

# Acne : An Update

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# Conflict of interest

- Advisory board :
- Galderma
- Johnson and Johnson
- Pfizer
- Byer
- Sunpharma

# Objectives

- As a result of attending this session, participants will be able to:
- 1-Understand the pathophysiology of Acne vulgaris in different age groups
- 2-Prescribe appropriate therapy according to the patient's clinical presentation
- 3-Recognize the role of diet in acne

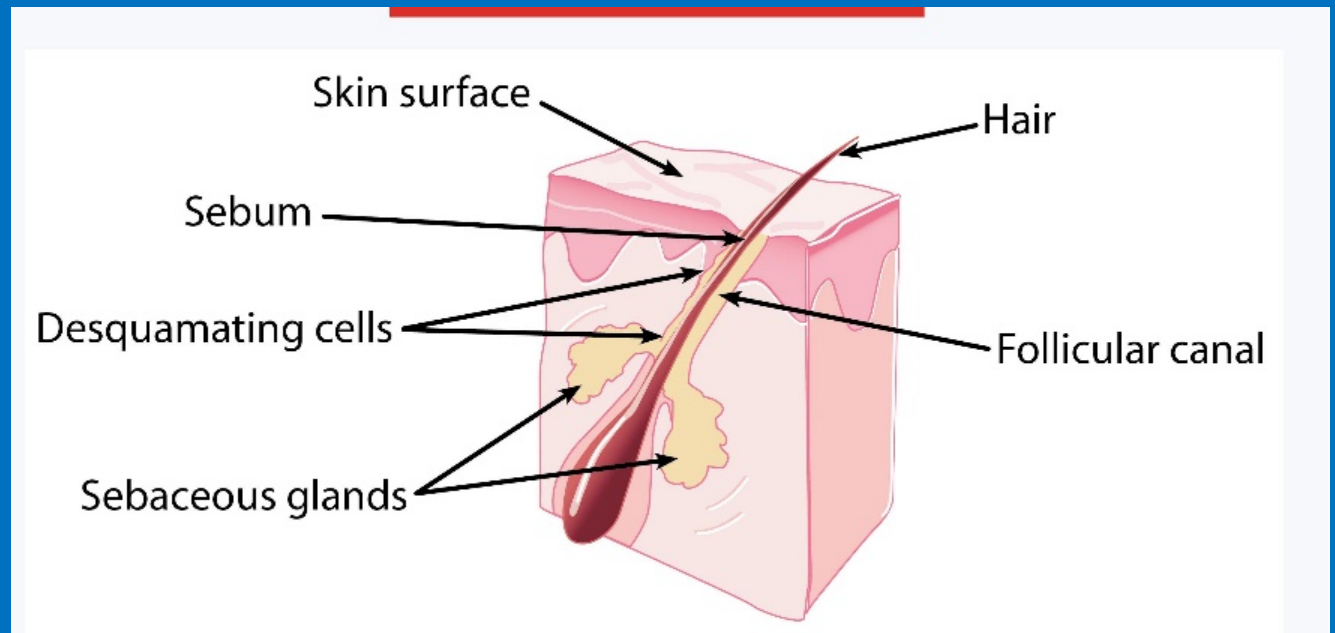
# Epidemiology

- Acne is the most common skin disorder
- Affects 85% of young people between 12 and 24 years of age
- Typically presents at ages 8-12 Y , peaks at ages 15-18 Y
- May resolve by 20-25 years of age
- May persist till 50 years of age



