2022 Akron Children's Hospital ARPN/PA Fall Pharmacology and Law Conference
Dermatology Update

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Disclosures

- No conflicts of interest

Objectives

- Identify common pediatric dermatology conditions for referral
- Discuss first-line pharmacological interventions while waiting for referral
- Examine pharmacological interventions implemented by Dermatology

Commonly referred dermatologic conditions

- Atopic Dermatitis (Eczema)
- Irritant Contact Dermatitis
- Seborrheic Dermatitis
- Molluscum Contagiosum
- Viral warts
- Acne

Atopic Dermatitis

AKA Eczema

Atopic Dermatitis

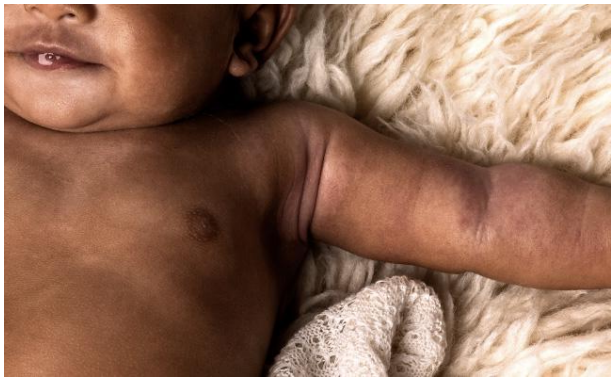
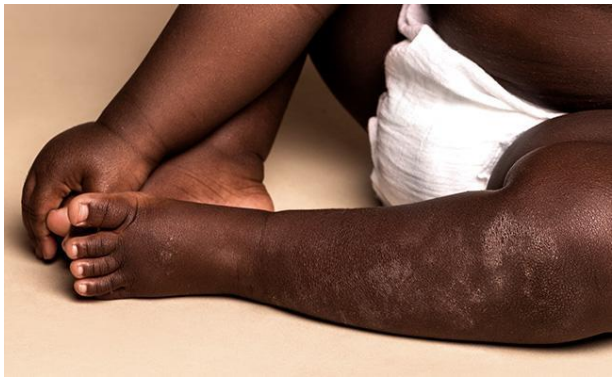
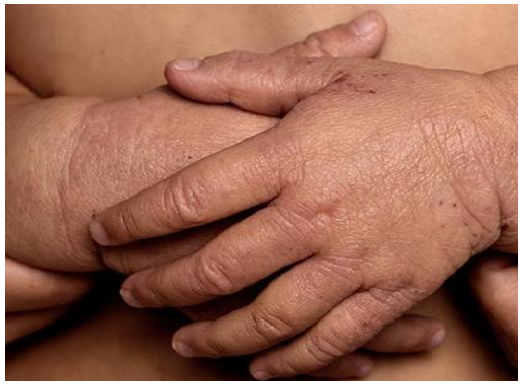
AKA Eczema

- Atopic Dermatitis (AD) is the most common chronic pediatric skin disorder, affecting as many as 15% of children.
- Begins during the first 6 months of life in 45% children, the first year of life in 60% of affected individuals, and before 5 years of age in at least 85% of affected individuals.
- Cause unknown but appears to be result of a complex interplay between immune dysregulation, barrier dysfunction, and the environment
- Strong genetic predisposition; many patients have personal or family history of atopy.

