

Allergy/Immunology – Marshall University Pediatrics

Description:

This is a clinical rotation about the most common chronic diseases affecting both children and adults. Residents will be introduced to allergy, asthma, and clinical immunology. They will become familiar with the skills of history taking, examination of patients, laboratory assessment, and interpretation of the results as they relate to the specialty. There will be involvement with outpatient management of conditions such as asthma, rhinitis, atopic dermatitis, anaphylaxis, drug reactions, food reactions, urticarial, and primary immunodeficiency. Residents will learn how to approach and resolve problems of immunodeficiency states. They should become familiar with allergy skin testing, pulmonary function testing, and the indications for allergen immunotherapy.

Note:

The goals and objectives described in detail below are not meant to be completed in a single one month block rotation but are meant to be cumulative, culminating in a thorough and complete Allergy and Immunology experience at the end of residency.

Primary Goals for this Rotation

GOAL: Prevention, Counseling and Screening (Allergy/Immunology). Understand the role of the pediatrician in preventing allergy and immunologic diseases, and in counseling and screening individuals at risk for these diseases.

Identify individuals at risk for developing allergic or immunologic disease by providing routine allergy/immunology screening of all patients and parents and offering prevention counseling that addresses:

1. Understand and apply current recommendations for feeding infants who are at risk for the development of food allergy
2. Recognize the effects of a restricted diet for multiple food allergies on the nutritional adequacy of a patient's diet
3. Smoking and household chemicals/irritants that may exacerbate allergic diseases
4. "Myths" related to allergic disease, e.g., its role in behavioral disorders such as ADHD and autism
5. Risk factors for development of asthma and allergic diseases including family history

Provide allergy/immunology prevention counseling to parents and patients with identified allergic diseases, including:

1. Allergen avoidance and environmental control, e.g., pets and indoor allergens

2. Access to lay organizations and support groups
3. Proper use of epinephrine self-injectors
4. Proper use of spacer/aerochamber devices with metered-dose inhalers

GOAL: Normal Vs. Abnormal. Develop a working knowledge of normal development of the immune system, and recognize pathophysiologic and other clinical findings that indicate deviations from the norm.

Describe the normal development and pathophysiology of the immune system, including the cellular, humoral, phagocytic and complement-based systems.

Discuss the classification of hypersensitivity reactions, e.g. Gell and Coombs classification.

Explain the clinical history and findings on physical examination that suggest the presence of allergic-based disease or immunologic dysfunction that requires further evaluation and treatment. Include discussion of family history and genetic factors.

Develop a strategy for the work-up of suspected allergic disease or immunodeficiency, based on presenting symptoms and signs.

Interpret clinical and laboratory tests to identify allergic disease or immunologic dysfunction, including: screening tests for immune deficiency (e.g., CBC with absolute lymphocyte and neutrophil counts, Immunoglobulin levels, DTH skin tests); delayed hypersensitivity; allergy skin testing; serology (e.g., screening with RAST); and pulmonary function tests.

Describe the relationship of allergic disease and immunodeficiency to otitis media, sinusitis, pharyngitis, meningitis and pneumonia.

GOAL: Undifferentiated Signs and Symptoms. Evaluate, treat, and/or refer patients with presenting signs and symptoms that suggest an allergic or immunologic disease process.

Create a strategy to investigate whether the following presenting signs and symptoms are caused by an allergic process or immunologic dysfunction, and determine if the patient should be treated or referred:

1. Cough
2. Wheezing
3. Skin rash
4. Recurrent pneumonia
5. Recurrent skin infections
6. Recurrent otitis, sinusitis, pharyngitis
7. Rhinorrhea
8. Red eyes
9. Gastrointestinal symptoms (vomiting, diarrhea, abdominal pain, etc.)
10. Failure to thrive
11. Vomiting, diarrhea (including bloody or mucoid stools)
12. Dyspnea or cough with exercise
13. Snoring

GOAL: Common Conditions Not Referred. Diagnose and manage patients with common allergic/immunologic conditions that generally do not require referral.