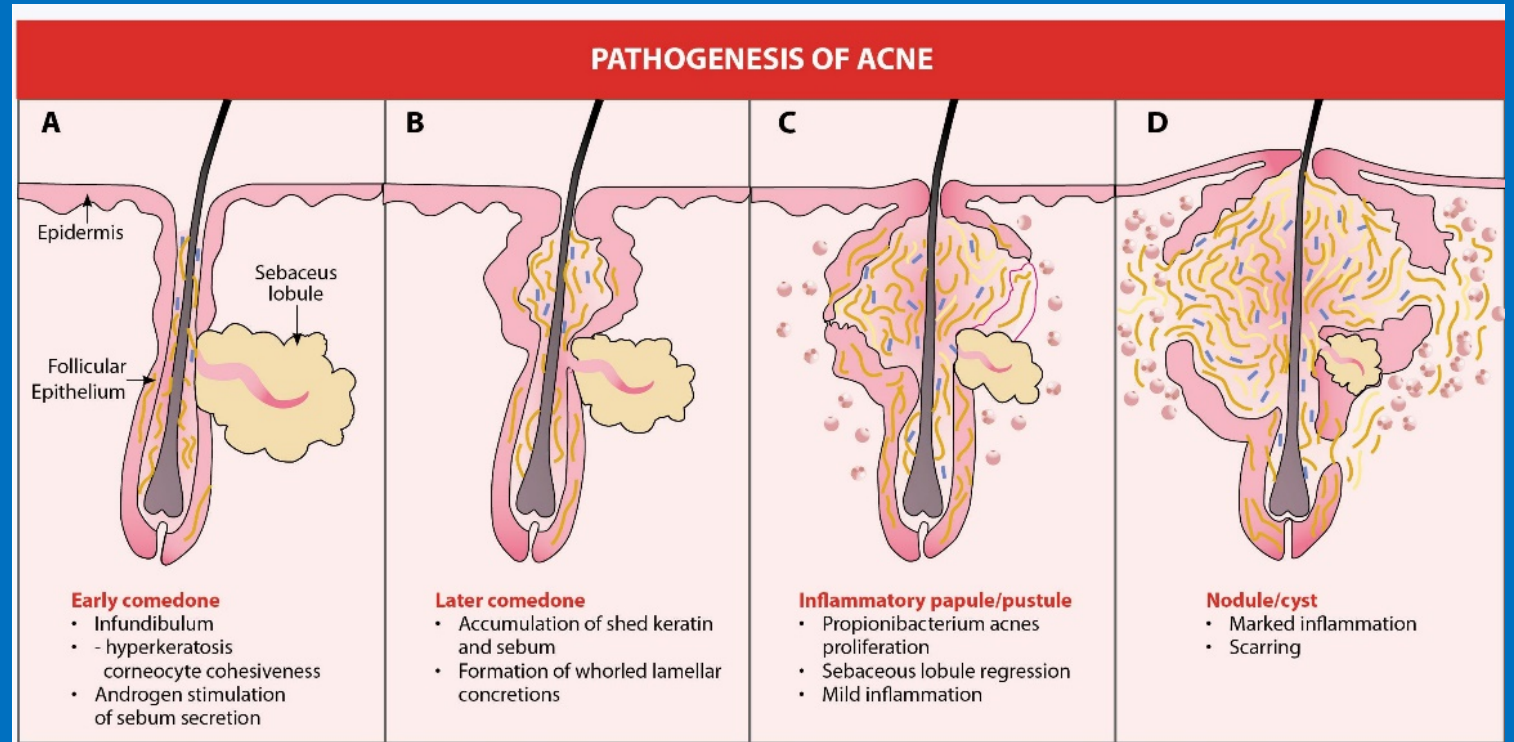
# Acne

- Chronic, inflammatory disease of the pilosebaceous units
- Pilosebaceous unit= hair + hair follicle + sebaceous gland



# Acne

- Excessive sebum production
- Abnormal follicular keratinization
- Proliferation of *Propionibacterium acnes*
- Inflammation

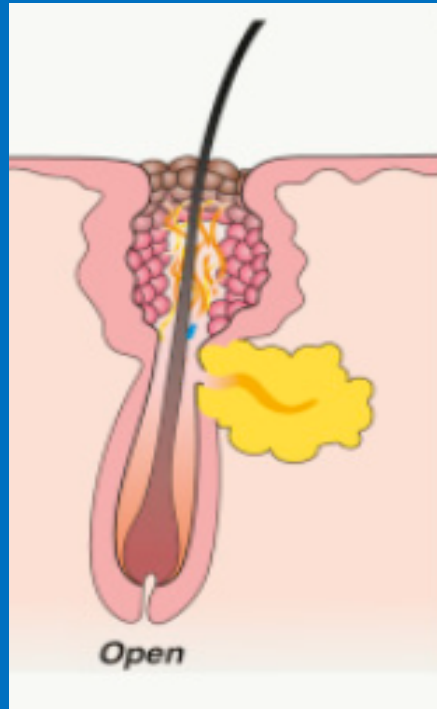


# How to diagnose acne?

- By identification of lesions
- Comedones
- Papule
- Pustule
- Nodule

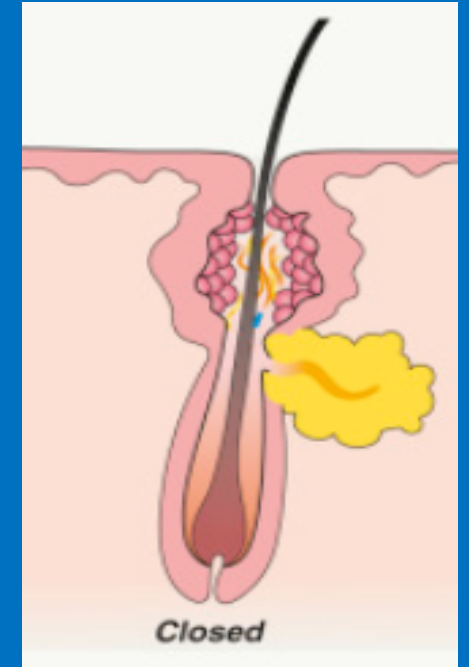
# Open Comedone

- Slightly elevated papules with a dilated follicular outlet filled with blackened keratin



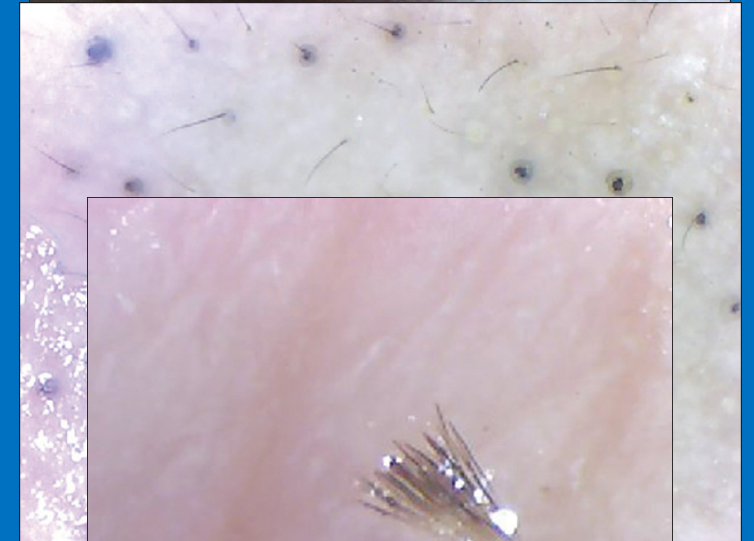
# Closed comedone

- Small skin-colored papules with no apparent follicular opening



# Trichostasis spinulosa

- Clusters of vellus hairs become embedded within hair follicles, with resultant dark, spiny papules on the face or trunk.





## Papule

- Solid raised lesion less than 1 cm



## Pustule

- Elevated lesion containing pus



## Nodule

- Palpable solid lesion larger than 1 cm



# Why to treat?

- Acne often spontaneously clears
- Psychological impact :
  - Emotional distress, decreased self-esteem, depression
- Permanent scarring

# Acne Scars





# Post inflammatory color changes



# Management

- See the acne in context
- Is this normal for the patient age group to have acne ?

# Neonatal acne



- May be present at birth, or develop over first 6 weeks of life
- Not a real acne but Inflammatory reaction to *Malassezia furfur*/ no comedone
- Inflammatory erythematous papules and pustules on face and scalp
- Resolves spontaneously and without scar within the first 3 months of life
- May respond more quickly with topical anti-yeast (e.g. ketoconazole cream)

# Infantile acne

- Infantile acne initially presents at 2–12 months of age
- True acne with comedones
- Spontaneous resolution in 6-12 months of age
- Elevated LH in first year of life in boys and enlarged fetal adrenal gland in both sexes lead to increased androgens
- Hormonal work up if severe, persistent or associated with other signs of hyperandrogenism



# Childhood acne

- Acne presenting between 1 and 7 years of age
- MOST WORRISOME!
- No normal source of androgen at this age group
- Think of : Premature adrenarche, Cushing's syndrome, CAH, gonadal/adrenal tumors, precocious puberty



# Pre-adolescent acne

- Acne presenting between 7 and 12 years of age
- Androgen produced by adrenal glands as part adrenarche
- May precede other signs of pubertal maturation
- Mostly comedonal acne of forehead and midface
- Work-up beyond history and physical is generally unnecessary unless other signs of androgen excess, polycystic ovarian syndrome, or other systemic abnormalities



# Adolescent acne

- 90% of adolescents develop acne to some extent
- Androgen hormones production during puberty
- In females adolescents with sever acne always consider the PCOS



# Post- adolescent/adult acne

- Acne that occurs after age 25
- It can be persistent, with onset during teenaged years, or late onset beginning after the age of 25 years
- Smoking, cosmetics, stress and sleep deprivation may contribute
- **Red flags:**
- Hair loss
- Excess hair growth
- Irregular menstrual cycles
- Rapid weight gain or loss
- Rapid onset of acne with no prior history of acne





# Management

- Now determine the type and severity of acne
- Comedonal vs inflammatory acne
- Scarring vs nonscarring

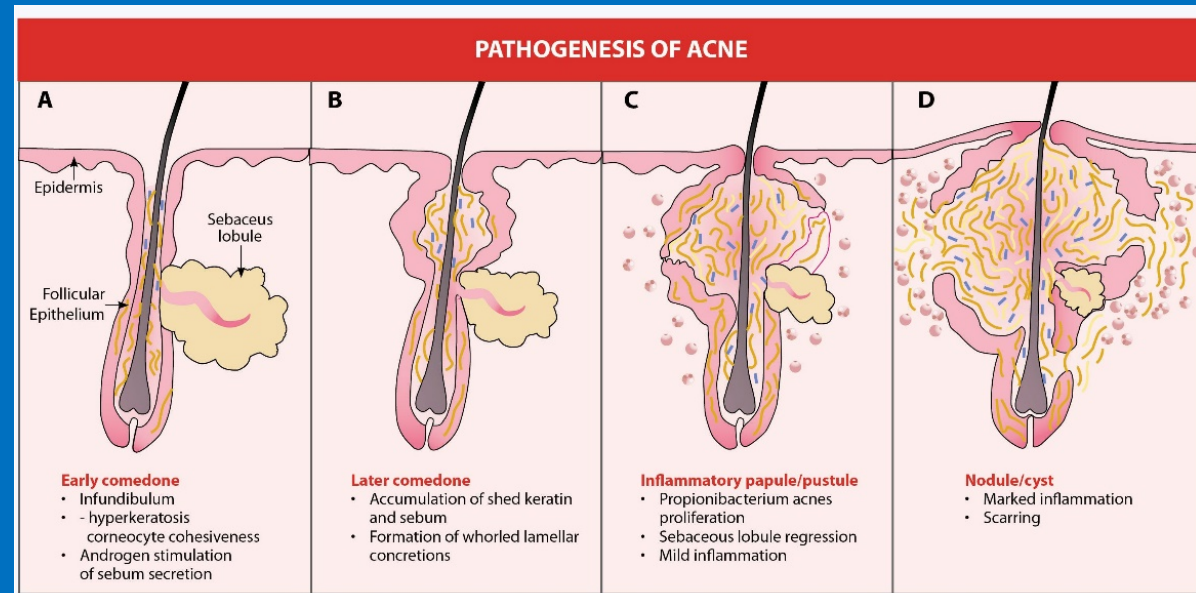
Table 3. **Evaluation of Acne Severity**

| Grading  | Predominant Lesion Type  | Distribution                           | Scarring  | Other Factors                     |
|----------|--|--|---|-----------------------------------|
| Mild     | Few to several comedones, few scattered papules  | <1/4 <sup>th</sup> face, mostly T zone | None  | None                              |
| Moderate | Many papules and pustules, variable comedones, 1–2 nodules                               | Roughly 1/2 face                       | Few, shallow                                    | Involvement of the chest and back |
| Severe   | Numerous papules and pustules and nodules; variable comedones; sinus tracts and/or cysts | Face, back, and/or chest               | Moderate to extensive, hypertrophic and/or deep | Drainage, hemorrhage, pain        |



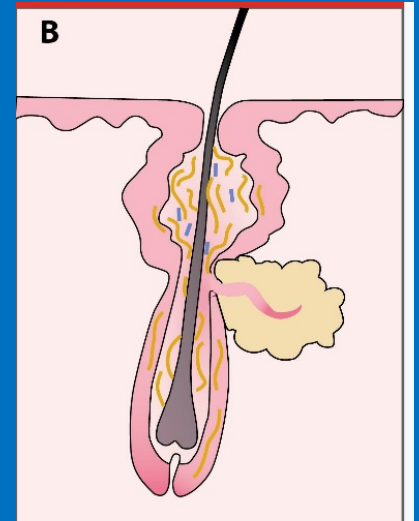
# Acne therapy

- Anti-seborrheic
- Keratolytic/comedolytic
- Antibacterial
- Anti-inflammatory



# Topical Retinoids

- Vitamin A derivatives
- Normalization of follicular keratinization and anti-inflammatory
- Considered as first line of TX for acne
- Monotherapy for comedonal acne
- Combinational therapy for inflammatory acne



# Natural Topical Retinoids

- Tretinoin (retinoic acid ) the acid form of vitamin A
- 0.01-0.1 concentration
- SE: Dryness, scaling, erythema, burning, irritation, and photosensitivity
- Apply retinoid every other day for first 2-4 weeks or use a short contact method for first 2-4 weeks
- Can be degraded if used during the day or in conjunction with benzoyl peroxide

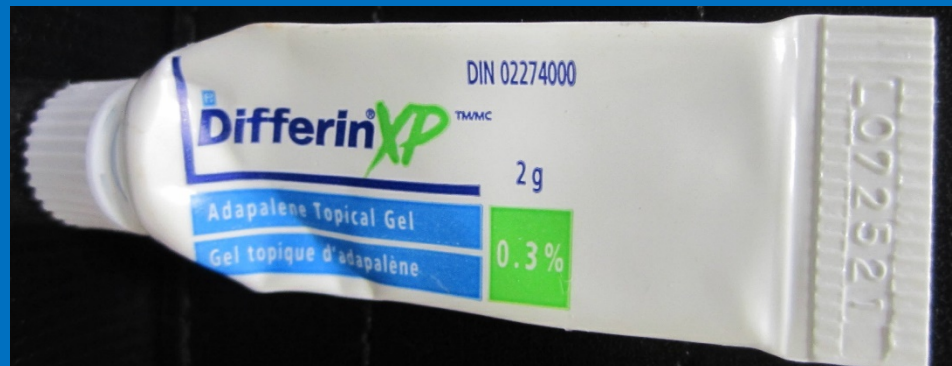
# Tretinoin

- Stieva-A
- Retin A
- Retin A micro gel    microsponge release formulation (0.1 and 0.04% Gel)



# Synthetic Retinoid

- Adapalene (Differin)
- Less irritant
- Seems more effective





# Synthetic Retinoid

- Tazorac (Tazaroten)
- Cream and gel 0.0,5 and 0.1



# Synthetic Retinoid

- AKLIEF (Trifarotene)





# Retinoids

|                             |       |              |
|-----------------------------|-------|--------------|
| Stieva A                    | 45gr  | 25 \$* DE 20 |
| Retin A                     | 30 gr | 20 \$ *DE 20 |
| Retin A micro 0.04/0.1%     | 45gr  | 85 \$        |
| Differin Gel /Cream<br>0.1% | 60gr  | 170 \$       |
| Differin gel XP 0.3%        | 60gr  | 175 \$       |
| Tazorac                     | 30 gr | 64 \$        |
| Aklief                      | 75 gr | 206 \$       |

# Benzoyl peroxide

- A lipophilic non-antibiotic antibacterial agent
- Comedolytic
- Anti inflammatory
- Comedonal and inflammatory acne
- Bleaches the clothes and hair
- Dryness and irritation

# Benzoyl Peroxide

|   |        |        |
|---|--------|--------|
| Benzagel                                  | 30 gr  | 10\$   |
| Clean and Clear Benzoyl Peroxide cleanser | 150 ml | 12 \$  |
| Persagel                                  | 28 gr  | 12\$   |
| Benzac wash 10%                           | 225 gr | 100 \$ |

