• No conflicts of interest
• This is not a basic science lecture
• This is a very short talk
• Focus on treatment, not diagnosis
• Not inclusive of all available methods of care
CASE 1: ACNE

- Otherwise healthy 22 year-old female presents with the following exam:

Would you grade this woman’s acne as mild, moderate, or severe?
• Rx options include:
  • Benzoyl peroxide alone
  • Topical Abx + BP
  • Topical retinoids alone
  • Topical retinoid + BP
  • BP + topical Abx + retinoid
  • Others: azelaic acid 20%, dapsone 5% gel, salicylic acid 0.2-2% OTC

Guidelines of care for the management of acne vulgaris
Pharmacologic Therapy for Acne: A Primer for Primary Care Clinician Reviews. 2017 October;27(10):22-29

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Topical Agents for Treatment of Acne

<table>
<thead>
<tr>
<th>Medication</th>
<th>Mechanism of action</th>
<th>Available preparations</th>
<th>Potential adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical retinoids</td>
<td>Normalizes follicular epithelial desquamation and keratinization, exhibits anti-inflammatory activity, promotes comedolysis</td>
<td>Cream 0.025, 0.0375, 0.05, 0.075, 0.1% Gel 0.1, 0.25, 0.0375, 0.04, 0.0, 0.1% Micronized 0.04, 0.08, 0.1%</td>
<td>Erythema, skin irritation, peeling, pruritus, photosensitivity</td>
</tr>
<tr>
<td>Tretinoin*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapalene*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tazarotene*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other topical agents

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</thead>
<tbody>
<tr>
<td>Benzoyl peroxide*</td>
<td>Bactericidal against P. acnes, exhibits comedolytic and keratolytic actions and anti-inflammatory activity</td>
<td>Washes, creams, gels, foams, solutions, and bar soaps with concentrations ranging from 2.5% to 10%</td>
<td>Erythema, scaling, chyosis, bleaching of hair and clothing</td>
</tr>
<tr>
<td>Clindamycin phosphate</td>
<td>Inhibits protein synthesis by binding to ribosomal 50S subunit of P. acnes</td>
<td>Lotion, gel, solution, foam, all 1%</td>
<td>Skin irritation, rare cases of pseudomembranous colitis, resistance</td>
</tr>
<tr>
<td>Erythromycin*</td>
<td>Inhibits protein synthesis by binding to ribosomal 50S subunit of P. acnes</td>
<td>Gel, solution, ointment, pledgets, film, all 2%</td>
<td>Resistance, irritant dermatitis from drug</td>
</tr>
<tr>
<td>Azelaic acid*</td>
<td>Destroys mitochondrial respiration and DNA synthesis in Propionibacterium acne; exhibits anti-inflammatory, antiinflammatory, and comedolytic properties; can inhibit tyrosinase, which may help lighten post-inflammatory hyperpigmentation</td>
<td>Gel, foam 15%, Cream 20%</td>
<td>Tingling or itching, application, irritant dermatitis</td>
</tr>
<tr>
<td>Dapsone*</td>
<td>Inhibits dihydrofolate synthetase and nucleic acid synthesis</td>
<td>Gel 5% and 7.5%</td>
<td>Irritant dermatitis, signs of methemoglobinemia, discoloration of clothing and skin when used in conjunction with benzoyl peroxide</td>
</tr>
<tr>
<td>Sodium sulfacetamide</td>
<td>Exerts a bacteriostatic effect on P. acnes through inhibition of dicyclohexylcarboxylic synthetase</td>
<td>Lotion, suspension 10%</td>
<td>Irritant dermatitis, may have a sulfonic odor</td>
</tr>
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TOPICAL RETINOIDS

• Tretinoin : 0.025% - 0.1% cream, gel
• Adapalene: 0.1% (now OTC), 0.3%, gel cream or lotion
• Tazarotene 0.05%, 0.1% cream, gel or foam (pregnancy category X)
• Most important topical therapy: comedolytic, resolve precursor microcomedone, and anti-inflammatory
• Works VERY SLOWLY
• Mild photosensitivity: recommend moisturizer with daily SPF

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Zaenglein, Andrea L. et al.
Journal of the American Academy of Dermatology, Volume 74, Issue 5, 945 - 973.e33
“IT’S TOO IRRITATING”

