Pimples Galore: Management of Teenage Acne

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Practice Change

As a result of attending this lecture, I encourage you to make the following changes in your practice:

- Comfortably assess a patient presenting with acne vulgaris.
- Devise an initial treatment plan for patients with acne vulgaris.
- Recognize possible side effects/risks of medications used to treat acne vulgaris.
Acne Vulgaris

- An estimated 45 million people in the United States have acne vulgaris
- 85% of adolescents and young adults are affected
- By age 18 as many as 25% of adolescents will have scarring attributable to acne
Acne Vulgaris

- Associated with significant physical & psychological morbidity
  - Permanent scarring
  - Painful lesions
  - Low self esteem
  - Emotional distress
  - Depression or anxiety
  - Social isolation
Acne Myths?

- Is acne caused by
  - Dirt or poor hygiene?
  - Diet?
    - Worse with high glycemic index diets?
    - Link to dairy intake?
      - 1% milk or skin milk
- Is acne exacerbated by stress?
Clinical Manifestations of Acne

- Non inflammatory lesions
  - closed comedones
  - open comedones

- Inflammatory lesions
  - papules
  - pustules
  - nodules
  - cysts

- Scars
  - pits
  - depressions
  - hypertrophic scars and keloids
Open Comedone “Black Head”

- Papule with dark center
- Obstructed follicle with a dilated orifice
Closed Comedone “White Head”

- White or skin colored papule
- Obstructed follicle filled with cellular debris
Papules and Pustules

- Erythematous papules or yellow pustules
- Obstructed hair follicle with surrounding inflammation
Cysts

- Deep dermal nodule
- May have surrounding inflammation
- Painful
- Risk of scarring
Scars

- Pitted scars
- Atrophic scars
- Hypertrophic scars
- Keloids
Acne in Different Age Groups

- Neonatal acne
- Infantile acne
- Adolescent acne
- Adult onset acne
Atypical Presentations of Acne

- Acne initially appearing in early childhood (between the ages of 1-7 years) may be a marker of underlying hormonal abnormalities
  - Precocious puberty

- Assess for other clinical signs of hyperandrogenemia
  - Pubertal development
  - Hirsutism, clitoromegaly
  - Consider evaluation for precocious puberty or premature adrenarche or referral to endocrine
Adolescent Acne

- Onset as early as age 8-9 (increase in DHEAS and sebum production)
  - Preadolescent acne 8-12 years (or menarche)
  - Adolescent acne >12 years (or menarche)
- Usually begins with non-inflammatory comedones on the central face
- Increase in number of inflammatory lesions with advancing pubertal stage
Acne Patient Evaluation

- Thorough history
  - Duration/age of onset of acne
  - Medications used to treat acne
  - Other medications currently using
    - May lead to acneiform eruptions
  - Type of cosmetics/hair oils
    - Pomade acne
    - Acne cosmetica
  - Occupation/recreational activities
  - Other medical problems
Patient Evaluation

- **Review of systems**
  - Regular menstrual cycles?
    - PCOS (alopecia, hirsutism, acne)
  - Premenstrual flares?

- **Physical Exam**
  - Face
  - Neck
  - Chest
  - Back
Various forms of assessing acne severity

- Based on number and type of non-inflammatory and inflammatory lesions
- Often categorized into
  - Mild
  - Moderate
  - Severe
Evidence-based Recommendations for Management of Acne vulgaris


Treatment of Acne Vulgaris

- Educate patients
- Compliance is key!
- Treatment takes time (at least 6-8 weeks before significant improvement is noted)
- Objective is to prevent the formation of future lesions and scarring
Treatment Options

- **Topical Therapy**
  - Topical Benzoyl peroxide
  - Topical combination Benzoyl peroxide & antibiotic
  - Topical retinoids

- **Systemic Therapy**
  - Oral antibiotics
  - Hormonal therapy
  - Oral retinoids

- **Light or Laser Therapy?**
Benzoyl Peroxide

- Indicated for mild to moderate inflammatory acne
- Nonspecific mode of antibacterial action through oxidizing activity
- Use once daily
- Available with or without a prescription in 2.5-10% cream, gel, lotion, or wash
- Side effects
  - Erythema, dryness, peeling, bleaching of clothing
  - Rare contact dermatitis
Combination Topical Therapy

- Combinations of benzoyl peroxide and a topical antibiotic improve inflammatory acne and decrease the development of *P. acnes* resistance
  - Erythromycin & benzoyl peroxide QD-BID (Benzamycin®)
  - Clindamycin & benzoyl peroxide QD-BID (Benzaclin®, DUAC®, Acanya® and Onexton®)

- Topical antibiotics should not be used as monotherapy
Topical Retinoids

- Indicated for non inflammatory/comedonal acne
- Therapeutic effects of topical retinoids
  - Normalizes desquamation of the follicular epithelium
  - Prevents formation of new comedones and resolves old comedones (comedolytic-unplugs the pores)
- Daily application
- Side effects
  - Irritation, erythema, dryness, sun sensitivity
Topical Retinoids

- Tretinoin (Retin-A®) 0.025%, 0.05%, and 0.1% cream & 0.01% and 0.025% gel
- Retin-A micro® (Incorporation of Tretinoin into microsponges) 0.04% or 0.1% gel
- Adapalene (Differin®) 0.1% or 0.3% gel, 0.1% cream, and 0.1% lotion
- Tazarotene (Tazorac®) 0.05% and 0.1% cream or gel
  - Pregnancy Category X
Topical Retinoid Combination Products