Atopic Dermatitis

AKA Eczema

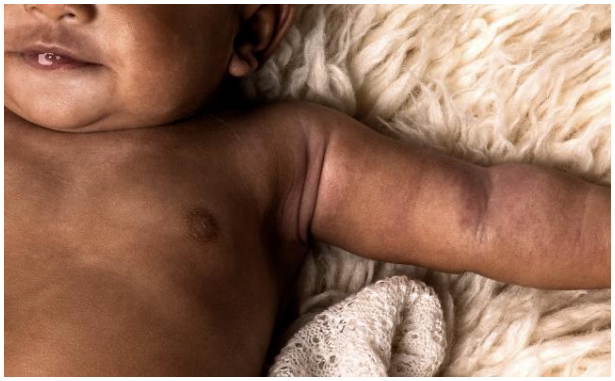
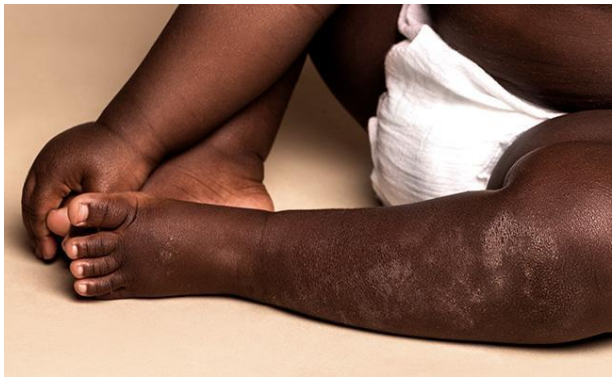
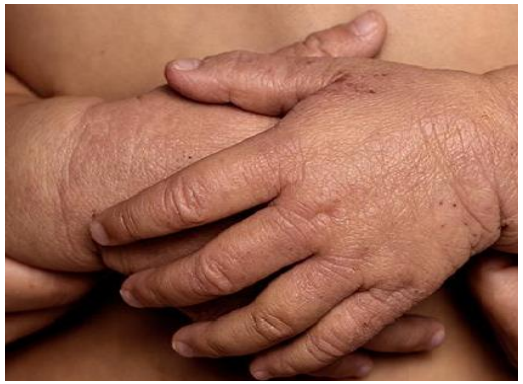
- Signs & Symptoms: characterized by pruritus with resultant scratching that leads to excoriations and lichenification.
  - Appearance of lesions varies with the patient's age and racial background.
  - Infants and toddlers: involvement of the face, trunk and extensor extremities
  - Childhood: Lesions are concentrated in flexural areas, such as antecubital and popliteal fossae, wrists and ankles. Some children exhibit round, crusted lesions (ie, nummular eczema); in older children, the feet may be involved.

Atopic Dermatitis

AKA Eczema

- Goals of therapy: Reduce inflammation, control pruritus, control infection
- First-Line Pharmacologic Treatment:
  - Low Potency Topical Steroids: Hydrocortisone 2.5% ointment, Desonide 0.05% ointment
  - Medium Potency Topical Steroids: Triamcinolone 0.1% ointment, Fluocinolone 0.25% ointment
  - High Potency Topical Steroids: Mometasone 0.1% ointment, Clobetasol 0.05% ointment

Atopic Dermatitis

AKA Eczema

- Topical Non-steroidal agents:
  - Crisaborole 2% ointment
    - Phosphodiesterase 4 (PDE4 Inhibitor)
    - FDA approved for mild-moderate AD ages 3 mos and greater
    - Twice daily application
    - Advantages: No risk of skin atrophy, can be applied to face (including eyelids) and body
    - Disadvantages: Cost if not covered by insurance, erythema and stinging at application site
  - Tacrolimus 0.03% or 0.1% ointment
  - Pimecrolimus 1% Cream (Elidel)
    - Calcineurin inhibitors
    - Inhibit T-lymphocyte activation
    - FDA approved for ages 2 and older
    - Twice daily application
    - Advantages: No risk of skin atrophy, applied to face (including eyelids) and body
    - Disadvantages: Stinging at application site, rare malignancies skin and lymphoma

- Adjunctive Treatment:
  - First generation antihistamine (ie, hydroxyzine 0.5mg-1mg/kg) to control nighttime pruritus
  - Second generation antihistamine (ie, cetirizine) to control daytime pruritus

Atopic Dermatitis

AKA Eczema

- When to Worry or Refer
  - Consider e-consult to dermatology
  - Consider referral to Dermatology
    1. Patients who have severe or extensive disease
    2. Do not respond to standard treatment
    3. Have chronic or recurrent bacterial or viral (molluscum contagiosum, herpes simplex virus) infections.
  - Such patients may benefit from more aggressive treatment and/or biologic therapy

