

ACNE: NOT JUST YOUR DAUGHTER'S PROBLEM ANYMORE

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Objectives:

- Recognize the most commonly available over the counter ingredients available for the treatment of acne and their place in therapy.
- Identify prescription topical and oral products and be able to recognize their place in the treatment of different stages of acne.
- Recognize the place of hormonal products (i.e. birth control or spironolactone) in the treatment of acne vulgaris.

Acne

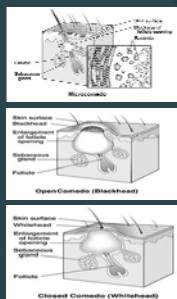
- Approximately 45 million Americans have acne.
- Acne is estimated to affect 40-50% of people over the age of 25.
- Over \$100 million a year is spent on **nonprescription** acne treatments

Pathophysiology

- Chronic inflammatory disease of the pilosebaceous follicles leading to the formation of comedones, papules, pustules, or nodules.
- Acne life cycle:
 - Hyperkeratosis and excess sebum production → plugging of follicles → microbial overgrowth damages the follicle → inflammation → comedone formation
- Genetics

Types of Lesions

- Comedones
 - Open comedones: blackheads
 - Closed comedones: whiteheads
 - Papules
 - Solid elevations in the skin with no visible fluid, generally erythematous and may be painful
 - Pustules
 - "Whitehead": Elevation of the skin usually containing neutrophils and necrotic inflammatory cells.
 - Nodules
 - Deeper lesions, usually inflamed and erythematous, cysts
 - Macule
 - Inflamed, erythematous area left by a healed acne lesion. Generally temporary, however may persist for days to weeks.
- Formation of lesions may occur on the face, neck, back, chest, shoulders, upper arms or legs



Picture: http://www.nlm.nih.gov/Health_Info/Acne/default.asp

Assessment and Treatment

- Severity of the acne
- Type of lesion
- Presence or absence of acne scarring
- Psychological impact
- Acne grading scales
 - More than 25 available
 - Mild, moderate, severe
 - Examples: Leeds acne grading scale (photographs), Global Acne Grading System (quantitative)

Topical Treatment

- Cornerstone of treatment for all stages of acne
- Categories:
 - Benzoyl peroxide
 - Salicylic acid
 - Antiseborrheic agents (i.e. sulfur)
 - Antibiotic agents
 - Retinoids
- Duration of treatment: long term



Benzoyl Peroxide

- Products available both over the counter and prescription in strengths ranging from 2.5% to 10%
- MOA:
 - Bactericidal agent against *Propionibacterium acnes* (*P. acnes*)
 - Possesses antikeratolytic properties
 - Causes comedo lysis.
- Often used in combination products
- Recommended for use in combination with antibiotics (topical or oral) to reduce the appearance of antibiotic resistant bacteria
- Adverse effects: irritant dermatitis, dry skin, burning

Salicylic Acid

- Available over the counter and prescription in concentrations ranging from 0.5% to 10% for the treatment of acne vulgaris (higher concentrations are for the removal of warts).
- Most often found in facial cleansers
- MOA: Possesses a keralytic effect and is a mild antiseptic.
- Adverse effects: erythema, pruritus, burning/stinging sensation

Antiseborrheic Agents

- Sulfur: available in concentrations from 1% to 10%
 - MOA: antiseborrheic with minor keratolytic properties
 - Available in combination products
 - Adverse effects: bad odor, staining of clothing, dermatitis, drying of skin
- Zinc sulfate
- Equal parts of alcohol ether

Antibiotic topical agents

- Available by prescription only
- Erythromycin, clindamycin, sulfacetamide, tetracycline, metronidazole (rosacea)
- Lotion, gel, cream
- MOA: Reduces the bacterial population, also possess anti-inflammatory properties.
- Should not be used as monotherapy
 - Increased incidence of bacterial resistance
 - Combination therapy with other topical agents is recommended¹¹
- Recently published acne treatment recommendations advise avoiding even topical antibiotics as maintenance therapy.
- Adverse effects: generally mild dermatitis, allergy



Topical Retinoids

- Available by prescription only
- A cornerstone of treatment for all stages of acne
- Maintenance therapy
- Tretinoin, adapalene, and tazarotene
- MOA:
 - Normalizes desquamation of skin cells
 - Reduces obstruction in the follicle which reduces *P. acnes* growth, facilitates the removal of existing comedones, and hinders formation of new lesions and reduces inflammation.
- Adverse effects: photosensitivity, skin irritation
- Most cannot be used in pregnancy

