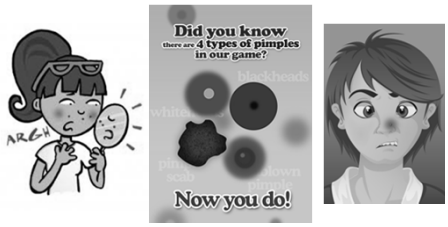
Adolescent Angst: Diagnostic and Treatment Algorithms for Acne



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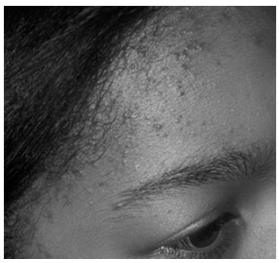
Conflicts of Interest

- I have served as a consultant for:
  - Galderma (Early Acne Intervention Council)
  - Pierre-Fabre
- Developed Skindex-Teen © (Quality of Life instrument)
- Some medications discussed FDA off-label

This is an 11 yo girl with forehead and T-zone acne, not responding to OTC benzoyl peroxide. What type of acne, and how would you treat?



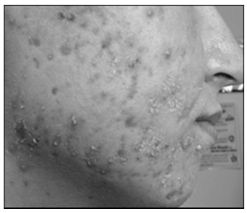
A) Mild comedonal; Salicylic acid wash, topical retinoid

B) Mild inflammatory; topical benzoyl peroxide-clindamycin combination BID

C) Moderate to severe mixed (inflammatory & comedonal); benzoyl peroxide wash, topical clindamycin, oral antibiotic, topical retinoid

D) Severe nodulocystic; refer for isotretinoin

This 16 yo boy has facial and truncal involvement, using benzoyl peroxide wash and topical erythromycin. He says this is a "good day" and everything is just making him dry. What type of acne, and how would you treat?



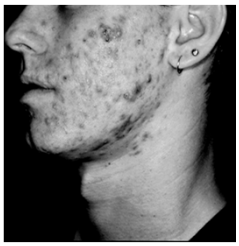
A) Mild comedonal; salicylic acid wash, topical retinoid

B) Mild inflammatory; topical benzoyl peroxide-clindamycin combination BID

C) Moderate to severe mixed (inflammatory & comedonal); topical benzoyl peroxide-clindamycin, oral minocycline, topical retinoid

D) Severe nodulocystic; refer for isotretinoin

This 17 yo boy has struggled with acne for 2 years. The other PCP in your group has had him on oral minocycline and combo BP-clindamycin for 6 months without response. What type of acne, and how would you treat?



A) Mild comedonal; salicylic acid wash, topical retinoid

B) Mild inflammatory; topical benzoyl peroxide-clindamycin combination BID

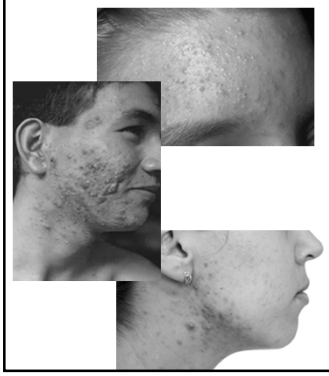
C) Moderate to severe mixed (inflammatory & comedonal); benzoyl peroxide wash, topical clindamycin, oral TMP-SMX, topical retinoid

D) Severe nodulocystic; refer for isotretinoin

Acne: Epidemiology/Associations

- Most common skin disorder in US
- Affects >80-85% of individuals
- Usually between 11-30 yo
- Concerning long-term effects:
  - Permanent scarring
  - Psychosocial withdrawal, decreased QoL
- Majority of pts can be treated by PCP with traditional/first-line therapies
- No "Gold Standard" treatment; must be individualized based on type of acne

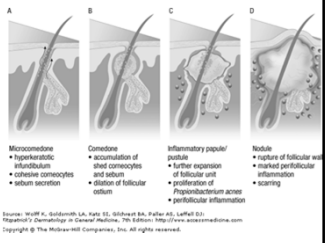
Acne: Epidemiology/Associations



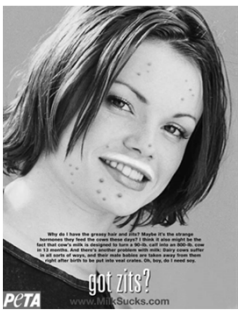
- Familial tendency (AD?)
- Typical "adolescent acne" usually begins around pubertal onset (or slightly earlier)
  - Girls 12-13 yo
  - Boys 14-15 yo
- "Pre-adolescent acne" at 8-9 yo (or earlier)
- >50% affected into 20s +
- Can have earlier or later onset, usually in setting of androgen dysfunction or PCOS

Acne Pathogenesis

1. Pilosebaceous unit obstruction…
2. ↑sebum production (Hormonal influence)…
3. Bacterial proliferation (*Propionibacterium acnes*)
4. Inflammation (Genetically determined hypersensitivity?)