Atopic Dermatitis

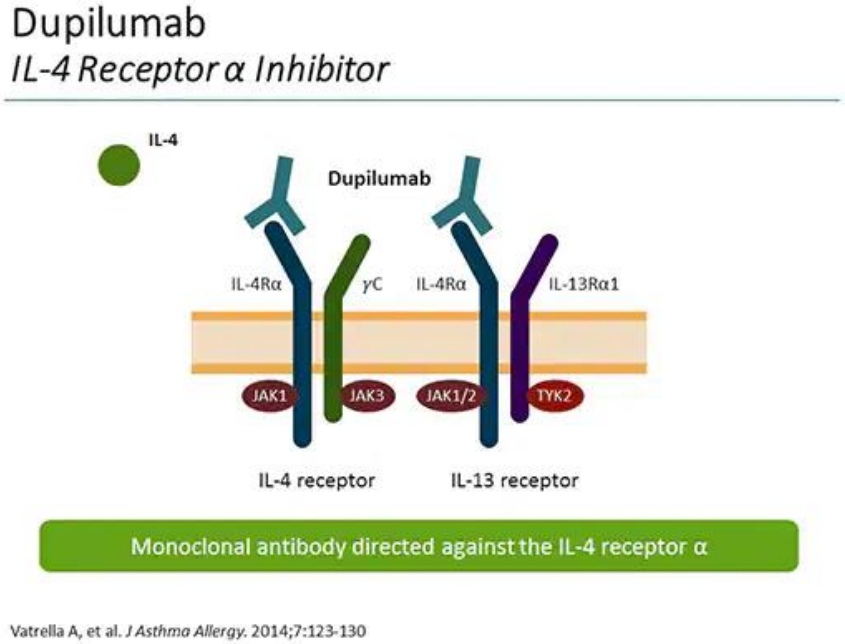
AKA Eczema

- Biologic Agent: Dupilumab (Dupixent)
  - What's New?
    - **FDA approved for moderate-severe AD for children 6 mos and older (June, 2022)**
    - FDA approved for children 6 years and older (May, 2020)
    - FDA approved for children 12 years and older (2019)
    - FDA approved for adults (2017)
    - Human monoclonal antibody that binds to the alpha subunit of the IL-4 receptor and inhibits downstream signaling of IL-4 and IL-13, cytokines of T helper type 2 (Th2) lymphocytes that are believed to play a key role in atopic diseases

Atopic Dermatitis

AKA Eczema

- Biologic Agent: Dupilumab (Dupixent)
  - Moderate to severe AD recalcitrant to topical or other therapies
  - Dosing: Age/weight dependent
    - SC injection dosed bi-weekly or monthly
    - Loading dose
  - Advantages:
    - Not associated with increased risk of infections
    - No need for laboratory monitoring
  - Disadvantages:
    - SC injection difficult for needle-phobic patients
    - Non-infectious conjunctivitis
    - Cost- Insurance PA required



Vatrella A, et al. *J Asthma Allergy.* 2014;7:123-130

Irritant Contact Dermatitis

- Inflammatory reaction of skin caused by physical contact with an irritating substance
- Modified by local physical factors (ie, diapering) and individual susceptibility
- Common forms of ICD:
  - Irritant diaper dermatitis
  - Dry skin dermatitis (ie, asteatotic eczema)
  - Lip-licking dermatitis and thumb sucking dermatitis
  - ICD to perioral skin commonly cause by berries, tomatoes and citrus fruits
- Goals of treatment for all types of ICD: decrease or eliminate contact with the irritant, skin barrier restoration, decrease inflammation and treat secondary infection, if present.
- When to worry or refer:
  - Uncertainty about the diagnosis
  - Failure to respond to therapy