Systemic Treatments

- Generally reserved for moderately severe to severe acne, or in the case of acne resistant to topical treatments alone, scarring, or psycho-social disabilities.
- Systemic treatment options:
 - Oral antibiotics
 - Isotretinoin
 - Hormonal therapy



Oral Antibiotics

- Tetracycline, doxycycline, minocycline, and erythromycin
- MOA: reduce *P. acnes* population which in turn reduces inflammation
- Duration of treatment: generally 3-6 months
- Adverse effects: GI upset, photosensitivity, candidiasis
- Bacterial Resistance is a major concern
- Tetracyclines cannot be used in pregnancy

Isotretinoin (Accutane®)

- Indicated for the treatment of severe, nodulocystic acne
- MOA: exact mechanism is unknown
 - Affects RNA synthesis at a cellular level which in turn modifies the cell turnover rate, decreases follicle and sebaceous gland size, and decreases sebum production.
 - Also possesses anti-inflammatory properties.
- Dose: 0.5 – 2.0 mg/kg/day x 20 weeks
- Remission is often permanently induced after one course of treatment.

Adverse Effects of Isotretinoin

- | | |
|---------------------------|---------------------------|
| • alopecia | • GI upset |
| • chelitis | • increased triglycerides |
| • Erythema | • pancreatitis |
| • pruritis | • hepatotoxicity |
| • conjunctivitis | • visual disturbances |
| • arthralgia | • depression |
| • abdominal or chest pain | |

Highly teratogenic – 2 forms of birth control required!! (iPledge)

iPLEDGE Program®

- Online program
- Designed to reduce the risk of pregnancy during treatment with isotretinoin
- Prescribing physician and the pharmacy dispensing isotretinoin must be enrolled in the program.
- All patients must enroll and meet criteria prior to receiving isotretinoin.
- All patients (male or female) must be counseled monthly by their physician which must be documented in the iPLEDGE system.

iPLEDGE program®

- Additional criteria for female patients:
 - 2 negative pregnancy tests prior to receiving initial prescription
 - commitment to using 2 forms of contraception beginning the month before starting treatment, during treatment, and for 1 month after treatment.
 - Each month the female patient must take a pregnancy test
 - results as well as contraception being used must be documented by the physician
- Authorization must be obtained from the program by the pharmacist prior to dispensing Accutane®

Hormonal/Steroid therapies

- Oral contraceptives – decrease sebum secretion
- Intralesional corticosteroid injections – anti-inflammatory, works over 3 to 5 days on nodules/cysts
- Topical corticosteroids – applied BID for 5 days for small nodules
- Spironolactone – anti-androgen

Miscellaneous Therapies

- Extraction – should only be performed by a professional
- Light therapy - studies are still lacking
- Alpha hydroxy acid - keratolytic agent with a moisturizing effect
 - Glycolic acid
 - Use in the treatment of acne is controversial
- Dietary restrictions - unproven

Guideline Recommendations

- Combination therapy is a first line approach to acne treatment.
- Avoid long term use of antibiotics
 - Oral antibiotic therapy should be reserved for moderate to moderately severe acne
- Consideration should be given to adding benzoyl peroxide to any regimen containing an antibiotic in order to reduce the incidence of resistance

Tips for Improved Outcomes



- Use treatment exactly as prescribed
- If seeing a dermatologist, do not use non-prescribed products
- Never pop, squeeze, or pick acne
- Avoid using abrasive products
 - Includes soaps, facial scrubs, toners, astringents, and masks
- Do not scrub your skin
- Wait 5 to 15 minutes after showering or washing your face to apply medications
- Use only oil-free skincare and hair care products
- Apply medications before makeup or lotions
- Use only noncomedogenic or nonacnegenic products
- Continue using the medication even after skin clears
- Gently cleanse skin after sweating
- Give your medications enough time to work



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Review

1. Benzyl peroxide is a good initial choice either alone or in combination with other topical products for inflammatory acne due to its release of free radicals once applied to the skin. (True)
2. Topical antibiotics are best used as monotherapy for the management of acne. (False)
3. Dietary restriction is an important component of treatment for all stages of acne. (False)