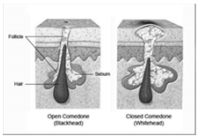
Acne: Other Triggers

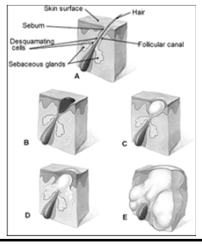


- Stress
- Hormonal fluctuations/menses
- Mechanical/occlusion
  - Sports gear (eg helmets)
  - Hair or hair products
  - Comedogenic makeup
- Medications
  - Anabolic steroids, progestin
  - Lithium
  - INH
- Pathologic androgen excess/PCOS
- Diet????
  - Milk/dairy (?hormones)
  - Refined carbs/"high glycemic index" → inflammation

Types of Acne Lesions

- Active:
  - (Microcomedone)
  - Open comedone ("blackhead")
  - Closed comedone ("whitehead")
  - Papule
  - Pustule ("pus bump")
  - Nodule/Cyst/Sinus tract
- Sequelae:
  - Dyspigmentation
    - Usually postinflammatory HYPERpigmentation
  - Scarring
    - Hypertrophic/keloidal
    - Atrophic/pitting/"ice pick"





Diagnostic Algorithm – Categorizing Acne

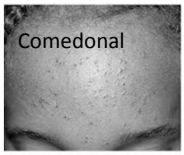
Is it:
- Mild
- Moderate
- Severe

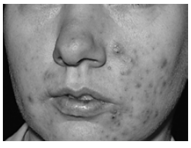
Is it:
- Comedonal
- Inflammatory
- Nodulocystic
- Hormonal

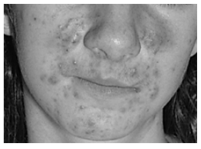
?
- With/without scarring
- Impact on QoL
- Truncal involvement
- "Good, bad or average day"

Acne Types…

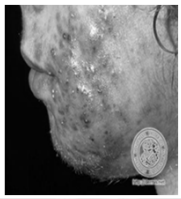
MILD | MODERATE | SEVERE

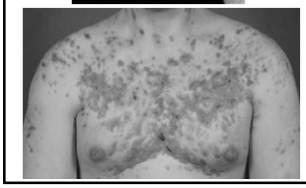






Acne Conglobata & Acne Fulminans

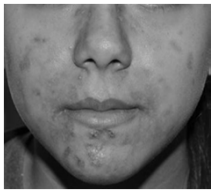




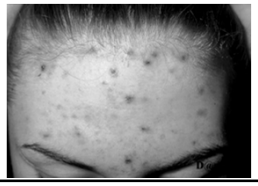
- Severe presentation
- Usually teen males
- Multiple connecting sinuses/tracts
- Scarring
- May have systemic symptoms, bony pain
- Associated autoinflammatory syndromes
- Warrants aggressive treatment/referral

Acne Excoriee (des jeunes filles)

- "Factitial dermatitis"
- Exogenous manipulation
- Often in the setting of anxiety, OCD, or body dysmorphic issues



- Treat with topicals
- Recognize the behavior
- Referral to behavioral health can help



Acne Treatment Algorithms – in Brief

- Mild *Comedonal*
  - Topical retinoid, SA; (consider BP)
- Mild *Inflammatory* or Mixed
  - Combo topical therapy: BP, antibiotic, retinoid
- *Moderate Inflammatory* or Mixed
  - Above topicals + oral antibiotic +/- hormonal
- *Severe Inflammatory* or Mixed
  - As for moderate, (consider hormonal or isotretinoin)
- Hormonal
  - OCP/spironolactone +/- topicals
- Nodulocystic
  - Referral for isotretinoin or other

Caveat…
Make the regimen as easy/efficient as possible

- Teenagers want fast response
- Have already tried "everything"
- Need to gain trust
- Written handouts/instructions
- Involve the patient
- Assess comprehension, whether pt is "up for it"
- Link to other patterned behaviors (brushing teeth)
- Takes 2-3 months to show effect – keep doing!
- Re-evaluate every few months (or refer if necessary)