Irritant Contact Dermatitis

- Irritant Diaper Dermatitis
  - Remove/diminish contactants from the skin surface
  - Decrease skin maceration by keeping skin surface free of aqueous material
  - Specific measures include:
    - Diaper changes frequently
    - Superabsorbent diapers
    - Gently cleanse with tap water and cotton cloth or pure 'Water Wipes' only. Avoid scrubbing or using soaps.
    - Use emollient ointment as barrier (Vaseline or Aquaphor) every diaper change
    - For active inflammation: treat with low-potency topical corticosteroid (ie, hydrocortisone 2.5% ointment BID, desonide 0.05% ointment BID)
    - If there is evidence of candidiasis: nystatin ointment + TCS BID
    - Do not use combination topical therapies that contain potent topical steroids (ie, betamethasone/clotrimazole)
  - Prognosis for ICD is excellent, provided appropriate treatment is instituted
  - Recurrences are common!

Seborrheic Dermatitis

- Chronic dermatitis of unknown cause. May be related to inflammatory response to yeast of the genus *Malassezia* (formerly *Pityrosporum*)
- Divided into 2 main variants
  - Infantile: present from soon after birth to ~1 year of life
  - Adolescent & adult: occurs primarily in older children (who have experienced adrenarche) or post-pubertal individuals.
  - Occasionally occurs in toddlers and elementary school-age children
- Signs and Symptoms:
  - Infantile: yellowish greasy scale on the scalp (ie cradle cap) and erythematous patches with greasy scale that have a predilection for the face and flexural areas. May have near total skin involvement.
  - Adolescent & adult: most common presentation scaling of the scalp (ie dandruff). May exhibit erythematous poorly defined scaling patches on the scalp, ears, eyebrows, nasolabial folds, central chest, and beard in males. Pruritus variable.

Seborrheic Dermatitis

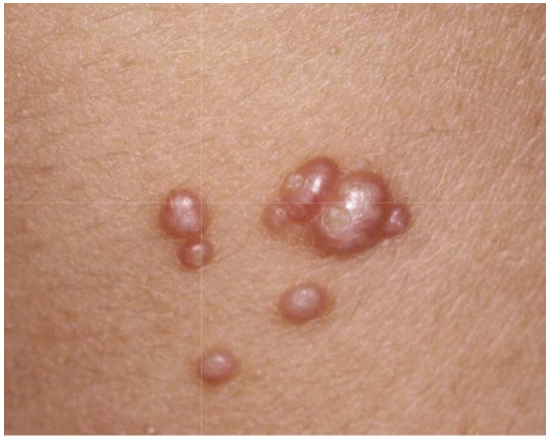
- Treatment:
  - Infantile
    - Scalp:
      - Controlled by gentle brushing to remove scale during daily shampooing. Mineral oil may be applied to loosen scale.
      - Can use an anti-seborrheic shampoo (ie selenium sulfide) but caution against stinging if gets in eyes
      - Low potency topical steroid oil or solution (ie fluocinolone 0.1% oil) occasionally necessary when significant inflammation present.
    - Skin:
      - Lesions may be treated with low-potency topical corticosteroid (hydrocortisone 2.5% ointment BID)
  - Adolescent & Adult:
    - Scalp:
      - More frequent shampooing of scalp can be helpful.
      - To control scaling: Use an anti-seborrheic shampoo (ie one containing pyrithione zinc, selenium sulfide, ketoconazole, tar, or salicylic acid).
      - To control erythema: Apply mid-high potency topical corticosteroid (fluocinolone oil, fluocinonide solution, clobetasol solution) up to twice daily as needed. Do not apply to face.
    - Skin:
      - Lesions may be treated with hydrocortisone 2.5% ointment + ketoconazole cream BID

