

**Atopic dermatitis = eczema**

- Involves both the epidermis & dermis
- React abnormally & easily to irritants
- Begins childhood < 5
  - Persists to adulthood in 25%
- Commonly in places of flexion (hands, feet, face, neck, upper chest)
- Inherited predisposition (↑ risk of allergic rhinitis, asthma)

**Triggers**

- Environmental: temperature extremes, decreased humidity
- Sweating
- Excessive washing
- Contact with irritating or allergen substances
- Aeroallergens
- Common food allergies
- Emotional stress

**Classification of severity**

- Mild: localized patches of dry skin, infrequent itching
  - Sleep, daytime activities not impacted
- Moderate: localized patches of dry skin, erythema, pruritis
  - Some impact on sleep & daily activities
- Severe: > 30% of BSA; persistent pruritus, extensive lichenification, cracking, oozing, altered pigmentation
  - Major impact on QoL and sleeping

**Non-drug measures**

- Keep fingernails short
- Bathing: warm water, short, once per day to remove serous crusts → immediately follow with moisturizers
  - Bath oils (colloidal oatmeal, liquid paraffin) not recommended
- Wet wraps: used in significant flares
  - Topical agent applied, covered by wetted first layer of bandage, followed by dry outside layer
- Gentle skin care: non-soap cleansers or mild (neutral – low pH, no fragrance/dyes) on UNAFFECTED AREAS
  - Avoid washcloths, scrubs, etc

**Symptoms**

Acute Eczema	Subacute	Chronic Eczema
<ul style="list-style-type: none"> <li>• Itchy</li> <li>• Red</li> <li>• Papules → poorly demarcated patches</li> <li>• Vesicles with serous weeping &amp; crust formation</li> <li>• Excoriations/ erosions</li> </ul>	<ul style="list-style-type: none"> <li>• Dry</li> <li>• Scaly</li> <li>• Papular</li> </ul>	<ul style="list-style-type: none"> <li>• Itchy</li> <li>• Leathery hypertrophied dry scales</li> <li>• Dry skin</li> <li>• Lichenification</li> <li>• Hypo or hyper pigmentation</li> </ul>

➤ **ITCHING LEADS TO RASHING**

- Pruritus & xerosis = hallmark feature
- Scratching itchy skin may cause the rash
- Increased risk of infection (*S. aureus*)

**Age-specific patterns**

- Infantile (2 months – 2 years)
  - Facial, neck & extensor distribution
  - Erythematous papules → weepy vesicles
- Childhood (2 – 12 years)
  - Flexural and fold distribution
  - Lichenification, scale, excoriations
- Adults (12+ years)
  - May improve or remit with age
  - Scalp, face, neck, upper chest, hands, genital area
  - Lichenification, scale, excoriations

**Goals of therapy**

- Relieve symptoms
- Improve QoL (no scales specifically for clinical practice)
- Reduce flare-ups
- Treat complications (ex// 2° bacterial infxn)
- Prevent medication side effects

**Drug alternatives**

- Topical moisturizers: mainstay therapy
- Topical corticosteroids: 1<sup>st</sup> line flare-up
- Topical calcineurin inhibitors: 2<sup>nd</sup> line (mod-severe atopic dermatitis)
- Antibiotics: for secondary bacterial infection
- Phototherapy and/or immunomodulatory agents: severe or refractory atopic dermatitis
  - UVA, UVB 2-3 times weekly

**Topical moisturizers:** to soften skin & prevent trans-epidermal water loss → lessening of S/S

**Ingredients**

Emollients	Castor oil, cocoa butter, fatty acids, lipids, mineral oil, ceramides, lanolin, cholesterol, glycerol stearate
Occlusive	Petrolatum, dimethicone, mineral oil, lanolin, paraffin, beeswax, soybean oil
Humectants	Glycerin, lactic acid, urea, hyaluronic acid, propylene glycol, sorbitol, pantothenol, retinol, alpha-hydroxy acid, glycolic acid, PEG
Barrier repair agents	Ceramides/cholesterol/free fatty acid combinations

**Potential Side Effects**

- Irritation: alpha-hydroxy acids
- Allergic contact dermatitis: fragrance, preservatives (parabens), lanolin, urea, propylene glycol
- Occlusive folliculitis: petrolatum, mineral oil

**Dosing**

- 250 – 500 g/week (adult) min 2 times per day and also after bathing
  - “Liberal and frequent” to minimize xerosis
  - 1 study suggests 130 g/m<sup>2</sup>/week

