

# Pediatric Acne

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# Disclosures

Almiral – A(H)

Dermira – A(H)

Sonoma pharmaceuticals A(H)

Choose appropriate therapies  
for treatment of acne in children  
from newborns to preteens

Learning Objective

# National Pediatric Acne Guidelines Initiative

What is this?

# Recommendations for Pediatric Acne

- Expert recommendations by the American Acne and Rosacea Society
- Reviewed and Endorsed by the American Academy of Pediatrics
- First detailed, evidence-based clinical guidelines for pediatric acne

# Pediatric Acne Guidelines

- Published in May 2013
- [Evidence-based recommendations for the diagnosis and treatment of pediatric acne.](#)
- Eichenfield LF, Krakowski AC, Piggott C, Del Rosso J, Baldwin H, Friedlander SF, Levy M, Lucky A, Mancini AJ, Orlow SJ, Yan AC, Vaux KK, Webster G, Zaenglein AL, Thiboutot DM; American **Acne** and Rosacea Society.
- **Pediatrics.** 2013 May;131 Suppl 3:S163-86.

# Acne in Children

- Birth to 12 years of age
- Neonatal
- Infantile
- Mid-Childhood
- Preadolescent

# Neonatal Acne

- **0-6 weeks of life**
- Small erythematous papules
- ? Acne --- maybe neonatal cephalic pustulosis
- Neonatal acne represents a heterogeneous set of conditions
- Controversy Pityrosporum (Malassezia) – sometimes present and sometimes not
- Usually resolves over a few months
- Distribution: Forehead, Cheeks, Nose  
Less commonly: neck, chest, back



# Neonatal Acne



- Maroñas-Jiménez, Lidia, MD; Krakowski, Andrew C., MD. **Pediatric Acne**. *Dermatologic Clinics* Published March 31, 2016. Volume 34, Issue 2. Pages 195-202. © 2016.

# Neonatal Acne

- Ketoconazole cream 2%
- If there are true comedones consider acne medications that you would use in infantile acne
- Usually not scarring, so can also not treat

# Neonatal Acne - Consensus

- Neonates may have true acne
- Many self-limiting papulopustular eruptions that occur on neonate faces
- Systemic abnormalities noted (growth, precocity, virilization), then referral to pediatric endocrinology
- *Eichenfield, LF, et al. Pediatrics 2013;131;S163*

# Neonatal/Infantile Acne

- Transient neonatal pustular melanosis
- Erythema toxicum neonatorum
- Sebaceous gland hyperplasia
- Congenital adrenal hyperplasia
- Virilizing tumor
- Other endocrinopathy
- Maternal medications – Lithium, Phenytoin, corticosteroids

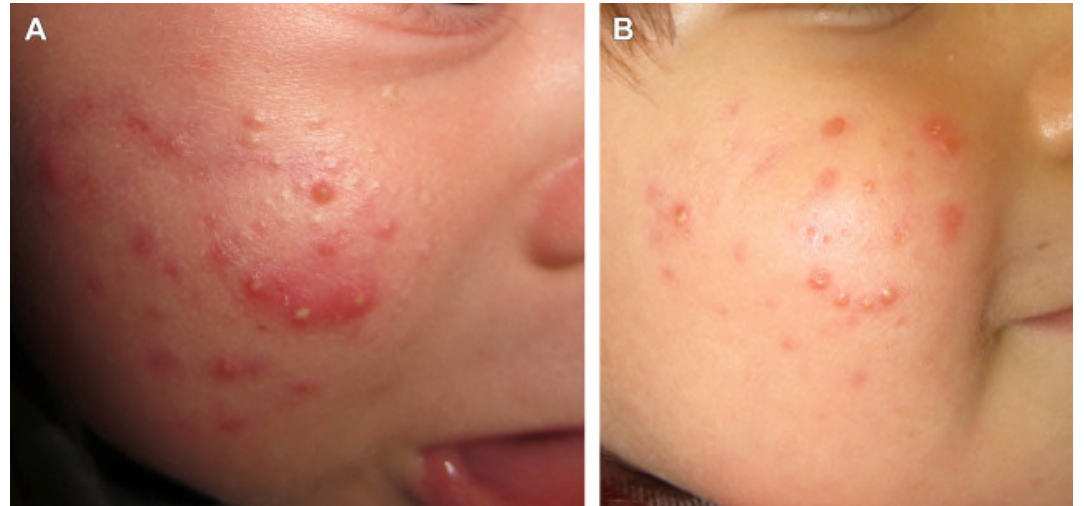
• Krakowski AC, Eichenfield LF, J Drugs Dermatol 2007;6:584-588.