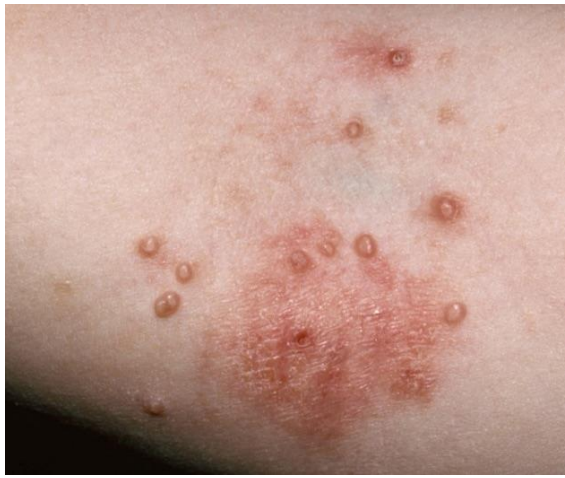
Seborrheic Dermatitis

- Prognosis:
  - Infantile seb derm has good prognosis, usually clearing rapidly with appropriate topical therapies
  - Adolescent/adult is often chronic requiring ongoing ‘maintenance’ therapy
- When to worry or refer:
  - When the diagnosis is uncertain or patient fails to respond to appropriate therapy

Molluscum Contagiosum

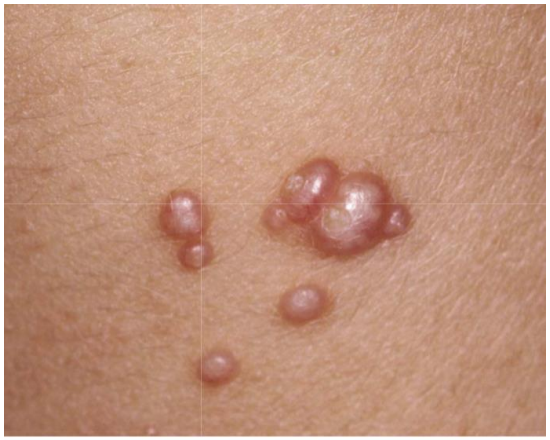
- Cause by a poxvirus
- Not usually associated with sexual abuse or immunodeficiency in infants and children
- Signs & Symptoms:
  - Usually asymptomatic, but can be associated with mild pain or pruritus
  - Lesions are usually 1-6 mm, discrete, flesh-colored, erythematous, or translucent papules with central umbilication
- Goals of Therapy:
  - To help the immune system identify viral infection sooner vs. later
  - Keep patient comfortable and free of secondary infection
  - No therapy prevents viral spread!

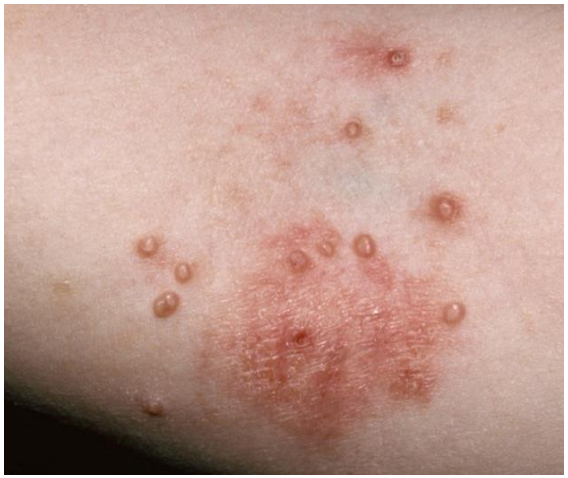




Molluscum Contagiosum

- Treatment:
  - Lesions will spontaneously resolve – watchful waiting is acceptable
  - Topical retinoids (tretinoin 0.1% cream)
  - Salicylic acid
  - Cantharidin (ACH does not carry*)
  - Cryotherapy
  - Candida antigen immunotherapy
  - Treat any secondary infection with topical vs. oral antibiotics
  - Treat any dermatitis with topical corticosteroids (HC 2.5% ointment BID)

