are similar to tretinoins.

3 Decreasing *P. Acne*

Benzoyl peroxide suppresses the growth of *P. acne* more effectively than topical antibiotics alone, but contact dermatitis is more common. Patients should wash with gentle soap and water, patting area dry before applying. A 2.5% preparation is probably just as effective as 5% or 10% (with less irritation). It should never be used *simultaneously* with topical retinoids, but is synergistic when used 10 to 12 hours apart.

Topical antibiotics (e.g. erythromycin, clindamycin) are bacteriostatic for *P. acne,* raising concerns about the development of resistant strains. The combination of erythromycin-benzoyl peroxide, however, appears to act synergistically and is probably the most effective topical agent against *P. acne.* Very rarely, topical clindamycin has been associated with pseudomembranous colitis.

Systemic antibiotics (e.g. tetracycline, erythromycin, doxycycline, minocycline) are very effective and generally quite safe. Tetracycline, for example, can decrease inflammatory lesions by up to 50% in six weeks. (Some antibiotics are contraindicated in specific groups such as children and pregnant or lactating women.)

Penicillins, cephalosporins and fluoroquinones are of little use in treating acne. To reduce the development of resistant strains, consider using antibiotics only in relapses or treatment failure with other agents, and tapering or stopping after two to four months. Topical antibiotics may lessen relapses during weaning.

Other Options

- **Sulphacetamide-sulfur**
- **Herbal remedies:**
  - Teatree oil is bactericidal against *P. acne.* It is similar in efficacy to benzoyl peroxide with slower onset. Contact dermatitis can occur.
  - Stinging nettle is a mild diuretic with CNS/CVS effects. There is no evidence of benefit.
- **Alpha-hydroxy acids**
  - Show little evidence of benefit.
- **Zinc and oral Vitamin A**
  - Unknown efficacy.
- **Procedures**
  - Comedo extraction, best after several weeks of tretinoin
  - Incision and drainage of purulent nodules and cysts
  - Corticosteroid injections into significant inflammatory lesions often speed healing (e.g. triamcinolone 5mg/ml into cyst in volume to cause blanching)
  - Dermabrasion and chemical peels have shown little success for scarring. C02 laser and recollagenation are more promising. ■

The Bottom Line

- **Early intervention can prevent scarring from inflammatory acne.**
- **Remember to treat the back and chest too.**
- **Encourage patience (at least 4 to 6 weeks before results). Acne may worsen before it improves.**
- **Many acne therapies are teratogenic. Don't forget contraceptive counselling in women.**