# Atopic Dermatitis, Eczema

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| **Diagnosis/Condition:** | Due to food/drug ingestion/sensitivity |
| **Discipline:** | ND |
| **ICD-10 Codes:** | L20.0, L20.81, L20.82, L20.84, L27.2, L25.4, L25.1 |
| **Origination Date:** | 2000 |
| **Review/Revised Date:** | 07/2024 |
| **Next Review Date:** | 07/2026 |

Eczema is a general term for many types of dermatitis. Atopic dermatitis is the most common of the many types of eczema, especially in the pediatric population. "Atopic" refers to diseases that are hereditary, tend to run in families, and often occur together. Atopic dermatitis (AD) is a pruritic disease of unknown origin that often starts in early infancy and is typified by pruritus, eczematous lesions, xerosis (dry skin), and lichenification on the skin (thickening of the skin and increase in skin markings).[1] AD is associated with other atopic diseases (e.g., asthma, allergic rhinitis, urticaria, acute allergic reactions to foods in many patients), with IgE sensitization as one potential causal mechanism.[2,] There does seem to be a complex pathogenic interplay between patient's susceptible genes, skin barrier abnormalities, and immune deregulation,[3,4] Those with AD are also at an increased risk of developing a latex allergy.[5] The prevalence rate in the US is 10-20% in children and up to 3% in adults.[6,7] The incidence of AD appears to be increasing worldwide.[8,9]

Affected individuals must cope with a significant psychosocial burden, in addition to dealing with the medical aspects of the disease. Sleep disturbances and emotional distress are common.[10] Fetal exposure to maternal stress may also be a contributing factor by enhancing the expression of asthma and atopic phenotypes in children.[11]. Structural abnormalities in the brain are suggestively associated with higher AD risk.[12] Individuals and family members are burdened with time-consuming treatment regimens for the disease, as well as dietary and household changes. AD has been associated with patient and parental sleep disturbances, anxiety levels, and increased maternal depression.[9] The cost to society is significant, with estimates ranging from less than $100 to more than $2000 per patient per year. Health care provider visits for contact dermatitis and other eczemas are over 7 million per year.[13,] A conservative estimate of the annual costs of atopic dermatitis in the United States is $5.297 billion (in 2015 USD). People with atopic dermatitis may change their occupation because of their skin disease.[17]

## Subjective Findings and History

- Acute or chronic skin inflammation with excessive pruritis (excoriations and crusting may develop).
- Erythematous plaques and/or small bumps with blisters that may leak extracellular fluid
- Often characterized by periods of acute flare up and remission.
- Episodes generally more severe in first five years of life (early age of onset).
- Intermittent acute "wet" inflamed eruptions and chronic dry itching eruptions on the elbow folds, back of knees, and front of the neck or face
- Etiologic factors: heredity, other atopic conditions: asthma, otitis media, allergic rhinitis in first-degree relative.

## Differential Diagnoses

- Scabies
- Allergic contact dermatitis
- Lichen simplex chronicus
- Mycosis fungoides
- Nummular dermatitis
- Relative zinc deficiency
- Tinea corporis
- Seborrheic dermatitis (SD)
- Mollusca contagiosa with dermatitis
- Cutaneous lymphoma
- Ichthyosis, psoriasis
- Immunodeficiency
- Other primary disease entities

## Objective Findings

- Inflamed, irritated wet lesions, (commonly on flexor surfaces, hands, neck, arms, legs and torso) lichenification and flexural involvement, xerosis, erythema, deposition of amyloid.
- Common around the mouth and anus in infants.
- Chronic appearance more commonly dry, lichenified, cracked, and inflamed.
- Appearance can be anywhere in adults but is most common on the hands.

## Labs

- No chemical marker for the diagnosis of atopic dermatitis is known but testing to rule out immunodeficiencies may be helpful.
- Biopsy shows an acute, subacute, or chronic dermatitis, but no specific findings are demonstrated.
- Peripheral blood for elevated eosinophils and basophils.
- Swab of infected skin may help with the isolation of a specific organism and antibiotic sensitivity.

- Possible allergy and sensitivity testing often indicates triggers such as food and environmental agents.
- Elevated IgE and decreased IgA are common.
- Erythrocyte sedimentation rate may be elevated in severe inflammation (ESR).
- A platelet count for thrombocytopenia helps exclude Wiskott-Aldrich syndrome.
- Scraping to exclude tinea corporis may be helpful.

## Assessment

- Laboratory tests if indicated (as above).
- Physical exam (pulmonary, EENT, cardiac, GI, dermatological).
- Identification of the triggers through testing, or avoidance and reintroduction.

## Plan

Treatment goals

- Identification and avoidance of triggers.
- Reduction of pruritis and discomfort.
- Prevention of secondary infection (bacterial or fungal).[14]
- Develop proper skin care habits, bathing, and lubricants/emollients to seal in moisture and allow water to be absorbed through the stratum corneum.
- Treatments should be monitored, as some treatments may make the condition worse.[15]
- Reduction of indoor air pollutants.[16]

Naturopathic Medicine[17]

