**Dermatitis vs eczema**

Dermatitis and eczema used interchangeably:
- Dermatitis = skin inflammation
  - Used with qualifiers eg contact dermatitis, seborrheic dermatitis, atopic dermatitis
- Eczema (modern latin) = boil over, break out
  - Eczema = atopic dermatitis

**Epidemiology**

- Prevalence: 15-29%
- Onset: 3-6 months
  - 90% onset <5 years of age
- Female 1.3: male 1

**Genetic risk factors**

- Family history of atopy
  - 70% +ve FHx
- Genetics
  - Multiple genes involved
  - Loss-of-function filaggrin mutations

**Pathogenesis**

- Family history of atopy
  - 70% +ve FHx
- Genetics
  - Multiple genes involved
  - Loss-of-function filaggrin mutations


Ref: J Allergy Clin Immunology 2012; 130:912-7
Filaggrin (FLG)

- Protein produced by differentiating keratinocytes encoded by FLG gene on 1q21 epidermal differentiation complex
- FLG degradation products → form natural moisturizing factor → determines hydration & pH of skin


Epidermal barrier dysfunction


Immunological Dysregulation


Distribution of AD by Age

Infants & toddlers <2 years

Older children & adolescents

Associated features

A few differentials...

Clinical course of eczema

Medical Complications

Psychosocial Impact

- Chronic relapsing course over months to years
  - 80% clear by later childhood
  - ~5% persisting into adulthood

- Moderate-severe disease
  - Intermittent flares
  - Rarely clear without treatment

- Mild disease

- 80% clear by later childhood
- ~5% persisting into adulthood

- Poor sleep and concentration → impaired development & education, hyperactivity
- Low self-esteem
- Depression
- Untold stress for family unit
- Time off work for caregivers
- Financial strain: ~$6000/year/child
MANAGEMENT

1. Assessment of severity

1. SCORAD (SCORing Atopic Dermatitis)
2. EASI (Eczema Area Scoring Index)
3. POEM (Patient Orientated Eczema Measure)

2. Core Principles

1. Build rapport – to achieve compliance
2. Control vs cure
3. Keep regimen simple

3. Avoidance of Trigger Factors

- Avoid:
  - Soaps/shampoo/perfumed/animal/plant-based products
  - Sandpits, grass, cats, dogs if confirmed trigger
  - Heat
  - Food allergen
    - If positive IgE and non-IgE and confirmed food allergy
    - House dust mite
  - Eradicate Staph
    - Bleach baths + emollient in water
    - use of intranasal mupirocin
    - appropriate antibiotic

Bleach bath regimen

For a bleach bath, you will need:
- 45 ml household bleach, 4% sodium hypochlorite (eg White King)
- Bath of 2-3 cups (f)l
- 1/2L lukewarm water (1/2 adult bath tub)
- Towsels

Steps:
- Run a bath full with lukewarm water
- Mix in the bath oil
- Add the bleach to the bath
- Allow child to bathe in the bath for up to 10 minutes
- Wash the head and face
- No need to rinse after the bath, gently pat dry and avoid rubbing the skin
- Apply moisturisers and prescribed creams or ointments
- If using topical steroids, apply them before moisturising

Bleach baths are usually recommended twice per week.


4. Emollient Use – grease up!

- Decrease need for topical steroids
- Use of creams, lotions, ointments, bath oils

- Many brands available
- Soon on the market:
  - Ointments containing ceramide
5. Topical corticosteroids (TCS)

- **Effects:**
  - Anti-inflammatory, immunosuppressive, anti-proliferative & vasoconstrictive
  - Potency: site specific
  - Daily to BD therapy until active eczema minimised
  - Continue 2x/wk application once control established

<table>
<thead>
<tr>
<th>Strength</th>
<th>Adult</th>
<th>Child</th>
<th>Baby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>0.001</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Class II</td>
<td>0.5</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td>Class III</td>
<td>2</td>
<td>0.2</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**Topical calcineurins (TCIs)**