• Requires specific instructions or else patients tend to discontinue
  • Warn them that they WILL GET redness, peeling, irritation, and dryness
  • Pea-sized amount for entire face
  • Start at 2-3 nights per week until irritation improves
  • Slowly build to every night over 2-3 months
  • Tretinoin can be deactivated by BP so try not to use at same time.
  • Tretinoin not photostable
  • 1-2 times daily fragrance free light lotion
  • Often start with lowest strength and then build
BENZOYL PEROXIDE

- Kills P. acnes
- No resistance documented
- ALWAYS add this when using antibiotic therapy: topical or oral
  - Enhances results, may reduce resistance
- Washes, creams, gels, leave on or wash off
- 2.5%-10%. Prescription and OTC
- Use limited by concentration-dependent irritation, staining of towels

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TOPICAL ANTIBIOTICS

• Accumulate in hair follicle.
• Anti-inflammatory and anti-bacterial mechanisms
• Clindamycin 1% > Erythromycin 2% (more resistance to P. acnes and Staph)
• Never as a monotherapy. Must use alongside BP

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3 MONTHS LATER…

• Same 22 year-old female returns for acne follow up. After taking a history, turns out she started none of the recommended topical medications. She reports wanting to “be more aggressive” about her acne treatment. This is her exam now:
MODERATE

• Rx: options include:
  • Combination topical therapy PLUS oral antibiotic
  • If female, consider combine topical therapy PLUS OCP and/or spironolactone
ORAL MEDICATIONS FOR MODERATE ACNE

- All oral medications should be used with topical retinoid and BP during and after for maintenance therapy

- Oral antibiotics: NEVER AS A MONOTHERAPY
  - Doxycycline (1.7-2.4 mg/kg/day) or minocycline (1 mg/kg/day)
    - Anti-inflammatory actions independent of microbial killing
    - Doxy SE: GI upset, photosensitivity. Mino SE: tinnitus, dizziness, pigmentation deposition
    - Do not decrease efficacy of birth control pills
  - Azithromycin only in pregnancy or children < 8 y/o
  - Other than tetracyclines and macrolides, oral Abx are discouraged
  - Limit to shortest possible duration. Re-evaluate at 3 months

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• The use of topical maintenance regimens cannot be overemphasized.

TOPLICAL MAINTENANCE THERAPY
= REDUCTION OF ANTIBIOTIC RESISTANCE
ORAL MEDICATIONS FOR MODERATE ACNE

• For women:
  • Combination oral contraceptive pills (estrogen + progesterone)
    • There are 4 approved for acne
    • Antiandrogenic properties
    • Reduces comedones and inflammatory lesions
    • Several contraindications. Must check BP prior to starting and during treatment.
    • Results apparent at 3 months
  • Spironolactone 50-100mg starting dose, can increase to 200mg/day
    • No longer necessary to follow K in otherwise healthy women. Avoid high K foods (coconut water).
    • Not approved by FDA for acne indication
    • NEEDS RELABLE CONTRACEPTION OR DO NOT USE
    • SE: diuresis, menstrual irregularities, breast tenderness
    • No increased risk of cancer in human studies
SEVERE OR RECALCITRANT

- Severe:
  - Likely needs consultation for isotretinoin

https://www.webmd.com/skin-problems-and-
THE ACNE VISIT

• Factors affecting acne treatment: Age, Site of involvement, Extent and severity of disease, Patient preference, Pregnancy or Breastfeeding status

• Inquire about overly aggressive exfoliating and washing

• Consistency of usage of appropriate medications is most important factor for improvement

• VERY important to set expectations: improvement will be slow and with topicals alone ~50-75% with 3 months of strict adherence

• Almost always use combination therapy

• Reassess after 3 months
COMPLEMENTARY/ALTERNATIVE THERAPIES

- Few well done studies but …
  - 2 clinical trials showed tea tree oil comparable to BP alone and better tolerated
  - A small number of studies show low glycemic index diet improves acne
  - Questionable association of acne with dairy, specifically milk

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CASE 2: ATOPIC DERMATITIS

• 35 year-old female presents with itchy rash currently located behind her knees and in elbow creases that has been waxing and waning for “all of my life”. She gets about 3-4 flares per year and flares are worst in the winter. She currently uses a fragrance free non-soap cleanser and moisturizes twice daily with a heavy fragrance free cream. This is her exam: