

COST-EFFECTIVE ACNE MANAGEMENT

PEGGY VERNON, RN, MA, C-PNP, DCNP,
FAANP

Disclosures

There are no financial relationships with commercial
interests to disclose

Any unlabeled/unapproved uses of drugs or products
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- Contact Peggy Vernon at creeksideskincare@icloud

Objectives

- List two mechanisms of action of benzoyl peroxide in acne treatment
- Discuss two over-the-counter products which may substitute for prescription medications in acne treatment
- State two ingredients in cleansers which prove helpful in acne treatment

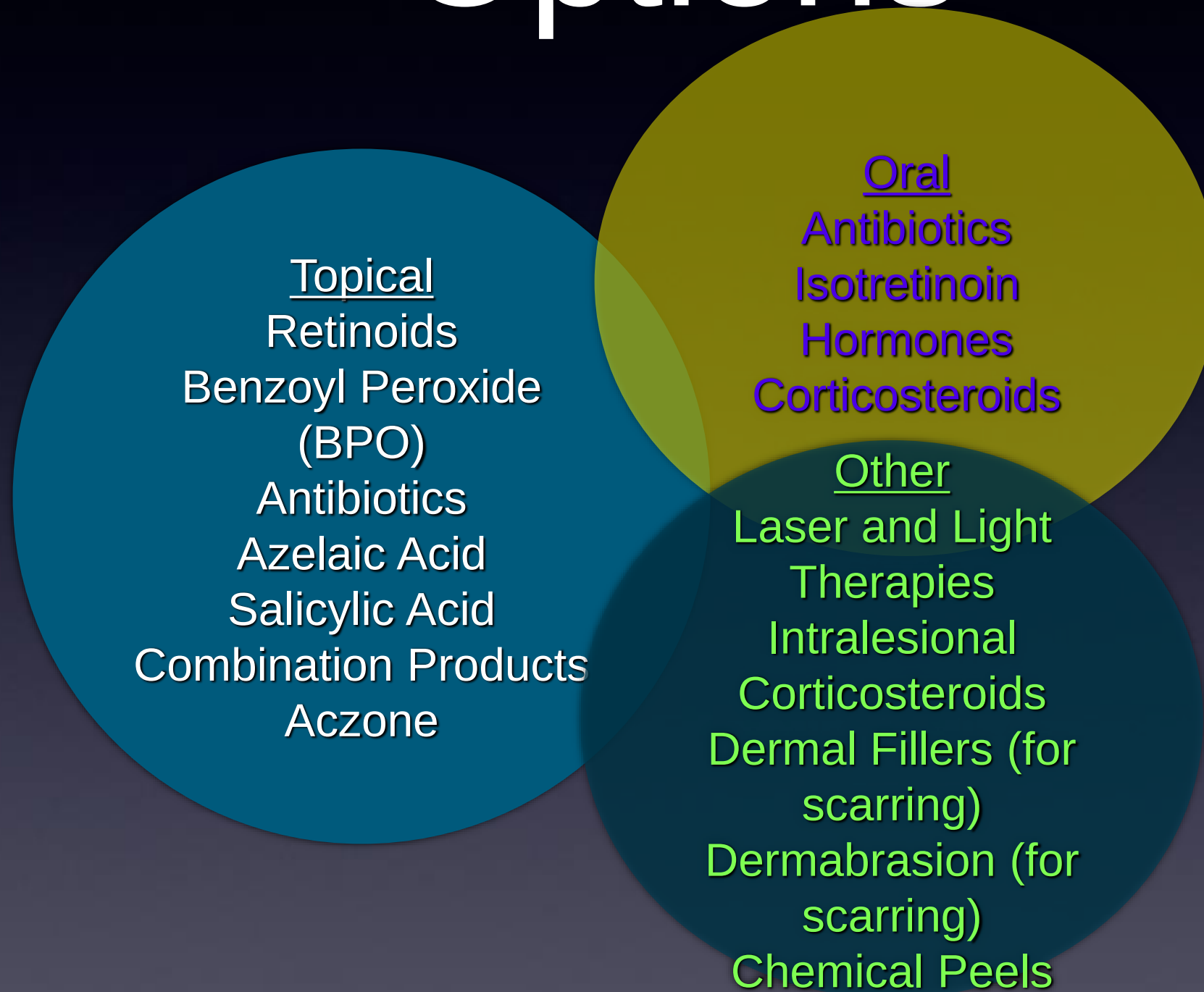
Acne Treatment Goals

- Normalize hyperkeratinization and follicular desquamation
- Decrease inflammation
- Decrease *P. acnes*
- Decrease sebum
- Prevent scarring

Acne Medications

- Keratolytics
- Antibiotics
- Antibacterials
- Hormones
- Isotretinoin

Current Treatment Options



Benzoyl Peroxide (BPO)

- Anti-bacterial
 - Lipophilic: penetrates stratum corneum, enters the pilosebaceous unit, reduces *P acnes*
- Comedolytic and anti-inflammatory effects
- Available over-the-counter and by prescription: 2.5%-10%
- May bleach hair, clothes, and bed linens
- Labeled “GRASE”: generally regarded as safe and effective by the FDA
- Pregnancy Category C. Molecular weight 242.23

BPO Mechanism of Action

- Potent antibacterial agents
- Improve both inflammatory and noninflammatory lesions (comedones)
- Dry and peel the skin
- Help clear blocked follicles
- May be used alone to treat mild acne
- Should be used in conjunction with topical retinoids and topical or systemic antibiotics for more severe cases

BPO Combination Products

- Benzamycin: Erythromycin 3%, benzoyl peroxide 5%
- Benzalin/Duac: Clindamycin 3%, benzoyl peroxide 5%
- Acanya: Clindamycin 3%, benzoyl peroxide 2.5%
- Epiduo: Adapalene 1%, benzoyl peroxide 5%

Combination Products

- The combination of erythromycin or clindamycin with benzoyl peroxide helps prevent bacterial resistance
- There appears to be a synergistic effect: The combination appears to be more effective than either drug used alone

Topical Antibiotics

- Clindamycin 5%: solution, lotion, gel, pledgettes, foam
 - Pregnancy Category B, Molecular weight 504.97
- Erythromycin 2%: solution, lotion, gel, pledgettes
 - Pregnancy Category B, Molecular weight 733.94
- Sulfa: lotion, cream, wash
 - Pregnancy Category C, Molecular weight 214.243

Topical Antibiotics

- Antibacterial and anti-inflammatory effects
- Indirect effect on comedogenesis (by reducing *P acnes*, which would otherwise activate the immune system and intensify comedogenesis)
- Should not be used as monotherapy
 - Strains of *P acnes* may develop resistance to the antibiotic
 - Resistance prevented by using in combination with BPO

- Acanya
 - \$532.79
 - BPO 2.5%/Clindamycin
 - \$472.99
- Benzacilin
 - 5%BPO/Clindamycin
 - \$524.89
 - \$105.14 generic

Valeant Access
Program Acanya
Insured \$35.00
Uninsured
\$75.00

Good Rx
Clindamycin Gel
\$56.63
OTC BPO 5% wash
\$4.99-\$20.00

Retinoids

- Azelaic Acid: antibacterial/keratolytic
 - Azelex 20%, Finacea 15%
 - Pregnancy Category B, Molecular Weight 188.22
- Adapalane: .05% cream, 0.1% gel, lotion, 0.3% gel (Differin)
 - Pregnancy Category C, Molecular Weight 412.53
 - Epiduo 0.1% Adapalane/ 5% BPO
- Tretinoin: .025% cream, .05% cream, 0.1% cream, 0.1% gel, .025% gel
 - Retin A Micro: .04%, 0.1%
 - Pregnancy Category C, Molecular weight 300.44
- Atralin: .05%
 - Pregnancy C, Molecular weight 300.44
- Ziana: .05% tretinoin/5% Clindamycin
- Veltin: .025% tretinoin/5% Clindamycin
- Tazarotene: .05%, .1% aqueous gel, cream (Tazorac)
 - Pregnancy Category X, Molecular weight 351.46

Retinoids Mechanism of Action

- Target microcomedones: precursors for all other acne lesions
- Increase turnover of follicular epithelial cells, causing extrusion of comedones
- Help normalize hyperkeratinization and abnormal desquamation
 - Help prevent formation of comedones and inflammatory lesions
- Improve follicular microclimate
- Reduce inflammation
- Enhance follicular penetration by other drugs
- Important for
 - Maintaining clear skin; prevent new lesion formation
 - Clear comedonal and inflammatory acne

Retinoid Systemic Absorption

- “Continuous daily dosing of tretinoin 0.1% cream, tazarotene 0.1% gel, and adapalene 0.1% gel has been shown to only slightly increase the mean maximum plasma levels of circulating retinoids in most patients.....serum retinoid levels were found to be more heavily influenced by dietary intake than by topical application of tretinoin”
 - Eichenfield et al

- Retin A Micro .04%

- 45 gm

- \$397.29

- Atralin .05%

- 45 gm

- \$244.20

Good Rx

Tretinoin .05%

45 gm

\$152.38

- Differin gel Brand
- 0.3%
- \$599.59

Benzer Pharmacy
Savings Program
Differin Gel 0.3%
\$75.00

Good Rx
Adapalene 0.1%
generic
45 gm
\$115.86
Adapalene 0.3%generic
45 gm
214.39

Galderma
CareConnect
Differin Gel 0.3%
\$75.00

Epiduo
\$494.4
9

Good Rx

Adapalene .1%
\$115.86
BPO 5%
\$20.00

Benzer and
CareConnect
\$75.00

Aczone (Dapsone)

- Synthetic sulfone
- Mechanism of action: Anti-inflammatory, mild antimicrobial
 - inhibits neutrophil function and migration
- Co-administration orally with TMP/SMX caused increased levels of dapsone and its metabolites
- Co-administration with topical BPO caused temporary yellow/orange discoloration of skin and facial hair
- Pregnancy Category C. Molecular weight 248
- \$502.60

Oral Antibiotics

- Inhibit growth of *P. acnes* and bacterial protein synthesis
- Decreases free fatty acid production and pustule formation
- Significant anti-inflammatory action as a result of their inhibition of the chemotactic response of neutrophils

Oral Antibiotics

- Erythromycin 250-500 mg: Pregnancy Category B
- Tetracycline 250-500 mg: Pregnancy Category D
- Doxycycline 50-100 mg: Pregnancy Category D
 - Doryx or Adoxa 50 mg, 100 mg, 150 mg
- Minocycline 50-100 mg: Pregnancy Category D
 - Solodyn 45 mg, 65 mg, 80 mg, 90 mg, 115 mg, 135 mg
- Less Common:
 - Clindamycin, Cephalosporine, Ampicillins, Azithromycin, Trimethoprim/Sulfamethoxazole

- Vibramycin

- (doxycycline hyclate)

- 100 mg

- #60

- \$641.79

Good Rx

Doxycycline Hyclate

Generic

100 mg

#60

\$49.07

- Monodox
- (doxycycline monohydrate)
- 100 mg
- #60
- \$1399.29

Good Rx

Doxycycline
monohydrate
100 mg
#60
\$34.34

- Dynacin

- 100 mg

- #60

- \$180.29

Good Rx

Minocycline

100 mg

#60

\$28.00

Mechanism of Action

	Normalize Keratinization	Decrease <i>p acnes</i>	Decrease inflammation	Decrease sebum
Retinoids	X		X	
BPO	X	X		
Topical ABX		X	X	
Salicylic Acid	X			
Azaelic Acid	X	X		
Oral ABX		X	X	
Hormones				X
Isotretinoin	X	X	X	X

Over-the-counter Products

Active Ingredients

- Benzoyl Peroxide: 2.5%-10%. Kills bacteria
- Salicylic Acid: .5%-2%. Does not bleach. Anti-inflammatory, bacteriostatic
- Alpha hydroxy acids: Glycolic acid, lactic acid. Reduce inflammation, remove dead skin cells, smooth appearance
- Sulfur: mild antibacterial and keratolytic properties. Remove excess oil. Best combined with BPO, Salicylic acid, or resorcinol. Often combined with sodium sulfacetamide to mask unpleasant odor.
- Resorcinol: mild antimicrobial properties. Usually 2% concentration combined with 5% sulfur

Murad

- Salicylic Acid and sulfur
- \$45.00/ kit

OXY

- Sensitive Skin: BPO 5%
- Maximum: BPO 10%
- Pads: BPO 2.5%
- Daily Defense: Salicylic Acid 2%
- \$5.79-\$13.49

Clearasil

- Salicylic Acid 2%
- \$4.97-\$15.97
- 10% BPO
- \$6.39

Olay

- Sulfur Spot Zinger
 - 2% salicylic acid
- \$7.99

Burts Bee's

- Salicylic Acid
- \$10.00

Neutrogena

- Salicylic Acid 1%
- Retinol
- \$20.99

Acne Free

- BPO 2.5%
- \$17.99

Other Ingredients

- Green Tea: kills bacteria, anti-inflammatory
- Passion Flower: anti-inflammatory
- Aloe Vera: Soothes irritated skin
- Sage Extract: fights free radicals



Coupon Cards

- Internet drug coupons can be used only for insured patients
- % or fixed amount off RX meds
- May be used for refills

Rxreliefcard.com

- Pharmacy discount card sponsored by Healthcare Alliance
- Save up to 75%
- Many major pharmacies
- Patients without prescription benefits

Goodrx.com

- Can be used with and without insurance
- Mobile apps
- Prices from >70,000 pharmacies
- Check by zip code

Helprx.info

- Printable coupons
- % off medications
- Can be used with and without insurance

MedicationCoupons.com

- Simple savings card
- With and without insurance
- >60,000 pharmacies nationwide

CouponDoc.com

- 30% off brand-name
- up to 80% off generic
- Insurance can't be used
- >60,000 pharmacies

Walgreens Rx Savings Club

- Individual \$20.00
- Family \$35.00
- With and without insurance
 - Federal and State health care programs ineligible
- Other in-store benefits
 - 10% at Healthcare clinics
 - 5-20% immunizations

Price Match

Leslie Ramirez, MD

- Osco: must give pharmacy name and drug price

Walgreens

- No price matching

Target

- Price match anyone if asked

Costco

- No price match
- Charge wholesale prices plus standardized 14% mark-up
- 90 day prescription often less than the co-pay for a 30 day prescription for 3 months

K-Mart

- Price match within 2 mile radius

Walmart

- Price match any pharmacy except Costco or other warehouse discount stores
- Limit: apply to same Rx 3 times only

CVS

- Price match any retailer except \$4 or \$5 Rx
- Will not match Super Saver Card prices
- No Costco or other warehouse discount stores

Case Studies

- Multiple open and closed comedones
- No pustules
- No inflammatory papules
- Oily



- Neutrogena acne wash
- Benzacilin
- Retin A Micro 0.1%
- Refer for facial and extractions after one month

- Oxy Maximum \$5.68
- Tretinoin .1% GoodRx coupon \$33.00

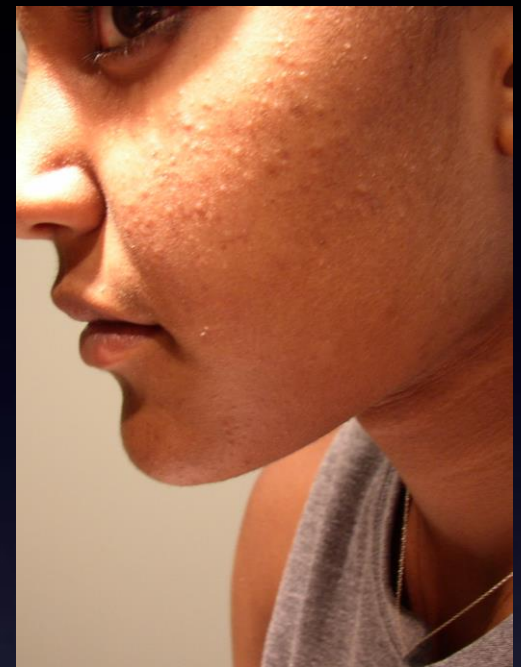
- Multiple closed comedones
- No inflammatory papules
- No pustules



- Neutrogena Deep clean
- Benzacilin
- Retin A Micro .04%
- Refer for facial/extractions after one month

- Neutrogena Deep Clean \$4.97
- Tretinoin .05% GoodRx coupon \$33.00

- Multiple open and closed comedones
- Areas of hyperpigmentation



- Neutrogena Acne wash
- Benzacilin
- Retin A Micro 0.1%
- Neutrogena Ultrasheer sunblock
- Refer for Glycolic Chemical Peels q6 weeks

- Oxy Maximum cleanser \$5.68 (10% BPO)
- Tretinoin 0.1% GoodRx Coupon \$33.00
- Neutrogena Ultrasheer Sunblock SPF 30 \$6.97

- Few comedones
- Inflammatory papules
- Few pustules
- No hyperpigmentation



- Neutrogena Acne wash
- Benzacclin
- Differin gel .3%
- Refer for Salicylic Acid Chemical Peel

- Olay Sulfur Mask \$29.97
- Cetaphil Cleanser \$9.47
- Cleocin T Solution GoodRx Coupon \$13.53
- Tretinoin .05% GoodRx Coupon \$33.00

- Extensive pustules with erythema
- Hyperpigmentation



- Neutrogena Acne Wash
- Benzacilin
- Differin Gel .3%
- Aczone
- Neutrogena Sunblock
- Minocin 100 mg bid

- Neutrogena Acne Wash \$6.47
- Cleocin T GoodRx Coupon \$13.53
- Tretinoin .05% GoodRx Coupon \$33.00
- Neutrogena Sunblock
- Minocin 100 mg bid GoodRx Coupon \$28.00
- Aczone Savings Program Insurance only \$35.00

- Extensive inflammatory pustules
- Erythema without hyperpigmentation



- Neutrogena Acne Wash
- Benzacilin
- Retin A Micro .04%
- Aczone
- Sunscreen
- Minocin 100 mg bid

- Oxy Maximum \$5.68
- Cleocin T solution GoodRx Coupon \$13.53
- Tretinoin .05% GoodRx Coupon \$33.00
- Minocin 100 mg bid GoodRx Coupon \$28.00
or
- Doxycycline monohydrate 100 mg bid GoodRx
Coupon \$32.50
- Aczone Savings Program Insurance only
\$35.00

- Inflammatory papules
- Erythema
- Larger nodules on neck



- Neutrogena Acne Wash
- Benzacilin
- Differin gel .3%
- Aczone
- Minocin 100 mg bid
- Sunblock
- Recheck 6 weeks for Isotretinoin if no better

- Oxy Maximum \$5.68
- Cleocin T solution GoodRx Coupon \$13.53
- Tretinoin 0.1% GoodRx Coupon \$33.00
- Minocin 100 mg bid GoodRx Coupon \$28.00
- Aczone Savings Program Insurance only \$35.00



Extensive nodules and cysts with erythema, hyperpigmentation, small scars



- Refer for Isotretinoin
- Zenatane Good Rx \$304.94

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