- Rotation diets (especially in childhood),[18] avoidance diets,[19,] vegetarian diet[20]; assess overall diet with elimination and challenge and/or food sensitivity testing. Food diversification and avoidance diets should be done with supervision to avoid nutritional deficiencies.[21,22]
- Education in prevention of childhood disease through environmental and dietary interventions [23] [24]Exclusion of cow's milk and eggs.[25,26]
- Maternal dietary exclusions in pregnancy and lactation.[26,27] Maternal consumption of fatty acids during pregnancy and lactation.[28,29] Maternal intake of antioxidant vitamins, zinc, and selenium.[30,31]
- Vitamin D and E.[32,33]
- Anti-inflammatory nutritional supplements and nutritional support for the GI tract; antihistamine effects and antioxidant effects.
- Probiotics. [34,35,36,37]
- Botanicals: anti-inflammatory, liver support, GI support, anti-infective, skin tonics, antihistamines, and anti-allergic herbs.
- *Mahonia aquifolium* ointment,[38] oral *Konjac ceramide,* [39] topical St John's Wort,[40] topical Persimmon leaf,[41] topical *Sambucus ebulus*[42], topical *Malva sylventris*[43], topical *indigo naturalis.*[44]
- Topical and oral γ-linolenic acid (GLA)[45,] evening primrose (EPO)[46] and borage oil have mixed results. [47,48] Therapeutic doses of EPO were 500 g/day for 8 weeks.[49]

- Coconut and olive oil. [50,51]
- Sunflower seed oil topically.[52,53]
- Constitutional homeopathic prescription.
- Kanuka honey applied topically (with olive oil and beeswax).[54]
- Food and botanicals that help regular Th1/Th2 balance. [55]
- Colloidal oatmeal topically.[56,]
- Glycerin topically. [57,58]
- *Ficus carica* topically. [59]
- Omega-3 polyunsaturated fatty acid (ω-3 PUFA) supplementation during pregnancy.[60]
- Quercetin.[61]

Physical Therapy

- Hydrotherapy. Avoid hot baths. Lukewarm baths followed by the application of a moisturizer to avoid moisture evaporation. Baths can be taken with added oils.
- Local topical poultices to decrease irritation.
- Castor oil packs.
- Pine tar baths.[62]
- Phototherapy (ultraviolet light (ultraviolet B, narrow-band ultraviolet B, and high-intensity ultraviolet A).[63,64] Avoid long-term use.
- Wet pack therapy.

Relaxation Techniques and Behavioral Modification

- Improved skin hygiene.
- Autogenic training.[65]
- Hypnotherapy.[66]
- Behavioral therapy.
- Parental training.[67]
- Food and environmental allergen avoidance.
- Clothing should be soft next to the skin (e.g., cotton) and washed in a mild detergent with no bleach or fabric softener.
- Cool temperatures to reduce sweating which can exacerbate irritation and itch. A humidifier (cool mist) prevents excess skin drying.

Pharmaceuticals[68] (all of these have been associated with unwanted side effects with varying efficacy)

- Topical or systemic corticosteroids[69] are often the first-line therapy, but have side effects.
- Phototherapy.
- Emollient adjunct [70] wet wrap dressing adjunct.[71]
- Topical calcineurin inhibitors (for patients over 2 yrs.) – Picrolimus, Tacrolimus.[72,73]
- Topical antibiotic treatment or dilute bleach baths if secondary infection.[74]
- Vitamin D analogues.[75]

- Immunosuppressive therapies (cyclosporin, azathioprine, interferon-g, methotrexate). These are associated with several moderate-to-severe side effects which reduce their clinical applicability and patient compliance.[76,77,78,]
- Phosphodiesterase inhibitors (crisaborole) and JAK inhibitors (ruxolitinib)[79]
- Leukotriene inhibitors.
- Biologic agents (dupilomab, omalizubab, tralokinumab).[80,81]

Traditional Chinese Medicine (TCM)[82,83]

- Botanicals and Chinese herbs[84,85,86] (*Potentilla chinensis, Tribulus terrestris, Rehmannia glutinosa, Lophatherum gracile, Clematis armandii, Ledebouriella saseloides, Dictamnus dasycarpus, Paeonia lactiflora, Schizonepeta tenuifolia, and Glycyrrhiza glabrae).*[87,88,89]
- "Pei Tu Qing Xin Tang (PTQXT) composed of *Radix pseudostellariae, Forsythia suspensa, Ramulus Uncariae cum Uncis, Medulla Junci, Herba lophatheri, Semen coicis, Rhizoma dioscoreae, Concha ostreae,* and *Radix glycyrrhizae*[90].
- *Radix angelicae pubescentis* combined with UV-A radiation.[91]

## Length of Treatment

- Up to 4 weeks to achieve sustained improvement and longer for chronic cases.

## Criteria for Referral or Re-evaluation

- Ongoing acute symptoms without resolution after 4 weeks.
- Secondary infection not responding to treatment.
- Chronic - failure to resolve or repeated acute outbreaks over a period of several months.

## Resources for Clinicians

Eichenfield LF, et al. Guidelines of care for the management of atopic dermatitis. Section 1. Diagnosis and assessment of atopic dermatitis. *J Am Acad Dermatol*. 2014 Feb;70(2):338-51.

Kim BS, James WD. Atopic Dermatitis. http://emedicine.medscape.com/article/1049085-overview (accessed on June 17, 2022)

Galli E, Neri I, Ricci G, et al. Consensus Conference on Clinical Management of pediatric Atopic Dermatitis. Ital J Pediatr. 2016;42:26. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4776387/ (accessed on June 17, 2022)

## Resources for Patients

MedicineNet.com. Atopic Dermatitis.
http://www.medicinenet.com/atopic_dermatitis/page7.htm (accessed on June 17, 2022)

The American Academy of Dermatology. Eczema/Atopic Dermatitis.
http://www.aad.org/dermatology-a-to-z/diseases-and-treatments/a---d/atopic-dermatitis
(accessed on June 17, 2022)

The National Eczema Association. http://www.nationaleczema.org/ (accessed on June 17, 2022)

The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS). Atopic Dermatitis. 2014. http://www.niams.nih.gov/Health_Info/Atopic_Dermatitis/default.asp (accessed on June 17, 2022)

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