

The least tolerable topical retinoid (tazarotene) is the most effective, and the most tolerable (adapalene) is the least effective. Patients who can tolerate tazarotene are likely to find that it works better for them than do the alternatives.

Retinoids formulated in creams tend to be better tolerated - but less effective in equal strengths - than those formulated in gels.

Retinoids can be combined with antimicrobial treatments for inflammatory acne - and used alone or in combination for long-term maintenance therapy.

Our preferred product is Epiduo®, a once-daily gel that combines the retinoid adapalene with benzoyl peroxide (\$210 for 45g).

2. Topical Benzoyl Peroxide (171ml of a *4% creamy wash for acne on chest and back* are available for \$4 at Walmart, Sam's and Kroger). When used alone, benzoyl peroxide is an effective antimicrobial and has comedolytic activity.

In combination with an antibiotic (e.g., 1% clindamycin/ 5% benzoyl peroxide), benzoyl peroxide is an effective, well-tolerated treatment for inflammatory acne.

Our preferred product is Duac®gel (\$190 for 45g). Alternatives include *Benzaclin®* and *Acanya®*.

3. Oral Antibiotics are most effective for inflammatory acne lesions, moderate-to-severe acne, and in patients where topical treatments have failed. Oral antibiotics may have rare, but in some cases severe, side effects. These agents should be taken for the minimal effective time period (at least 6 months), discontinued, and then followed by long-term topical therapy.

Tetracycline is a first-line agent for inflammatory acne due to its efficacy and price. Dosing typically starts at 500 mg twice daily (a 1 month supply is available for \$4 at Walmart, Sam's and Kroger), and is maintained until marked improvement is observed; a 50% reduction may be noted in just 6 weeks. At that point, a maintenance dose of 500 mg daily can be taken.

Tetracycline absorption is optimized if pills are taken with water at least 30 minutes before eating. If the capsule sticks to the food pipe, tetracycline release may result in a burning sensation lasting up to 4 days. Side effects also include food pipe ulceration, loose stools, and vomiting. Furthermore, tetracycline absorption is affected by concurrent consumption of dairy products, food or heavy metals (i.e. iron). Candidal vaginitis has been reported in up to 10% of patients. Tetracycline may also trigger liver necrosis, Stevens-Johnson syndrome, and increased pressure within the brain in the absence of a tumor, characterized by dizziness, lethargy, headache, nausea, vomiting, light sensitivity, and double vision.

Doxycycline has a reduced risk of nausea, vomiting, and loose stools. It can be taken with meals as its absorption is not affected by food.

Initial dosing for acne is usually 100 mg twice daily (20 tab are available for \$4 at Walmart, Sam's and Kroger), with a subsequent maintenance dose of 100 mg daily.

Although doxycycline may be the most photosensitizing of the tetracyclines, this side effect is rare (<

1% of patients) and dose-dependent. Phototoxic reactions are most common with immense sun-exposure and since sunscreen use may not prevent photosensitivity reactions in Bowling Green, it may be wise to avoid doxycycline in the summer, especially in those with fair skin. Mouse experiments have suggested an adverse effect on fertility.

Minocycline produces more rapid and sustained lesion reduction than other tetracycline-agents.

The initial dose is usually 50 mg twice daily to 100 mg twice daily, with a maintenance dose of 50 mg to 100 mg daily (\$24 for 100mg #60).

Absorption of minocycline is greatest when taken 30 minutes before a meal because drug absorption is reduced 10% to 15% with concurrent food intake.

Though an incredibly effective drug, minocycline is criticized for rare, but possible side effects:

- Drug-induced *lupus* may occur between 2 and 6 years after starting therapy. Patient present with malaise accompanied by symmetrical pain in the small joints of the hand and wrist.
- *Blue-gray skin pigmentation* may manifest 3 to 6 months after starting therapy. Nail discoloration has been reported after only 8 weeks of therapy.
- A *hypersensitivity syndrome*, characterized by fever, swollen lymph nodes, and rash may occur between 3 weeks and 2 months after starting therapy.
- In addition, an *eosinophilic pneumonitis* with difficulty in breathing, cough and fever, along with pulmonary infiltrates, may develop.
- Long-term treatment has been associated with *hepatitis, thyroiditis, polyarteritis nodosa and arthritis*. Baseline liver function tests may be useful prior to initiating therapy.

4. Hormonal Therapies are now recognized as effective acne therapies in women with inflammatory acne or certain hormonal conditions. These women may benefit from treatment with birth control pills, such as ethinyl estradiol/levonorgestrel (Alesse®, Levlen®, Levlite®, Plan B®, Seasonale®, Tri-Levlen®, Triphasil®) and drospirenone/ethinyl estradiol (Yasmin®).

Antiandrogens, such as **spironolactone** (\$20 for 25mg #30 and \$32 for 50mg #30), also have anti-acne benefits and may be used alone or in combination with oral antibiotics or topical therapies for certain women.

Side effects: Menstrual irregularities (20%), hyperkalemia (serum potassium should be monitored every 3 months), breast tenderness, breast enlargement, headache, fatigue, and reduction of blood pressure.

Contraindications: Kidney dysfunction, genetic predisposition to breast cancer.

5. Oral **isotretinoin** (\$590 for 20mg #30 and \$680 for 40mg #30) is a mainstay therapy for severe, scarring acne and acne that relapses or is resistant to oral and topical therapies.

iPLEDGE: Because ANY isotretinoin in early pregnancy results in at least 50% risk of birth defects, isotretinoin is sold only under a special program approved by the Food and Drug Administration called iPLEDGE. Isotretinoin can only be prescribed by healthcare providers

and dispensed by pharmacies registered in iPLEDGE.

Women of childbearing age must have two negative pregnancy tests before therapy is initiated. A negative result for a pregnancy test should be obtained within 2 weeks prior to therapy, which should begin during a normal menstrual period. Also, a pregnancy test must be conducted during each month of therapy.

Two effective forms of birth control must be used during therapy, and pregnancy must be avoided one month before, during, and at least one month after stopping isotretinoin.

Common side effects: Dry skin, itching, dry nose, nosebleeds(epistaxis), cracks in the corners of the mouth (cheilitis), dry mouth, inflammation of the whites of the eyes, joint aches, hair loss, hypertriglyceridemia, hypercholesterolemia. Because of delayed or poor wound healing, incisional surgery including attempts at cosmetic scar revision should be delayed for 12 months after the completion of isotretinoin therapy.

Rare side effects include hearing / vision problems, bone and muscle damage, inflammatory bowel disease (ulcerative colitis/Crohn's disease/rectal bleeding), lupus, skin infections, peeling, sun sensitivity, liver damage, pancreatic damage, kidney damage, and increased pressure within the brain in the absence of a tumor (pseudotumor cerebri), characterized by dizziness, lethargy, headache, nausea, vomiting, light sensitivity, and double vision. There have been reports of an increased risk of depression and suicide attempts in individuals taking isotretinoin, but the causality has not been absolutely proved.

Drug interaction: Combination with tetracycline has been associated with pseudotumor cerebri.