# Tactupump /Tactupump forte

- Adapalene(0.1% )and benzoyl peroxide topical gel(/2.5%)
- Adapalene(0.3%) and benzoyl peroxide topical gel (2.5%)



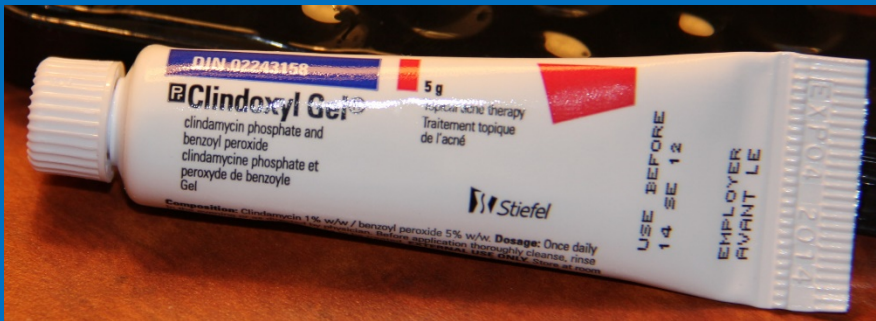
# Topical Antibiotics

- Antibacterial
- Anti-inflammatory
- Clindamycin
- Erythromycin
- SE: Development of resistance by *P. acnes*
- Resistant *P.acnes* can spread to the skin of untreated contacts
- No monotherapy
- Combination with BPO and retinoids decreases the risk of resistance



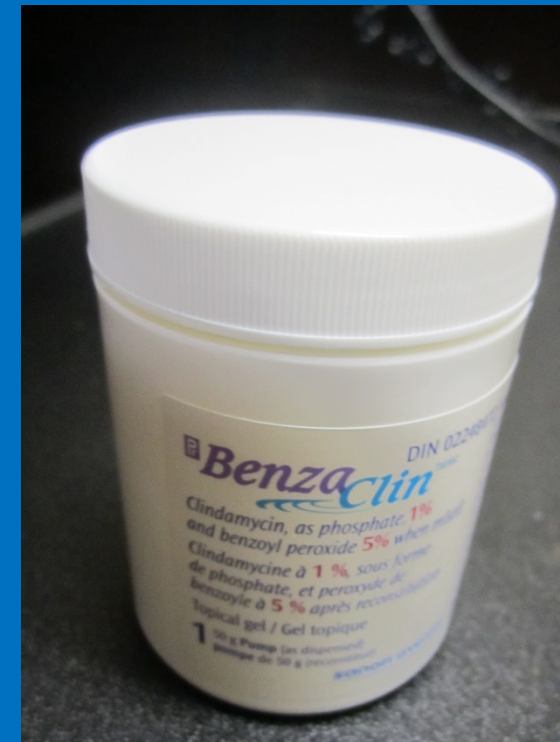
# Clindoxyl gel

- Clindamycin 1% and benzoyl peroxide 5%



# Benzaclin gel

- Clindamycin 1% and benzoyl peroxide 5%



# Benzamycin

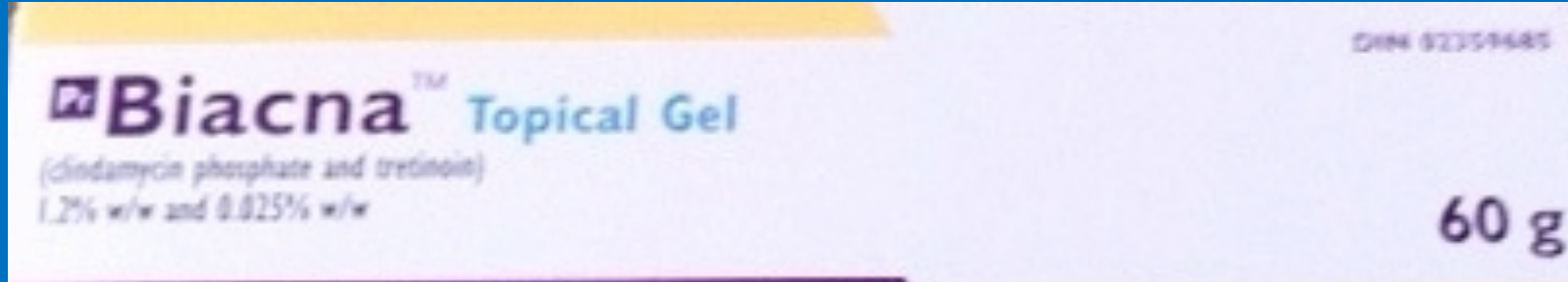
- Erythromycin 3% and benzoyl peroxide 5% alcohol based gel