- Steroid sparing
- Useful on thin skin sites – face, neck, groin
- Good safety profile despite black box warning (malignancy)
- FDA approval for children older than 2 years

6. Topical Calcineurins (TCIs)

- Steroid sparing
- Useful on thin skin sites – face, neck, groin
- Good safety profile despite black box warning (malignancy)
- FDA approval for children older than 2 years

7. Wet wraps & occlusive dressings

- Applied on top of emollients or emollients+TCS
- Bottom wet layer and top dry layer
- Use elasticated cotton tubular bandages or cotton clothing in two layers
- Beware increased systemic absorption: use lower potency TCS, limited time
- Adverse effects:
  - General discomfort, chills, folliculitis

**TCS Phobia**

- TCS often under-utilised
  - → worse short and long-term outcomes
- Used appropriately, does NOT cause:
  - atrophy, hypopigmentation, hypertrichosis, osteoporosis, purpura or telangiectasia
- Very rare cases, prolonged and excessive use of potent TCS → striae, short term HPA alteration & ophthalmological disease

**Fingertip unit as measure of steroid required:**

<table>
<thead>
<tr>
<th>Age</th>
<th>Leg/foot</th>
<th>Torso/ front</th>
<th>Torso/ back</th>
<th>Arm/hand</th>
<th>Neck/face</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 months</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1-2 years</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3-5 years</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>6-10 years</td>
<td>45</td>
<td>35</td>
<td>5</td>
<td>2.5</td>
<td>2</td>
</tr>
</tbody>
</table>

Fingertip unit (FTU) can be a helpful way to determine the amount of steroid required. It is defined as the amount of steroid preparation squeezed from a tube that will fit along an adult’s index finger to the first crease. The table shows the ranges of FTU required for children aged three months to 10 years.

8. Adjunctive therapies

PHOTOTHERAPY
- UVA1, UVA combined with UVB, and narrowband UVB
- Narrowband UVB and high-dose UVAs both helpful for chronic AD, and UVA1 useful for acute flares
- Logistical limitations in paediatrics

OTHER:
- Non-sedating antihistamines
- Leukotriene inhibitors

9. Systemic therapies

- Indications: severe eczema refractory to treatment
- Options
  - Oral corticosteroids – should be avoided
  - Cyclosporin, Methotrexate, Azathioprine, Mycophenolate mofetil
  - New advancements: Dupilumab, JAK inhibitors
- Specialist input required
- Monitor baseline bloods
- Assess vaccination status

Food allergy & Eczema

- Increased risk of food allergies with eczema
  - 14% in moderate eczema; 35% in severe eczema
- IgE and non-IgE mechanisms
- 75% - milk, egg, wheat, soy and peanut

Food allergy & Eczema

- Refer to Allergist when patients present with:
  - anaphylaxis or suspicious symptoms occurring within minutes to hours of ingesting food and require Epipen
  - in children <5 y with moderate-severe eczema;
  - persistent eczema despite optimized treatment
  - Perceived allergies with elimination diets implemented by parents
    - Formal allergy testing required
  - Exposing at risk babies to allergens early may help prevent food allergy

Prevention of eczema

- Emollient use
- Probiotics during pregnancy and infancy
- Note:
  - Withholding allergenic food does not prevent eczema or food allergies
Key points

- Significant disease burden
- Emollients and TCS are cornerstone of treatment
- Steroid phobia results in under-utilisation of TCS with worse outcomes
- Multi-disciplinary approach required
  - GP, Allergist/Immunologist, Dermatologist, Dietician, Psychologist

Thank you

- Feel free to contact me on: kidsandallergy@gmail.com

References & useful resources

- Images: Dermnetnz.org
- ASCIA Guidelines - Eczema Action Plan, Infant Feeding Guidelines
- Lack, Food Allergy and Atopic Eczema
- J Allergy Clin Immunology 2012; 130:912-7
- Simpazet et al, ‘Emollient enhancement of the skin barrier from birth offers effective atopic dermatitis prevention’, in J Allergy Clin Immunol 2014; Vol34, No4