

# **Atopic Dermatitis**

**Chris Poarch, APRN-CNP**

# Disclosures

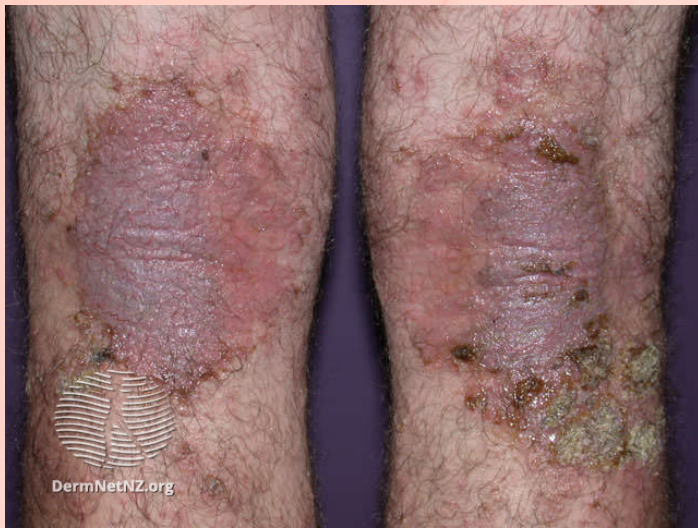
None

# OBJECTIVES

1. Recognize and identify Atopic Dermatitis.
2. Identify severity scales.
2. Identify basic care measures.
3. Identify common treatment modalities with associated risk versus benefit in the pediatric and adult population.

# Atopic Dermatitis





# Atopic Dermatitis/Eczema

- Affects 5-20% children worldwide depending on country and ethnicity
- Affects 16% US children
- Approximately 1-7% of US Adults, increasingly being recognized (limited studies)
- 85% of cases with onset before age 1 and 95% of cases by age 5

# Risk Factors

- Genetics
  - Atopy (eczema, asthma, allergic rhinitis)
  - 1 parent = 2-3 times risk, both parents 3-5 times risk
  - 70% have a family history
- FLG (filaggrin) gene variants resulting in loss of epidermal barrier function
- Other Implications: water hardness, air pollution, exposure to nonpathogen organisms at an early age, climate
- IL 4, IL-13, IL-17A, IL- 22, IL-25, and IL-31, suppresses filaggrin expression causing skin barrier impairment

# Clinical Presentation

- Severe Pruritis resulting in lichenification (skin thickening)
  - Causes moisture loss and skin infections
- Concomitant Triggers:
  - Soaps/detergents
  - Abrasive fabrics
  - Heat
  - Humidity





# Diagnosis

- American Academy of Dermatology
  - Essential features include pruritis with eczematous rash involving extensor surfaces in infants and children, flexural surfaces in all age groups, and avoidance of the axilla and groin, with chronicity
  - Important features early onset, atopy history (personally or family), xerosis
  - Associated features include periorcular/oral/auricular changes, perifollicular prominence, prurigo like lesions, lichenification, keratosis pilaris, ichthyosis, hyperlinear palms, pityriasis alba

# Stages

- Classified as:
  - Acute - erythema, weeping, blisters, crusts
  - Subacute - papules, plaques, erosions, crusts
  - Chronic – scaling, lichenification, hyperpigmentation  
hypopigmentation



# Differential Dx

- Nummular dermatitis
- Psoriasis
- Lichen simplex chronicus
- Irritant contact dermatitis
- Mycosis fungoides

# Testing

- Serum IgE (80% have elevated levels)
- Skin biopsy, usually rule out Dx (punch vs shave)
- Bacterial Culture
- HSV Culture or PCR
- Food challenges
- Patch Testing
- Allergy Testing (prick vs RAST/blood)
- HIV testing if appropriate

# Severity Scales

## Eczema Area and Severity Index (EASI)

- Four body regions for BSA– head/neck, trunk, upper extremities and lower extremities
- Severity – redness, thickness, scratching, lichenification