Acne Treatment: Benzoyl Peroxide

- Mainstay of most acne therapy
- No lower age limit
- OTC or Rx

- Antimicrobial
- Anti-inflammatory
- Mild comedolytic

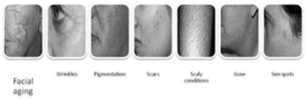
- Concentrations range 2.5-10%
- Cleanser (bar or liquid), cream, gel, lotion, shaving cream
- ***Bleaches clothing, linens, towels***
- **Irritant: drying, redness**
- Rare true allergic rxn

Clinical Pearls: Benzoyl Peroxide

- Warn about the bleaching!
  - If treating body, use at nighttime with old pajamas/sheets
  - Tell family to get cheap white towels for the bathroom
- Go slow !
  - Emphasize SMALL amount, thin layer
  - Patients nearly always overdo it
  - Shouldn't "see on your skin"
  - Can start every other day and titrate to use more frequently
- Start gentle – 4 or 5%, CREAM not gel
- If using as wash, start once a day
  - Gentle cleanser other time of day
  - Can be useful in shower if truncal acne
- Redness/dryness usually represents irritation, NOT allergy
- Can use (non-comedogenic) moisturizer to combat dryness
- Oily skin:
  - BP as cleanser, cream, gel or combo product
- "Sensitive" skin:
  - BP as cleanser or avoid, work up to combo products

Other OTC topical considerations

- ***Salicylic acid (beta-hydroxy)***
  - OTC
  - Reduces sebum, drying but less so
  - Comedolytic
  - Gel, lotion, wash, cream
- ***Glycolic acid (alpha-hydroxy)***
  - OTC, derived from fruit/yogurt
  - Reduces sebum, drying but less so
  - Comedolytic
  - Wash, cream
  - Safe in pregnancy



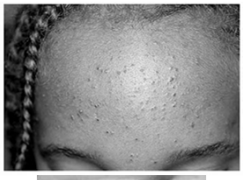
- ***Clinical Pearls*:**
  - Available OTC in many "anti-aging" products, maybe a good idea in those with very dry or sensitive skin
  - Typically more expensive, brand-name products, so may limit availability to general population
  - Help with postinflammatory hyperpigmentation

Acne Treatment: Topical Retinoids

- Normalize keratinization
- Builds dermal collagen
- **Comedolytic**
- **Anti-comedogenic**
- "Unclog pores" and help with scarring

- Apply sparingly (pea-sized amount)
- Applied at night
  - Sun inactivates
  - Increase photosensitivity
- Multiple vehicle choices
- Considered teratogenic

Acne Treatment: Topical Retinoids

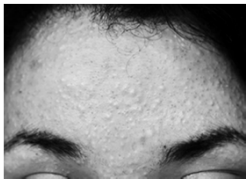


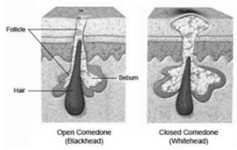
From "weakest" to "strongest":

- **Adapalene (Differin)**
  - 0.1%, 0.3%
  - Cream, gel, lotion
- **Tretinoin (Retin-A, Renova, etc)**
  - (0.01%), 0.025%, 0.05%, 0.1%
  - Cream, gel, micro-gel
- **Tazarotene (Tazorac)**
  - 0.05%, 0.1%
  - Cream, gel, foam

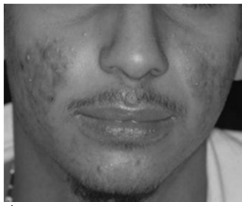
Clinical Pearls: Topical Retinoids

- Cream less irritating/drying than gel
- Gels are slightly "stronger" at same concentration (0.1 crm ≠ 0.1 gel)
- Start 2-3 x/week then advance slowly
- Start low concentration, increase as tolerated (unless v oily to start)
- Can make worse before better (2-3 weeks), need to get over the "hump"
  - Redness, dryness, peeling
  - Worse blackheads/whiteheads
- Warn about photosensitivity, use sunscreen
- May need PA – advocate for patient, check what is actually dispensed