# Biacna

- Clindamycin 1.2% Tretinoin 0.025% aqueous gel



# Aczone gel

- Topical 5% dapsone water based gel
- Antimicrobial and anti-inflammatory effects
- Mostly for inflammatory acne



# Finacea :Azaleic acid

- A naturally occurring dicarboxylic acid produced by *Malassezia furfur*
- Antibacterial but not antibiotic
- Comedolytic
- It may help to lighten post inflammatory hyperpigmentation



# Salicylic acid

- A beta hydroxy-acid (BHA) derived from willow bark
- Comedolytic and antibacterial agent
- Salicylic acid is available over the counter in different products Like Reversa , Clean and Clear

|                |       |         |
|----------------|-------|---------|
| Clindoxyl gel  | 45gr  | 60\$    |
| Finacea        | 50 gr | 45\$    |
| Aczone         | 60gr  | 90\$    |
| Tactuo forte   | 60 gr | 225 \$  |
| Benzaclin gel  | 50gr  | 70 \$   |
| Benzamycin gel | 46gr  | 78 \$   |
| Tactuo gel     | 60gr  | 140\$   |
| Biacna         | 60gr  | 90 \$   |
| Salycilic Acid |       | 10-30\$ |
| Dalacin T      | 60gr  | 37 \$*  |

# Oral antibiotics

- When inflammatory acne is not responding well to topical treatments and acne involving trunk or multiple bodily areas
- Should be used at least for 6-8 weeks and max up to 4 months pulse therapy
- Antibiotic resistance in P. Acne ,staph aureus and other non target bacteria
- Should be prescribed with topical therapy : Benzoyl Peroxide and/or retinoids
- Once improvement achieved scale back to topical agents alone for maintenance
- A topical retinoid and BPO or azelaic acid can be used at discontinuation of antibiotic

# Oral antibiotics

- Doxycycline
  - SE: Dyspepsia, nausea, emesis, diarrhea, photosensitivity, esophagitis
  - Dose: 50-100mg once to twice daily
- Minocycline
  - SE: vertigo, mouth & shin hyperpigmentation, hepatitis, drug induced lupus
  - Dose: 50-100mg once to twice daily



# Hormonal therapy

Second-line treatment for female patients irrespective of whether or not the serum androgen levels are abnormal

- OCP can help with acne :
- Estrogen: Inhibit LH and FSH
- Suppression of ovarian androgen production
- ↑ Sex hormone binding globulin (SHBG) → ↓ free testosterone
- Not to be used until one year after onset of menstruation.

# Oral contraceptive pills

- All OCPs improve acne
- Some are specifically studied

| COMMONLY USED COMBINED ORAL CONTRACEPTIVES  |  |
|---|--|
| Oral contraceptive®   | Estrogen mcg/Progestin mcg                                   |
| <i>FDA-approved for acne vulgaris</i>   |  |
| Ortho Tri-Cyclen  | Ethinyl estradiol 35/norgestimate 180, 215, 250              |
| Estrostep   | Ethinyl estradiol 20, 30, 35/norethindrone 1000              |
| Yaz, Loryna, Nikki, Beyaz*  | Ethinyl estradiol 20/drospirenone 3000                       |
| <i>Clinical data to support use</i>   |  |
| Alesse  | Ethinyl estradiol 20/levonorgestrel 100                      |
| Diane-35†   | Ethinyl estradiol 35/cyproterone acetate 2000                |
| Yasmin, Syeda, Yaela, Safyral*  | Ethinyl estradiol 30/drospirenone 3000                       |
| Natazia   | Estradiol valerate 1000, 2000, 3000/<br>dienogest 2000, 3000 |
| <i>No/insufficient clinical data</i>  |  |
| Various combinations of ethinyl estradiol 10, 20, 25, 30, or 35 <b>plus</b><br>norethindrone 400, 500, 750, 800, or 1500 <i>OR</i><br>levonorgestrel 50, 75, 125, or 150 <i>OR</i><br>desogestrel 100, 125, or 150 <i>OR</i><br>norgestrel 300 <i>OR</i><br>ethynodiol diacetate 1000 |  |
| *Also contains levomefolate calcium for protection against neural tube defects.   |  |
| †Not available in the US.   |  |