Diagnose, explain and manage the following allergic/immunologic conditions when they are mild to moderate in severity and without complications:

1. Allergic rhinitis
2. Allergic conjunctivitis
3. Atopic dermatitis
4. Asthma
5. Urticaria/angioedema
6. Food allergies
7. Common drug allergies
8. Insect sting allergy-local reactions
9. Primary Immunodeficiency (congenital, acquired, or metabolic)
10. Sinusitis and recurrent otitis media

GOAL: Conditions Generally Referred. Recognize, initiate management of, and refer patients with allergic/immunologic conditions that generally require referral.

Identify, explain, initially manage and refer the following allergic/immunologic conditions:

1. Allergic/immunologic conditions that are severe or refractory to therapy
2. Asthma, moderate or severe persistent
3. Patients who require diagnostic testing and/or immunotherapy
4. Chronic urticaria
5. Hereditary or severe angioedema
6. Anaphylaxis
7. Latex allergy
8. Immunodeficiency (congenital, acquired, or metabolic) with compatible symptoms
9. Serum sickness

Identify the role and general scope of practice of pediatric allergists and immunologists; recognize situations where children will benefit from the skills of specialists trained in the care of children; and work effectively with these professionals to care for children with allergies, asthma, and immunologic disorders.

GOAL: Anaphylaxis, Angioedema and Urticaria. Understand the role of the general pediatrician in the assessment and management of anaphylaxis, angioedema and urticaria.

Recognize the signs and symptoms of urticaria, angioedema and anaphylaxis.

Discuss the pathophysiology of urticaria, angioedema, and anaphylaxis.

Identify triggers for urticaria, angioedema, and anaphylaxis and provide counseling about avoidance.

Develop a treatment plan for initial management of urticaria, angioedema and anaphylaxis, including indications for use of epinephrine, antihistamines and steroids.

Establish an educational plan for a child with urticaria, angioedema, or anaphylaxis, including medical alert systems, trigger avoidance, and proper use of epi-pens and antihistamines.

Identify the indicators for an allergy referral of a child with urticaria, angioedema and anaphylaxis.
GOAL: Allergic Rhinitis and Conjunctivitis. Diagnose and manage patients with allergic rhinitis and conjunctivitis.
Identify the signs and symptoms of allergic rhinitis and conjunctivitis, including differentiation of allergic from other causes of rhinorrhea and red eyes.
Describe causes of rhinitis and conjunctivitis other than allergic disease.
Identify co-morbidities associated with allergic rhinitis and conjunctivitis, including asthma, eczema, sleep-disordered breathing, sinusitis, etc.
Discuss the indications, clinical significance and limitations of diagnostic tests for allergic rhinitis and conjunctivitis. Interpret the results of these tests: total peripheral eosinophil count, prick and intradermal skin tests, serum specific IgE tests, and total IgE levels.
Educate families and child care facilities about environmental and allergen controls that can alleviate allergic and nonallergic rhinitis and conjunctivitis, and discuss the non-infectious nature of allergic conjunctivitis.
Compare pharmacologic options for treatment of allergic and non-allergic rhinitis and conjunctivitis, considering potential side effects and drug interactions. These therapies include: oral and topical antihistamines and anticholinergics, topical steroids and vasoconstrictive agents, mast cell stabilizers, decongestants, anticholinergic agents, leukotriene modifiers, combination medications and emerging therapies (e.g. monoclonal IgE).
Identify the indicators for an allergy referral of a child with allergic rhinitis and conjunctivitis.
Discuss the guidelines for safe administration of immunotherapy. Administer immunotherapy prescribed by an allergist to a patient and establish a plan to monitor for untoward reactions.
GOAL: Asthma. Diagnose and manage patients with asthma.
Identify the signs, symptoms, and pathophysiology of asthma, and differentiate asthma from other causes of cough, wheezing, shortness of breath and exercise intolerance.
Discuss the indications, clinical significance, and limitations of diagnostic tests and procedures for asthma. Interpret the results of these tests and procedures: chest X-ray, pulmonary function testing, peak flow monitoring, spirometry, inhaler use (MDI, DPI), spacing devices (e.g. aero-chambers, inspirease,etc.), nebulizers, and asthma action plans.
Classify the baseline disease severity of a patient with asthma according to current national guidelines, e.g., mild-intermittent, mild-persistent, moderate-persistent or severe-persistent.
Identify associated diseases or co-morbid conditions related to asthma (e.g., GER, allergic rhinitis, etc.).

