The Type 2 Inflammation Connection
Uncontrolled Signs and Treatment Goals

American College of Allergy, Asthma & Immunology

Conditions related to type 2 inflammation can be challenging to manage, including allergic rhinitis, asthma, atopic dermatitis (AD), chronic rhinosinusitis with nasal polyps (CRSwNP), eosinophilic esophagitis (EoE) and food allergies. Even with treatment, these conditions can get out of control, a signal that it is worsening. This chart is designed to help you recognize the symptoms that indicate your patient's condition is uncontrolled and provide insight into treatment goals. The complete eradication of symptoms may not always be possible but referring your patients with uncontrolled type 2 inflammatory conditions to a board-certified allergist/immunologist who can work with you will help ensure they can receive the most effective treatment and significantly improve their quality of life. Effective early control of these conditions may prevent permanent damage in some cases.

Condition	Uncontrolled	Treatment goals
Allergic Rhinitis 	**Child and Adult** • Nasal symptoms, including congestion, rhinorrhea, postnasal drip, repetitive sneezing • Red, puffy, watery eyes • Nasal, throat, eye itching • Sleep disturbances and mouth breathing leading to poor work or school performance	**Child and Adult** • Symptom relief • Improved sleep, which improves school or work performance **Special considerations** • Infants are not commonly diagnosed with allergic rhinitis • Common associated co-morbidities with type 2 inflammation include asthma, AD and food allergies • Treatment for allergic rhinitis may also help reduce the severity of asthma, as up to 40% of patients with allergic rhinitis have asthma (and 80% of people with asthma have allergic rhinitis), and the conditions may have overlapping triggers
Asthma 	**Infant** • Frequent coughing or wheezing, especially nocturnal, interrupting sleep • Dyspnea, including flaring nostrils and intercostal retractions • Increased respiratory rate • Discomfort or fussiness • Poor feeding • Use of quick-relief medication two or more times a week • More than two to three coritcosteroid bursts in a year • Required an emergency room visit or hospitalization **Child and Adult** • Frequent coughing or wheezing, especially nocturnal or exercise-induced • Dyspnea • Chest tightness • Restricted daily activities such as school, work, sports, socializing and going outside • Use of quick-relief medication two or more times a week • More than two corticosteroid bursts a year • Required an emergency room visit or hospitalization	**Infant, Child and Adult** • Minimal symptoms (cough, chest tightness, wheezing, dyspnea) occurring two or fewer days a week • Rare or no nocturnal awakenings due to asthma • Reduced use of reliever medications for acute symptom relief to two or fewer times a week • Minimal use of oral corticosteroids • Maintenance of normal activities **Special considerations** • Common associated co-morbidities with type 2 inflammation include allergic rhinitis, AD and food allergies
Atopic Dermatitis 	**Infant, Child and Adult** • Severe pruritis • Moderate-to-severe erythema or erythematous maculopapular rash and excoriation • More than 10% of the body covered in lesions – commonly affected areas include cheeks and extensor surfaces in infants, and flexor creases, face, hands or feet for children and adults. • Frequent sleep disturbances, impact on daily functioning, affecting school performance, work productivity, psychosocial well-being and mental health	**Infant, Child and Adult** • Symptom relief, including reduced pruritis and dermatitis • Prevention of exacerbations • Limit therapeutic risks • Improved sleep, school, work, mental health, daily functioning **Special considerations** • Common associated co-morbidities with type 2 inflammation include asthma, allergic rhinitis and food allergies

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Chronic Rhinosinusitis with Nasal Polyps (CRSwNP) 	**Child and Adult** • Nasal symptoms, including congestion, rhinorrhea, postnasal drip, repetitive sneezing • Sleep disturbances and mouth breathing leading to poor work and school performance • Decreased or loss of smell • Nasal polyps worsening or return after surgery	**Child and Adult** • Symptom relief, including reduced sinonasal symptoms • Improved sense of smell and taste • Improved quality of life • Limit therapeutic risks to minimize repeat surgery **Special considerations** • CRSwNP is rare in children and any young child with polyps should be tested for cystic fibrosis • Common associated co-morbidities with type 2 inflammation include asthma, allergic rhinitis and AD
Eosinophilic esophagitis (EoE) 	**Infant** • Feeding difficulties and failure to develop normal eating patterns • Failure to thrive • Regurgitation/emesis • Irritability **Child and Adult** • Dysphagia • Chest pain, reflux and stomach pain • Esophageal food bolus impaction requiring removal • Poor weight gain (in children) • Adoption of coping strategies that may impact quality of life, including cutting food into tiny bites, drinking a lot of water while eating, avoiding meat and other foods, avoiding social situations that involve eating and eating slowly and chewing excessively – usually the last one to finish a meal • Fibrostenosis of the esophagus	**Infant, Child and Adult** • Symptom relief and prevention of complications by reducing inflammation in the esophagus • Restore normal growth and development **Special considerations** • Common associated co-morbidities with type 2 inflammation include asthma, allergic rhinitis, AD and food allergies
Food Allergies 	**Infant, Child and Adult** • Increasing severity of reactions • Ongoing digestive issues including nausea, emesis, diarrhea • Anaphylaxis including recurrent allergic reaction symptoms such as red, watery eyes, urticaria, angioedema, hypotension, rhinorrhea, dyspnea, bronchospasm, tachycardia, dizziness or shock	**Infant, Child and Adult** • Prevention of reactions • Prompt treatment of acute reactions to prevent long-term effects, including death • Mitigation of food allergy impact on nutrition and health • Reduction of anxiety related to food allergies for patients and parents of children with food allergies **Special considerations** • Common associated co-morbidities with type 2 inflammation include asthma, allergic rhinitis, AD and EoE • If a patient has had an allergic reaction to a food, the clinician should prescribe epinephrine autoinjectors

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