Acne Treatment: Topical ABX & Others



- **Clindamycin** - MAINSTAY
  - 1% Gel, lotion
  - Resistance without BP
- **Erythromycin**
  - Gel, cream, ointment
  - Resistance
- **Sulfacetamide**
  - Helpful for rosacea, odor
- **Dapsone (Aczone)**
  - Anti-neutrophilic therefore anti-inflammatory
  - Newer on market
  - Rare risk clinically insignificant hemolysis
- **Azelaic acid (Azelex, Finacea)**
  - 20% cream
  - Antibacterial and anticomedonal, decreases hyperpigmentation
  - Irritant side effects
  - Safe in pregnancy

Acne Treatment: Combo Products

- **Clindamycin + BP = Benzaclin, Duac, Acanya, generic**
  - Most widely used amongst dermatologists
  - Less issue with resistance
  - All forms are not equal (may limit compliance)
  - Use only thin layer – should not "see it" on skin
  - Can use non-comedogenic moisturizer to improve tolerability

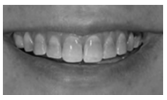
- **Erythromycin + BP = Benzamycin**
  - Theoretical resistance
  - Needs to be refrigerated (may limit compliance)

- **Adapalene + BP = Epiduo**
  - Great for early/pre-adolescent acne
- **Tretinoin + Clindamycin gel = Ziana, Veltin**
  - Great to simplify routine, usually done with BP wash

Acne Treatment: Oral Antibiotics

- ***General Guidelines*:**
  - Topicals alone may suffice
  - Usually require **3-4 month** trial
  - Continue no longer than necessary (but do give enough time)
  - Reuse same drug if needed/possible
  - Consider resistance
- ***Tetracyclines*:**
  - Usually first-line for acne
  - Teratogenic, contraindicated < 9 yo
  - Can all cause pseudotumor cerebri, vulvovaginal candidiasis
  - Other side effects specific to specific drug





Acne Treatment: Oral Antibiotics

- **(Tetracycline)**
  - 250-500 mg BID
  - GI upset usually limits
- **Doxycycline**
  - 50-100 mg BID
  - GI upset (take with food)
  - Dairy limits absorption
  - Consider teen's schedule
  - Photosensitivity!
- **Minocycline**
  - 50-100 mg BID
  - Vertigo, HA
  - Esophagitis
  - DRESS (Drug hypersensitivity)
  - Blue-gray pigmentation
  - Lupus-like syndrome
- **Second-line:**
  - Cephalosporins (Cephalexin, Cefadroxil)
  - TMP-SMX
  - Amoxicillin/Ampicillin
  - Clindamycin
  - Erythromycin
- Party Line: None of these should impact OCP effect

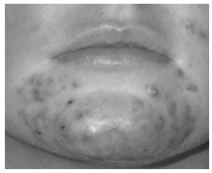
Clinical Pearls: Oral Antibiotics

- If "on fence", I treat
  - Unless specific contraindication or patient/parental concern
- Can get quicker results…
  - Gain trust in regimen effectiveness
  - Allow time for topicals to work
- 2-3 month course to start, reassess

- Doxycycline first line, accessible, lower serious risk
- Important limitations:
  - GI upset/nausea
  - Take with snack/food, but not dairy
  - Sun sensitivity (skin type, activities)

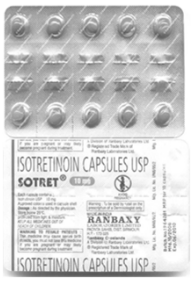
Acne Treatment: Hormonal

- Work to oppose androgen effect
- Use in girls who:
  - Report menstrual fluctuations
  - Have lower face/jawline predominance
  - Are older and still have acne
  - Have any other signs of androgen dysfunction/PCOS
- **OCPs (Estrogen + Progestin)**
  - FDA-approved for acne (most will have effect):
    - *Ortho TriCyclen* (norgestimate + ethinylestradiol)
    - *Estrostep* (norethindrone + ethinylestradiol)
    - *Yaz* (drospirenone + ethinylestradiol)
  - If one doesn't help, try another
- **Spironolactone** – Androgen receptor antagonist
  - Start at 25-50 mg daily, up to 25-200 mg daily
  - Teratogenic
    - Use with OCP or other contraceptive
  - Side effects:
    - Menstrual irregularities
    - Breast tenderness
    - Rare hyperkalemia