Identify triggers that exacerbate a patient's asthma (environmental, seasonal, infectious) and provide counseling about avoidance where feasible.
Compare the indications, effectiveness, side effects and costs of the different pharmacologic agents used in the treatment of asthma, and discuss "reliever" and "controller" therapy.
Establish a treatment plan for the child with asthma that includes routine follow-up for reassessment, and the initial treatment and referral of the patient with impending respiratory failure due to asthma.
Based on a patient's symptoms and disease severity classification, develop a written asthma action plan for home and school. Include assessment and recognition of asthma symptoms (e.g., symptom-driven vs. peak flow assessments), a step-wise pharmacological approach to the management of acute symptoms ("reliever" therapy) and chronic symptoms ("controller" therapy), and instructions about when to seek professional medical care.
Educate a patient and family about all aspects of asthma, including course of disease, quality of life, risk factors for sudden death, strategies to improve adherence to treatment, trigger avoidance, symptom recognition and monitoring, asthma action plans, medications and delivery systems, and seeking professional medical care.
Discuss the factors that affect patient/family and school adherence to treatment protocols and the key role of support services in reducing barriers to care.
Identify the indicators for an allergy or pulmonary referral of a child with asthma.
GOAL: Atopic Dermatitis. Understand the role of the general pediatrician in the assessment and management of atopic dermatitis.
Recognize the signs and symptoms of atopic dermatitis, differentiating atopic dermatitis from other causes of chronic skin disease.
Understand associations of atopic dermatitis with other allergic disorders, such as food allergy, rhinitis and asthma.
Identify triggers, both allergic and irritant, that worsen the atopic dermatitis condition and provide counseling for avoidance.
Design a treatment plan to manage atopic dermatitis that may include skin hydration and moisturization, options for topical anti-inflammatory medication, and use of antihistamines.
Develop a working knowledge of the side effects of topical ointments, in particular corticosteroids.
Identify the indicators for referral to allergy or dermatology specialists for the child with atopic dermatitis.
GOAL: Drug Allergy. Understand the principles, diagnosis and management of drug allergy.
Discuss the pathophysiology of drug allergy.
Recognize the signs and symptoms of drug allergies, including differentiating drug

allergy from other causes of skin rash, joint swelling and anaphylaxis.
Discuss the genetic basis, mechanisms and manifestations of drug allergy including urticaria, serum sickness, Stevens Johnson Syndrome, and anaphylaxis.
List the medications most commonly used to treat drug allergy and anaphylactic reactions.
Establish an education and treatment plan for a child with a drug allergy that includes drug avoidance and the use of antihistamines, epinephrine, steroids and supportive treatment.
Identify the indicators that would lead to subspecialist referral for a child with drug allergy.
GOAL. Food Allergy. Understand the role of the general pediatrician in the assessment and management of patients with food allergy.
Identify the signs and symptoms of food allergy and differentiate food allergy from other causes of skin rash, and GI or pulmonary symptoms.
Differentiate IgE-mediated food allergy from non-IgE mediated food allergy.
List the foods most commonly associated with food allergy.
Discuss the indications, clinical significance, and limitations of diagnostic tests and procedures to diagnose food allergies and interpret the results of skin testing, serum specific IgE testing, elimination diets, food challenges.
Explain the natural history of food allergies, including when suspected allergens may be introduced into the diet.
Create a treatment plan for a child with food allergies that includes food avoidance, food challenges, management of allergic symptoms, and emergencies.
Identify the indicators that would lead to subspecialist referral for a child with food allergy.
GOAL: Immunodeficiency. Understand the role of the general pediatrician in the assessment and management of patients with immunodeficiency.