## SCORing Atopic Dermatitis (SCORAD)

- Uses rule of 9 for BSA
- Intensity assessed by redness, oozing/crusting, swelling, excoriations, lichenification, dryness
- Subjective symptoms by patient for itch and sleeplessness

# Treatment

- Most significant impact on patient outcome is patient education
- Start with basic care measure for all patients
  - Skin hydration
    - Bathing frequency and products
    - Moisturizers (glycerol, glycyrrhetic acid)
  - Avoiding aggravating factors
    - Harsh products (detergents, softeners, solvents, fragrance)
    - Stress
    - Hard water
    - Skin being wet to frequent
    - Fabrics
    - Pets
    - Heat/sweating
    - High allergy foods

# Topical Medications

- Topical Steroids with break periods 1-2 week on/off cycles twice daily (ointments preferred usually)
- Mild Atopic Dermatitis & Face/Neck/Intertriginous areas
  - Low potency such as hydrocortisone 2.5%, desonide 0.05% (groups 5-6)
- Moderate Atopic Dermatitis
  - Medium potency such as triamcinolone 0.1%, fluocinolone 0.025%, mometasone furoate 0.1%
  - May use a high potency for up to 2 weeks then go down to medium potency. Betamethasone dipropionate 0.05%, fluocinonide 0.05%, triamcinolone 0.5%

# Topical Medications

- Calcineurin Inhibitors twice daily during off weeks from topical steroids
  - Tacrolimus 0.1% for > 16yo
  - Tacrolimus 0.03% for  $\geq 2$  yo
  - Pimecrolimus 1% > 2yo
- Crisaborole 2% a phosphodiesterase 4 (PDE4) inhibitors, twice daily during off weeks from topical steroids,  $\geq 3$  month old
- Ruxolitinib 1.5% a Janus kinase (JAK1/2) inhibitor for > 12 yo



# Additional Therapies

- Dilute bleach baths -  $\frac{1}{4}$  cup in a half full tub (approximately 20 gallons). Soak in it for 10 minutes, ages 2 and up. Can perform 2-3 times weekly.
- Wet wraps – apply topical medication, then a thin layer of petroleum jelly. Soak cotton pajamas or cut socks in warm water and wring out, immediately put them on. Wear for a few hours or overnight. Never put anything around the neck. Can use for 2-3 days

# Amounts

- Adult male: one fingertip unit provides 0.5 g
- Adult female: one fingertip unit provides 0.4 g
- Child aged 4 years: approximately 1/3 of the adult amount
- Infant 6 months to 1 year: approximately 1/4 of the adult amount
- One hand: apply 1 fingertip unit
- One arm: apply 3 fingertip units
- One foot: apply 2 fingertip units
- One leg: apply 6 fingertip units
- Face and neck: apply 2.5 fingertip units
- Trunk, front & back: 14 fingertip units
- Entire body: about 40 units

# Systemic Therapies

- Systemic Steroids should be rarely used and only in adolescents and adults. Prednisone 20-30mg/day for 3 days then 10 mg for 4 days. Continue topicals during this time to reduce rebound flare.
- Antibiotics to treat skin infections.
- Methotrexate, cyclosporine, mycophenolate, azathioprine – refer to dermatology.
- Phototherapy - NBUVB

# Biologics

- Dupilumab IL4 & IL 13 inhibitor,  $\geq 6$  months old, more favorable safety profile compared to conventional immunosuppressive agents. Continue topicals until no longer needed or for flares.
  - Adverse events reported include conjunctivitis, facial redness, injection site reaction, eosinophilia, increase in HSV infections. Psoriasis like eruption, psoriasis, arthritis have rarely been reported.
- Tralokinumab IL 13 inhibitor approved for adults more favorable safety profile compared to conventional immunosuppressive agents. Continue topicals until no longer needed or for flares.
  - Adverse events included viral URI, conjunctivitis, injection site reaction