**Choice of topical moisturizers**

Vehicle	Advantages	Disadvantages
Cream	Cosmetically elegant	Less absorption
Lotion	Evaporates well, good for large areas, good for hairy areas	
Gel	Good for hairy areas, oily skin	Alcohol base will sting/irritate
Ointment	Excellent penetration, emollient effect, little or no irritation	

**Topical Calcineurin inhibitors**

**Tacrolimus ointment:** mod-severe disease

- Dosing: BID application
  - 0.03% for use > 2 yo
  - 0.03% or 0.1% for use in ≥ 16 yo

**Compared to TCS (topical corticosteroids)**

- Slower time to clinical effect
- 0.1% as effective as mid-potency
- 0.03% more effective than low-potency but less-effective than mid-potency TCS

**SEs:** skin burning, pruritus, redness, VZV infection, photosensitivity

**Avoid**

- Unnecessary sun exposure
- Use in immunocompromised or <2 yo

**Pimecrolimus:** mild-moderate disease

- Dosing: 1% BID application

**Compared to TCS**

- Slower time to clinical effect
- No direct comparisons with low-potency TCS
- Less efficacious than mid & high-potency TCS

**SEs:** less burning than tacrolimus

**Avoid (same as tacrolimus)**

- Unnecessary sun exposure
- Use in immunocompromised or <2 yo

**Oral antihistamines:** poor efficacy but potent sedating antihistamines (diphenhydramine, hydroxyzine) 30 minutes prior to bedtime may help with sleep

### Topical Corticosteroids (TCS)

#### Example regimen

- Mild flare: low potency TCS daily to BID x 1-2 weeks
- Moderate flare: moderate potency TCS daily to BID x 1-2 weeks
  - Taper to low potency TCS for few days
- Severe flares: high potency daily to BID x 7-14 days
  - Until inflammatory lesions are improved, less thick
  - Daily vs. BID = equi-efficacious

#### Once flare is controlled...

- Switch back to moisturizers and re-institute TCS at next flare
- For patients with frequent flares at same site: high-potency TCS applied 1-2 times per week at these locations

**Long-term use:** use least potent corticosteroid that is effective

#### Occlusion

- Increases steroid penetration
- May be used with all vehicles
- Simple plastic dressing result in several fold increase in steroid penetration
- Often used overnight
- Avoid application to the face or intertriginous areas
- Monitor for: irritation, folliculitis, and infection

#### Choice of dosage form

Ointment	<ul style="list-style-type: none"> <li>• Greasy, lubricating (low cosmetic appeal)</li> <li>• Preservative-free = non-stinging</li> <li>• <b>Occlusive = improves steroid absorption</b></li> <li>• <b>Good for dry/thick hyperkeratotic lesions</b></li> <li>• Avoid use on hairy or intertriginous areas (folliculitis, maceration)</li> </ul>
Creams	<ul style="list-style-type: none"> <li>• Better cosmetic appeal</li> <li>• Preservatives → stinging, irritation</li> <li>• Useful for weepy lesions (drying effects)</li> <li>• <b>Useful for intertriginous areas</b></li> <li>• No occlusive effects</li> </ul>
Lotions and gels	<ul style="list-style-type: none"> <li>• Least greasy and occlusive</li> <li>• Often contain alcohol (drying effect for weeping lesions)</li> <li>• Good for hairy areas</li> </ul>

#### Dermatologic SEs

- Acute SE incidence low
  - Allergic contact dermatitis possible
- Chronic or long-term
  - Purpura, telangiectasia, striae, focal hypertrichosis, acneiform or rosacea-like eruptions
  - Delayed wound healing
  - Infection (*S. aureus*, Herpes simplex)
  - Skin atrophy (may be permanent) – epidermis/dermis
    - Increased risk with higher-potency, occlusion, use on thinner skin, older age
- Some effects resolve after discontinuing TCS (may take months)

#### Systemic AEs: routine monitoring not necessary

- Rarely: osteoporosis, hyperglycemia
- Risk of HPA suppression
  - Avoid ultra high-potency steroids for >3 weeks continuously, taper-off
- No association for cataracts and glaucoma

#### Monitoring

- Benefit
  - Sx improvement within 7 days
  - 50% decrease in inflammation
  - Lessening of pruritus
  - Improvement in quality of life issues
- Adverse effects
  - Assess lesion sites for dermatological AE
  - Routine monitoring of systemic AE not regularly recommended
- Compliance: steroid phobia → EDUCATION