Identify the signs and symptoms of immunodeficiency diseases, and differentiate immunodeficiency from other causes of acute and chronic disease, as well as primary from secondary immunodeficiency disorders.

1. Presenting signs and symptoms of potential immunodeficiency
 - a. Recognize the clinical characteristics of antibody deficiency syndromes after 4 to 6 months of age
 - b. Recognize the clinical characteristics of cellular immunodeficiency in the first few months after birth
 - c. Recognize the clinical findings associated with combined antibody and cellular immunodeficiency
 - d. Recognize the clinical characteristics of phagocytic disorders
 - e. Understand that some drugs administered for transplantation may induce immunodeficiency
 - f. Recognize the clinical features of graft-versus-host disease

Discuss the indications, clinical significance and limitations of diagnostic tests and procedures to assess immune function. Interpret the results of tests of: CBC (especially evaluation for age-appropriate absolute lymphocyte count (ALC) and absolute neutrophil count (ANC)), lymphocyte (T, B, NK cell) number and function, immunoglobulin levels, antibody function, mitogen and antigen assay for lymphocyte function, DTH skin testing, complement levels, and neutrophil assays, as well as laboratory evaluations for secondary immune disorders, such as HIV and CF.

Demonstrate the initial approach to evaluation, treatment and referral for a child with suspected immunodeficiency.

Discuss treatment options available for patients with primary immunodeficiency disorders and the potential harm of blood transfusions and live vaccines in these patients.

Under supervision of an immunologist, develop a treatment plan for a child with immunodeficiency, including pharmacologic management, precautions, and immunizations.

Rotation Specific Competencies

Patient Care:

1. Understands and weighs alternatives for diagnosis and treatment
2. Appreciates subtle findings on physical examination
3. Understands pertinent details to obtaining medical history in allergy/immunology
4. Develops and contributes to management plans
5. Competently understands/interprets procedures:
 - _____ Allergy Skin Testing: Indications, General Interpretation, Benefits, Risks
 - _____ Patch Testing: Indications, Benefits, Risks
 - _____ Pulmonary Function Testing: Indications and Interpretation
 - _____ Allergy Shots: Indications, Benefits, Risks

Medical Knowledge:

1. Is aware of indications, contraindications, and risks of commonly used medications and procedures
2. Applies the basic science, clinical, epidemiologic, and social-behavioral knowledge to the care of the patient

Interpersonal Skills and Communication:

1. Provides effective interaction with patients, families, and colleagues
2. Works effectually as a member of the health care team

Practice-based Learning and Improvement:

1. Undertakes self-evaluation with insight and initiative
2. Facilitates that learning of students and other health care professionals

Professionalism:

1. Is honest, reliable, cooperative, and accepts responsibility
2. Shows regard for opinions and skills of colleagues
3. Is responsive to needs of patients and society, which supersedes self-interest

Systems Based Practice:

1. Applies knowledge of how to partner with health care providers to assess, coordinate and improve patient care
2. Practices effective allocation of health care resources that does not compromise the quality of care

Recommended Reading Sources:

1. MedStudy. *Pediatrics Review Core Curriculum*. Seventh Edition, 2016-2017. "*Allergy and Immunology*". Huynh, S. (Sec. Ed.); Way, J. (Ed.). Colorado Spring, CO: Medstudy; 2015.
2. Geha R, Notarangelo L. *Cases Studies in Immunology: A Clinical Companion*. Seventh Edition. New York, NY: Garland Science; 2016.
3. www.utdol.com for specific Allergy/Immunology topic review

References:

1. American Board of Pediatrics, Content Outline, 2017
2. ACGME Program Requirements for Graduate Medical Education in Pediatrics, July 2017

*Updated and revised September 28, 2017 by Meagan Shepherd, MD