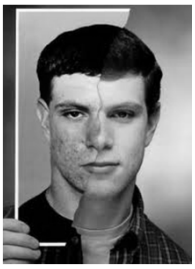
Acne Treatment: Oral Isotretinoin

- For severe nodulocystic or recalcitrant acne
- Must be registered in "Ipledge" system as prescriber and as patient
- Requires compliant, committed patient/family
- Contraindications:
  - Lack of comprehension
  - Desire to become pregnant in near future
  - ?Psychiatric hx
  - ?Inflammatory bowel dz hx/fam hx
- Typical 4-6+ month course, with monthly labs
- 1+ mg/kg/day, sometimes "low & slow"
- Goal cumulative dose 125-150 mg/kg
- Recent data supports 200+ mg/kg to ↓ recurrence
- 10, 20, 30, 40 mg capsules



Acne Treatment: Oral Isotretinoin

- Not usually a "cure," but can be a "game changer"
  - 25% perhaps never have to use anything else
  - 50% acne recurs but v manageable
  - 25% acne recurs, need 2nd course
- Teratogenic – females must use 2 forms contraception
- Numerous other side effects:
  - Xerosis, cheilitis, dermatitis, hair loss
  - Decreased night vision, dry eyes
  - Transient hyperlipidemia, hypertriglyceridemia
  - Muscle/joint pains, rhabdomyolysis, hyperostosis
  - Hepatitis, ?IBD risk
  - HA, mood changes
  - ? Depression/anxiety/suicidal ideation risk

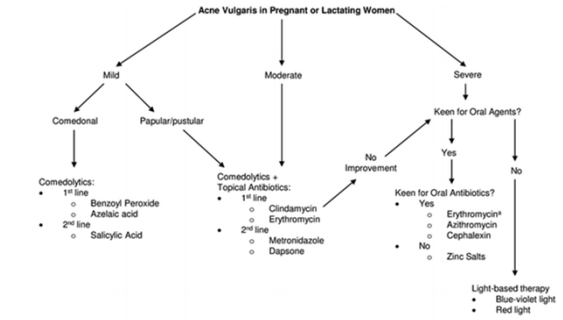


Acne Treatment in Pregnancy

- Conservative approach often taken – but consider more aggressive if scarring/QoL impact
- Topicals safer than orals
- Alpha-hydroxy acid washes
- Can also consider laser (PDL, Blue light)

- **Category B:**
  - **Topical Erythomycin, Clindamycin, Metronidazole**
  - **Azelaic acid**
  - **Sodium sulfacetamide**
  - **PO Erythromycin, Keflex**
- Category C:
  - ***Benzoyl peroxide***
  - ***Salicylic acid***
  - Topical Dapsone, Adapalene, Tretinoin
  - PO Bactrim, fluoroquinolones, spironolactone
- Category D:
  - Tetracyclines
- Category X:
  - Topical tazarotene (Tazorac)
  - Isotretinoin
  - OCPs
  - Cyproterene (hormonal)
- Unknown:
  - Zinc

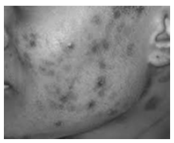
Acne Treatment in Pregnancy

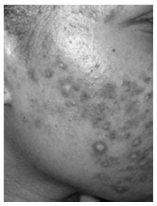


[a] avoid in first few weeks of lactation

Kong YL, Tey HL. **Treatment of acne vulgaris during pregnancy and lactation.** Drugs. 2013 Jun;73(8):779-87.

Postinflammatory Dyspigmentation

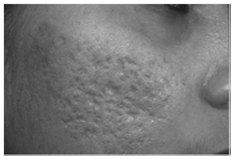


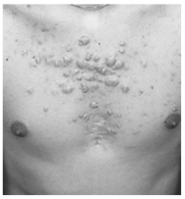


- More common with darker skin types
- Sun exposure can make worse
- Sometimes more alarming to patient than active lesions

- Reassurance – not scar
- May take 6-12 months to improve/resolve
- Topicals can help:
  - SA gel/cleanser
  - Retinoids
  - Azelaic acid
  - Non-comedogenic sunscreen!
- For persistent, would consider (cosmetic):
  - Chemical peels (SA, GA, etc)
  - Laser

Acne Scarring





- Different types
  - Atrophic, ice pick/box car
  - Hypertrophic or keloidal
- Results from inflammation or traumatizing skin
- Reason to avoid manipulation!
  - Warm compresses
  - Direct extraction only when superficial pustule