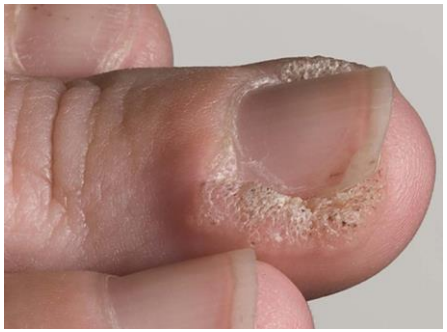




- When to worry or refer:
  - When treatment requested is not available in your practice
  - When diagnosis is uncertain
  - Extensive disease present
  - MC associated with poorly controlled AD

Viral Warts

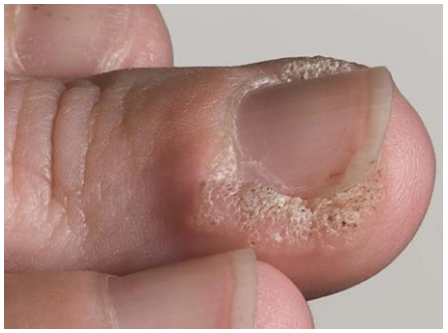
- Epithelial growths induced by different subtypes of human papillomavirus (HPV)
- Clinical wart subtypes correlate with different HPV subtypes
- Most spontaneously resolve in 1-2 years
- Transmission may occur person to person, from fomites, or from autoinoculation



Viral Warts

Signs & Symptoms:

- Common warts: discrete, skin-colored papules with verrucous surface. May exhibit dark specks that represent thrombosed capillaries
- Plantar warts: rough or smooth papules and plaques localized to plantar feet
- Flat warts: smooth, pink or skin-colored, flat topped papules 1-3 mm typically seen on face or legs
- Anogenital warts (ie, condylomata acuminata): discrete papules or confluent plaques; pink to red or skin-colored; localized to genitalia or adjacent skin
- Periungual warts: papules, confluent plaques or nodules adjacent to nails, with involvement of the proximal or lateral nail fold areas



Viral Warts

- Treatment:
  - Warts are self-limited, usually asymptomatic, and do not necessarily require treatment. None of the current treatments are uniformly effective
  - Risk to benefit ratio of therapy should be considered. Care should be exercised to avoid overly painful or traumatic treatments in younger children
- First line therapy:
  - Topical salicylic acid with or without duct tape occlusion
  - Cryotherapy
- When to worry or refer:
  - When the diagnosis is uncertain
  - Anogenital warts in children may be marker for sexual abuse, although autoinoculation, vertical transmission (consideration in children < 3, and benign non-sexual modes of transmission also possible
  - Desired treatment is not available in office
- Other Treatments:
  - Pulsed dye laser
  - Candida antigen immunotherapy

Viral Warts

- When to worry or refer:
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Acne Vulgaris

- Most common disease that is treated by physicians.
- Affects approximately 45 million individuals in the United States, including 85% of all teenagers and young adults.
- Has potential for significant negative effect on quality of life.
- Successful treatment is generally associated with improved psychologic well-being.
- Pathophysiology:
  - Result of a complex interaction between hormonal changes and their effects on the pilosebaceous apparatus
- Signs & Symptoms:
  - Comedonal lesions
    - Open Comedones (blackheads), closed comedones (whiteheads)
  - Inflammatory lesions
    - Erythematous papules and pustules, nodules, cysts

Acne Vulgaris

- Treatment:
  - Topical Agents: retinoids, benzoyl peroxide, antibiotics, and fixed-dose combination products- combines two of these products
  - Oral antibiotics: doxycycline, minocycline, sarecycline, tetracycline, erythromycin
  - Hormonal therapy: oral contraceptives, antiandrogens (ie spironolactone)
  - Isotretinoin
- When To Refer:
  - Failure to respond to topical therapies after 2-3 months of appropriate use
  - Severe acne with presence of nodules, cysts, or scarring
  - Early onset acne at younger than 7 years (or other signs of androgen excess) warrants hormonal evaluation

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