# Biologics

- Abrocitinib JAK1 inhibitor, approved for adults and children  $\geq 12$  yo. Increased potential for serious adverse events. Continue topicals until no longer needed or for flares.
  - Adverse events reported include exacerbation of atopic dermatitis, nausea, HA, nasopharyngitis, acne.
- Upadacitinib JAK1 inhibitor approved for adults and children  $> 12$  yo. Increased potential for serious adverse events. Continue topicals until no longer needed or for flares.
  - Adverse events included acne, URI, nasopharyngitis, HA, elevated CPK, conjunctivitis, exacerbation of atopic dermatitis, herpes zoster, eczema herpeticum.

# References

- Chiesa Fuxench ZC, Block JK, Boguniewicz M, et al. Atopic Dermatitis in America Study: A Cross-Sectional Study Examining the Prevalence and Disease Burden of Atopic Dermatitis in the US Adult Population. *J Invest Dermatol* 2019; 139:583.
- Eichenfield LF, Tom WL, Chamlin SL, et al. Guidelines of care for the management of atopic dermatitis: section 1. Diagnosis and assessment of atopic dermatitis. *J Am Acad Dermatol* 2014; 70:338.
- Irvine AD, McLean WH, Leung DY. Filaggrin mutations associated with skin and allergic diseases. *N Engl J Med* 2011; 365:1315.
- Miller DW, Koch SB, Yentzer BA, et al. An over-the-counter moisturizer is as clinically effective as, and more cost-effective than, prescription barrier creams in the treatment of children with mild-to-moderate atopic dermatitis: a randomized, controlled trial. *J Drugs Dermatol* 2011; 10:531.

## References (Continued)

- Paller AS, Fölster-Holst R, Chen SC, et al. No evidence of increased cancer incidence in children using topical tacrolimus for atopic dermatitis. *J Am Acad Dermatol* 2020; 83:375.
- Roekevisch E, Spuls PI, Kuester D, et al. Efficacy and safety of systemic treatments for moderate-to-severe atopic dermatitis: a systematic review. *J Allergy Clin Immunol* 2014; 133:429.
- Sawangjit R, Dilokthornsakul P, Lloyd-Lavery A, et al. Systemic treatments for eczema: a network meta-analysis. *Cochrane Database Syst Rev* 2020; 9:CD013206.
- Siegels D, Heratizadeh A, Abraham S, et al. Systemic treatments in the management of atopic dermatitis: A systematic review and meta-analysis. *Allergy* 2021; 76:1053.
- Simpson EL, Bieber T, Guttman-Yassky E, et al. Two Phase 3 Trials of Dupilumab versus Placebo in Atopic Dermatitis. *N Engl J Med* 2016; 375:2335.

## References (Continued)

- Svensson A, Chambers C, Gånemo A, Mitchell SA. A systematic review of tacrolimus ointment compared with corticosteroids in the treatment of atopic dermatitis. *Curr Med Res Opin* 2011; 27:1395.
- Williams H, Flohr C. How epidemiology has challenged 3 prevailing concepts about atopic dermatitis. *J Allergy Clin Immunol* 2006; 118:209.
- Williams H, Robertson C, Stewart A, et al. Worldwide variations in the prevalence of symptoms of atopic eczema in the International Study of Asthma and Allergies in Childhood. *J Allergy Clin Immunol* 1999; 103:125.
- van Zuuren EJ, Fedorowicz Z, Christensen R, et al. Emollients and moisturisers for eczema. *Cochrane Database Syst Rev* 2017; 2:CD012119.
- Yin Z, Xu J, Luo D. Efficacy and tolerance of tacrolimus and pimecrolimus for atopic dermatitis: a meta-analysis. *J Biomed Res* 2011; 25:385.



# Contact Information

[aprnncnp@gmail.com](mailto:aprnncnp@gmail.com)