- 2.5% benzoyl peroxide & 0.1% adapalene gel (Epiduo®)-once daily application
- Clindamycin phosphate 1.2% gel & tretinoin 0.025% gel (Ziana®)-once daily application
Oral Antibiotics

- Indicated for moderate to severe inflammatory acne not responsive to topical therapy
- Bactericidal and antiinflammatory
- Decrease *P. acnes* colonization
- Inhibit neutrophil chemotaxis
- Reduces free fatty acids in sebum
- Should not be used as monotherapy
- ? Length of treatment
Oral Antibiotics

- Tetracycline (250-500 mg QD-BID)
  - Not commonly prescribed
- Doxycycline (50-100 mg QD-BID)
  - Photosensitivity
  - GI upset/esophagitis
- Minocycline (50-100 mg QD-BID)
  - Multiple possible side effects
Minocycline

- **Possible side effects**
  - Hyperpigmentation
  - Vertigo like symptoms
  - Arthralgia and arthritis

- **Severe adverse reactions**
  - Drug induced lupus (late reaction pattern)
  - Serum sickness like reaction
  - Benign intracranial hypertension (pseudotumor cerebri)
  - Autoimmune hepatitis
  - Hypersensitivity syndrome reaction (fever, rash, LAD, malaise, facial swelling)
Hormonal Therapy

- Adjunctive treatment option for females with recalcitrant acne
- Lowers circulating and local androgen levels
  - Reduces sebum production
- Reduction of androgen expression
  - Oral contraceptives
- Androgen receptor blockers
  - Spironolactone (pregnancy category C)
Candidates for Hormonal Therapy

- History of failed standard acne therapies
- History of menstrual irregularities
- Premenstrual flares of acne
- Hirsutism
Oral Contraceptives

- Can improve acne in adolescent females and women
- Ideally a combination oral contraceptive consisting of ethinyl estradiol with a progestin having low intrinsic androgenicity
- FDA approved for contraception and acne vulgaris
  - Norgestimate (Ortho-Tri-cyclen®)
  - Norethindrone (Estrostep®)
  - Drospirenone (Yaz®)
    - Increased risk of clots
Contraceptives Which May Worsen Acne

- Long acting progestin-only contraceptives
  - Depot injections
    - Medroxyprogesterone
  - Subdermal implants
    - Etonogestrel
  - Hormone intrauterine devices
    - Levonorgestrel
Systemic Retinoids

- Indicated for patients with severe or refractory inflammatory or nodulocystic acne
- Isotretinoin (13-cis retinoic acid) previously known as Accutane®
  - Now only available in generic brands
- Analogue of Vitamin A
- Human teratogen, many adverse side effects
- Pregnancy Category X
Isotretinoin Side Effects

- TERATOGEN
- Hypertriglyceridemia
- Hepatotoxicity
- Muscle pain
- Bone and joint pain
  - Hyperostosis
  - Calcification of tendons/ligaments
- Headache
  - Benign intracranial hypertension (pseudotumor cerebri)
- Diminished night vision

- Mucocutaneous effects
  - Dry skin, lips, eyes
  - Epistaxis
  - Photosensitivity
  - Hair thinning/loss
  - Erythema

- Possible mood changes/depression

- Possible inflammatory bowel disease
Isotretinoin and Depression

- Unclear if there is a specific causal link between depression and Isotretinoin use
- Reconsider treatment options if patient or family has a history of depression or a psychiatric disorder
- Patients should be advised to immediately report mood swings or symptoms suggestive of mood changes
Risk Management Program

- FDA has required all prescribers, patients (male & female), and pharmacies be registered with a national database and comply with all requirements
  - iPLEDGE

- Appropriately timed and documented negative pregnancy tests and pregnancy prevention counseling are required before Isotretinoin can be dispensed for females
Alternative Treatment Options?

- **Topical antioxidants**
  - Vitamin C
  - Nicotinamide

- **Botanicals**
  - Green Tea
  - Tea Tree Oil (Melaluca)
    - High irritation potential

- **Dietary modification**
  - Lower carbohydrate/glycemic index diet
  - Limit dairy intake
Acne Management

- How do you decide which medications to prescribe?
- Depends on several factors
  - Severity and type of acne lesions
  - Patient’s past medication experiences and personal preferences
  - Availability and cost of medications
- Combination therapy is recommended
<table>
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<tr>
<th>Acne Severity</th>
<th>Recommended Treatment</th>
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| Mild          | Topical Benzoyl Peroxide  
                Topical Antibiotic/Benzoyl Peroxide Combo  
                Topical Retinoid |
| Moderate      | Topical Benzoyl Peroxide  
                Topical Antibiotic/Benzoyl Peroxide Combo  
                Topical Retinoid  
                Oral Antibiotic  
                Hormonal Therapy  
                Consider Referral to Dermatology |
| Severe        | Topical Benzoyl Peroxide  
                Topical Antibiotic/Benzoyl Peroxide Combo  
                Topical Retinoid  
                Oral Antibiotic  
                Hormonal Therapy  
                Referral to Dermatology for Oral Retinoid |
Acne Conclusions

- Acne is a common skin condition
- May cause significant psychosocial effects
- Multiple treatment options
- Consider referral of atypical/recalcitrant cases
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Acne References


O’connell K et al. *Cutis* 2008;81(suppl 1):8-12.


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