# Infantile

- **0-1 year; usually see around 3-6 months**
- Boys>girls
- **May predispose to worse acne in teenage years\***
- Increased sebum production
- Look more like classic acne – will see comedones
- Face where **cheeks** are mainly affected, also chin
- Less on the chest and back
- Should treat – can cause scarring
- Look for signs of hormonal abnormalities

• \*Herane, MI. Acne in infancy and acne genetics. *Dermatology* 2003;206:24-28.

# Infantile Acne



## **Pediatric Acne**

Dermatologic Clinics.

Maroñas-Jiménez, Lidia, MD; Krakowski, Andrew C., MD. Published  
March 31, 2016. Volume 34, Issue 2. Pages 195-202. © 2016

# Infantile acne - Consensus

- Most infantile acne is self-limited
- If there are signs of hormonal abnormalities, refer to pediatric endocrinologist
- *Eichenfield, LF, et al. Pediatrics 2013;131;S163*

# Infantile Acne treatments

- Combine treatments
- Watch products that are appropriate for a baby
  - Topical antibiotics/benzoyl peroxide
  - Adapalene cream/low strength tretinoin
  - Avoid washes so that wash doesn't get into the eye
  - Oral erythromycin
  - Isotretinoin if severe, scarring
    - HOW YOUNG? I have seen case reports in the first months of life
    - DOSE ? 0.5mg/kg to 1mg/kg; cumulative dose 60-180mg/kg



# Mid childhood acne

- **Most likely time to have underlying hormonal abnormality**
- Newer concept
- **From 1-7(8) years of age**
- Androgens should be low and stable
- Evaluate for **Hyperandrogenism**
- Distribution – face, chest, back

# Mid-childhood/Prepubertal Acne

- Cushing's syndrome
- Congenital adrenal hyperplasia
- Premature adrenarche
- Polycystic ovarian syndrome
- Gonadal tumors
- Adrenal tumors
- Ovarian tumors
- True precocious puberty

- Krakowski AC, Eichenfield LF, J Drugs Dermatol 2007;6:584-588.

# Mid Childhood Acne

- Guide for Evaluation of Mid-Childhood Acne
  - Bone age
  - Growth Chart
  - Hormone Levels
- 
- Acne Vulgaris Editors, Shalita, AR., Del Rosso, JQ, Webster, GF, 2011 Informa Healthcare. Pp188-190

# Mid Childhood Acne

- Guide for Evaluation of Mid-Childhood Acne
- **Bone age**
  - Accelerated with Androgen Excess
  - Delayed in Cushing's Syndrome
- Growth Chart
- Hormone Levels
- Acne Vulgaris Editors, Shalita, AR., Del Rosso, JQ, Webster, GF, 2011 Informa Healthcare. Pp188-190

# Mid Childhood Acne

- Guide for Evaluation of Mid-Childhood Acne
  - Bone age
  - **Growth Chart**
    - Height crossing percentiles upward in androgen excess
    - Weight crossing percentiles upward and height downward in Cushing's syndrome
  - Hormone Levels
- Acne Vulgaris Editors, Shalita, AR., Del Rosso, JQ, Webster, GF, 2011 Informa Healthcare. Pp188-190

# Mid Childhood Acne

- Guide for Evaluation of Mid-Childhood Acne
- Bone age
- Growth Chart
- **Hormone Levels**
  - High levels of androgens such as free testosterone and DHEAS in tumors and PCOS
  - High levels of 17-a hydroxyprogesterone in CAH

# Which Hormones to check

- DHEA(s)
- Testosterone
- Cortisol
- 17 hydroxyprogesterone
- Androstenedione
- LH/FSH
- Prolactin
- **Pediatric Endocrinologist Referral – to ensure completeness**

# Mid-childhood acne - consensus

- Acne in this age group is very **uncommon**
- Should warrant workup for cause of hyperandrogenism

• *Eichenfield, LF, et al. Pediatrics 2013;131;S163*



# Preadolescent acne

- **8-12 years of age**
- Treatments same as infantile/mid-childhood
- Adherence
- Once a day regimen
- Swallowing pills – use liquid forms
- Isotretinoin – uncommon but may need to repeat (early teen acne – young age they may need again)

# Preadolescent Acne Differential Diagnosis

- Angiofibromas or adenoma sebaceum\*
  - Corticosteroid induced acne/inhalers
  - Flat warts
  - Keratosis pilaris
  - Molluscum
  - Syringomas
  - Perioral dermatitis
  - Pomade acne
- 
- \* [Keri JE, Avashia N](#). An adolescent girl with tuberous sclerosis complex and acne. [Pediatr Ann](#). 2006 Jun;35(6):433-5

# Preadolescent Acne

- Sometimes called Preteen acne
  - Comedones
  - Seborrhea
  - Polycystic Ovarian Syndrome (PCOS) – can see at this age (8-12 years) in girls
  - Distribution:
    - Face (especially forehead)  
Conchae of ears may be involved
    - Chest
    - Back
  - Pelvic Ultrasound is not considered useful for diagnosis of PCOS because it is considered non-specific
- Rosenfield RL. Clinical review: Identifying children at risk for polycystic ovary syndrome. *J Clin Endocrinol Metab.* 2007 Mar;92(3):787-96.