- Reassurance…
- Evaluate response to therapy after 6-12 months first
- Topicals – retinoids
- IL steroid injxns for hypertrophic
- Cosmetic procedures:
  - Dermabrasion
  - Surgical recision
  - Fractionated and/or ablative laser

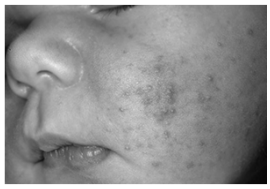
Acne Treatment

- Mild Comedonal
  - Topical retinoid, SA cleanser
- Mild Inflammatory or Mixed
  - Combo topical therapy: BP, antibiotic, retinoid
- Moderate Inflammatory or Mixed
  - Above + oral antibiotic +/- hormonal
- Severe Inflammatory or Mixed
  - Above + oral antibiotic (consider hormonal or isotretinoin)
- Hormonal
  - OCP/spironolactone + topicals
- In Pregnancy
  - Start with topicals (BP, glycolic/azelaic acid, abx), avoid retinoids
- Nodulocystic
  - Referral for isotretinoin or other

Making the regimen as easy as possible…

- Give written instructions
- Make specific cleansing recommendations
  - i.e. *"Wash your face twice a day, once with a gentle cleanser, once with the medicated soap I've recommended"*
- Explain purpose of different medications
- Use analogies (prevention not spot treatment)
- Allow enough time for regimen to work
- Use strong enough regimen that is likely to work!
- Give enough medication and refills
- Follow through with PAs etc if needed

One final note…

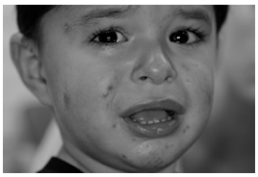


- **Neonatal "acne"**
  - Congenital/first weeks
  - ? Maternal hormonal influence
  - ? Hypersensitivity to *Malessezia* species
  - Papules, pustules, no comedones
  - No treatment required
  - **"Neonatal Cephalic Pustulosis"**
- **Infantile**
  - Presents at **3-6 months+**
  - Comedones, papules, pustules, +/- nodulocysts
  - ? Transient adrenal/gonadal androgen production
  - Can scar!
  - Treat like typical teen acne
    - Start with topicals
    - Refer for further treatment

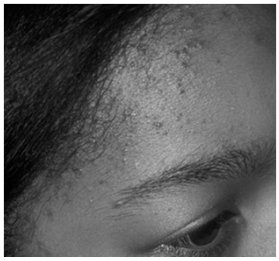
Childhood Acne

- **Childhood (later than 6 months old)**
  - More persistent, severe
  - Comedones, papules, pustules, +/- nodulocysts
  - Can scar!
  - Treat like teen acne
    - Start with topicals
    - Usually needs orals
  - Likely warrants endocrine referral if severe, especially if 2-7 yo
    - Start with X-ray for Bone age
    - DHEAS
    - Testosterone
    - 17OH progesterone
    - LH, FSH, prolactin

Evidence-based recommendations for the diagnosis and treatment of pediatric acne.
Eichenfield LF, et al. *Pediatrics*. 2013 May;131 Suppl 3:S163-86.



This is an 11 yo girl with forehead and T-zone acne, not responding to OTC BP. What type of acne, and how would you treat?



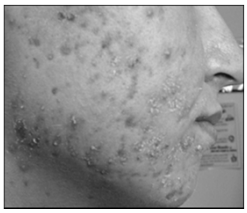
A) Mild comedonal; SA wash, topical retinoid

B) Mild inflammatory; topical BP-clindamycin

C) Moderate mixed (inflammatory and comedonal); BP wash, topical clindamycin, oral antibiotic, topical retinoid

D) Severe nodulocystic; refer for isotretinoin

This 16 yo boy has diffuse facial and some truncal involvement, using BP wash and topical erythromycin. He says this is a "good day" and everything is just making him dry. What type of acne, and how would you treat?



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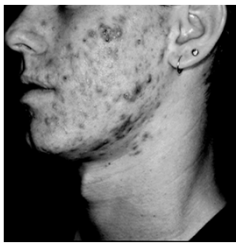
C) Moderate mixed; BP wash, topical clindamycin, oral antibiotic, topical retinoid

D) Severe nodulocystic; refer for isotretinoin

This 17 yo boy has struggled with acne for about 2 years. The other PCP in your group has had him on oral minocycline and combo BP-clinda for 6 months without response. What type of acne, and how would you treat?



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Thanks!

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