# Isotretinoin

- Synthetically derived from vitamin A
- Comedolytic
- Decreases follicle and sebaceous gland size
- Decreases sebum production
- Possesses anti-inflammatory effects

# Isotretinoin

- Nodulocystic acne / Recalcitrant acne
- Total cumulative dose of 120-150mg/kg
- Common side effects : Dry mouth, nose, and eyes...
- Increases in cholesterol, triglycerides and transaminases
- Teratogenicity, Pseudotumor cerebri
- Depression ?

# Compliance

- Talk about temporary worsening of acne
- Mention irritation and suggest decreasing frequency of application if needed
- Don't forget moisturizers
- Gentle cleanser
- Simplify the treatment
- Realistic expectations and the importance of maintenance regimens
- Long length of treatment (Acne can last 5-10 years)
- Ensure that makeup, sunscreen, and moisturizer are non-comedogenic



## Acne Treatment Action Plan



### In the morning,

- ☐ Wash face with .....
- ☐ Apply.....to ☐ face, ☐ chest, ☐ back every morning or alternating  
.....on odd days and ..... on even days.
- ☐ Moisturize face with .....
- ☐ Sunscreen and/or oil-free makeup can be applied after these steps if required or desired.

### In the evening,

- ☐ Wash face with .....
- ☐ Apply .....to ☐ face, ☐ chest, ☐ back every night
- ☐ Apply ..... to ☐ face, ☐ chest, ☐ back on odd nights and  
.....on even nights.

# Washing and scrubbing

- Improves the oily appearance of face but does not necessarily open or cleanse pores and may lead to skin irritation
- No good study available
- Washing 2 times per day with a gentle cleanser



# Mask Acne : Maskne

- Mechanical acne : friction and heat, bacteria and yeast overgrowth
- What to do?
- Cotton mask
- Change masks every few hours
- Don't use make up under the mask
- Wash your face after removing mask and put non comedogenic moisturizer



# Acne and diet ?



# Acne and sugar

- Diets with high glycemic load → hyperinsulinemia and increased insulin-like growth factor 1 (IGF-1) activity → androgen synthesis by various tissues as well as direct effects on pilosebaceous unit → increased sebum production and follicular plugging → worsen acne
- Multiple RCTs have shown the benefit of a low sugar diet in treating acne.
- This diet may be recommended to patients.





Do I  
cause  
acne?

# Acne and milk

- Observational studies support the link between milk and acne.
- Milk increases insulin and IGF-1 levels
- Milk contains bovine IGF-1, and dihydrotestosterone precursors
- More probably low-fat/skim milk, but not full-fat milk, is positively associated with acne
- Fat-reducing process could enhance the insulin and IGF-1-promoting elements of milk
- Milk restriction?

# Comedonal acne

- 1-Topical retinoid
  - a) StiveA
  - b) RetinA
  - c) Differin Xp
  - d) Benzagel
  - d) Tactuopump





# Inflammatory acne

- Retinoid and/or benzoyl peroxide Plus/minus Topical antibiotics
- All mentioned in previous slide

Plus

a) Benzacclin/Clindoxyl

b) Dalacin

c) Biacna

- If sever can add oral antibiotic





# To Take Home Messages

- Acne is the most common skin diseases encountered by primary care physicians
- Can affect mental health
- Can be scarring
- Avoid antibiotics as much as you can
- In case you need them avoid monotherapy
- Oral antibiotic for a maximum of 4 months
- Childhood acne is a real red flag
- Low glycemic diet should be emphasized

# References

- 1-Pediatrics in Review November 2013, 34 (11) 479-497
- 2-2003 Elsevier-Bologna, Jorizzo and Rapini: Dermatology-  
[www.dermtext.com](http://www.dermtext.com)
- 3-Am Fam Physician. 2012 Oct 15;86(8):734-740

Thank you!