# Factors related to onset of PCOS in the Pediatric Population

- smaller for gestational age
- low-birth weight
- precocious pubarche
  
- Important to follow girls in these groups
  
- **Can be difficult diagnosis – have to tease out the normal changes of puberty with those of the condition**
  
- Report of the international symposium: polycystic ovary syndrome: first Latin-American consensus. International Journal of Clinical Practice. 64(5):544-57, 2010 Apr.

# What is premature pubarche

- Appearance of **pubic hair before age 8 years in girls and 9 years in Boys**
  - In girls premature pubarche may proceed development of clinical
  - ovarian androgen excess in adolescence.
- 
- Clinical spectrum of premature pubarche: links to metabolic syndrome and ovarian hyperandrogenism. Ibanez L. Diaz R. Lopez-Bermejo A. Marcos MV. Reviews in Endocrine & Metabolic Disorders. 10(1):63-76, 2009 Mar.

# Androgen Excess

- Androgen excess seems to occur more quickly if there is evidence of low birth weight
- How/Why?
- Reduced fetal growth
  - Followed by **post-natal catch up** in height and weight
  - Hyperinsulinemia appears to be factor in the cascade
- Clinical spectrum of premature pubarche: links to metabolic syndrome and ovarian hyperandrogenism. Ibanez L. Diaz R. Lopez-Bermejo A. Marcos MV. Reviews in Endocrine & Metabolic Disorders. 10(1):63-76, 2009 Mar.

# Androgen Excess

- What do we do?
- Look for girls with **low birth weight and early puberty**
- They may develop faster with a final height that is **moderately reduced**
- In these patients, metformin may help
- Clinical spectrum of premature pubarche: links to metabolic syndrome and ovarian hyperandrogenism. Ibanez L. Diaz R. Lopez-Bermejo A. Marcos MV. Reviews in Endocrine & Metabolic Disorders. 10(1):63-76, 2009 Mar.

# How will metformin help?

- Can slow down the ovarian hyperandrogenism
  - Normalize body composition and excessive visceral fat
  - Delay pubertal progression without “hurting” the bones such that **adult height may be improved**
- 
- Clinical spectrum of premature pubarche: links to metabolic syndrome and ovarian hyperandrogenism. Ibanez L. Diaz R. Lopez-Bermejo A. Marcos MV. Reviews in Endocrine & Metabolic Disorders. 10(1):63-76, 2009 Mar.



# PCOS - It's complicated!!!

- More than 70 candidate genes which may be related to the etiology of PCOS

- Urbanek, M. The genetics of polycystic ovary syndrome. Nat Clin Pract Endocrinol Metab 2007;3:103-11

## All pre-teens (boys and girls)

- Important to see how the patient feels about the acne, as their concerns may be different from the parents/caregivers.

# Treatment of Acne

## Quick Pearls...

## Hints from the pediatric guidelines

- Grade acne
  - Mild/Moderate/Severe
  - **Clinically, Noninflammatory/Inflammatory**

# Developing Algorithms

- **Inflammatory Acne**
- Often times needs a systemic agent
  - Oral antibiotics
  - Isotretinoin
  - Hormonal therapy rare in the age groups we are discussing

## Developing algorithms

- Oral Antibiotics alone substandard care
- Should be combined with Benzoyl Peroxide and/or Retinoid

## Developing Algorithms

- Know when to refer
- Scarring
- Resistant acne
- Very inflammatory

## MILD ACNE

- Mild acne – topicals may suffice
- Benzoyl Peroxide or Retinoid
- Combination Products possibly including topical antibiotic



## MODERATE ACNE

- Moderate acne
  - **Start with a combination therapy**
  - Use oral antibiotics
  - Consider oral isotretinoin
  - Hormonal therapy rarely

## SEVERE ACNE

- Severe acne
  - Use combination therapy AND systemic medications (oral antibiotics and/or hormonal therapy, rarely)
  - Consider Isotretinoin

# Developing Algorithms

- Inadequate response
  - Change formulations
  - Add what you hadn't used previously
  - Change oral antibiotics
  - Females remember hormonal manipulation – rare in this age group