



## Recommended Curriculum Guidelines for Family Medicine Residents

# Allergy and Immunology

*This document was endorsed by the American Academy of Family Physicians (AAFP), the American College of Allergy, Asthma and Immunology (ACAAI), the Association of Departments of Family Medicine (ADFM), the Association of Family Medicine Residency Directors (AFMRD) and the Society of Teachers of Family Medicine (STFM), and was developed in cooperation with the St. Luke's Family Medicine Residency Program.*

### Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, knowledge and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME) <http://www.acgme.org>. The curriculum must include structured experience in several specified areas. Most of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center. Structured didactic lectures, conferences, journal clubs and workshops must be included in the curriculum with an emphasis on outcomes-oriented, evidence-based studies that delineate common and chronic diseases affecting patients of all ages. Targeted techniques of health promotion and disease prevention are hallmarks of family medicine. Appropriate referral patterns and provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME Web site. Current AAFP Curriculum Guidelines may be found online at <http://www.aafp.org/cg>. These guidelines are periodically updated and endorsed by the AAFP and, in many instances, other specialty societies as indicated on each guideline.

Each residency program is responsible for its own curriculum. ***This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.***

## **Preamble**

The scope of allergic and immunologic conditions includes disease processes that may seem minor and have little clinical significance, as well as those that are potentially life-threatening. These common conditions may have a significant social and economic impact on patients and their families. The specialty of family medicine encompasses the care of adults and children with allergic and immunologic diseases and promotes care that is both comprehensive and ongoing. Every family physician should be aware of the impact of allergic and immunologic problems on the individual and his or her family, as well as be able to perform diagnostic, preventive and therapeutic services to these patients. Preventive services may include identification and management of environmental and occupational factors. Interaction with the patient and his or her family is an integral part of family medicine education.

It is expected that the family physician will become proficient in the diagnosis and treatment of patients who have allergic and immunologic conditions. The family physician may find it appropriate to seek consultation from an allergist or immunologist and to actively engage in the co-management of the patient. In some severe cases, management by an allergist or immunologist may be indicated.

This Curriculum Guideline provides an outline of the attitudes, knowledge and skills that should be among the objectives of training programs in family medicine and that will lead to optimal care of patients with allergic or immunologic conditions by future family physicians.

## **Competencies**

At the completion of residency training, a family medicine resident should:

- Be able to demonstrate knowledge of allergic and immunologic conditions, including but not limited to rhinitis, asthma, urticaria, anaphylaxis, immunodeficiency and hypersensitivity reactions. (Medical Knowledge)
- Be familiar with the performance and interpretation of spirometry and skin testing. (Patient Care)
- Be able to discuss diagnostic, therapeutic and preventive strategies of allergic and immunologic conditions with the patient and his or her family. (Communication Skills)
- Demonstrate respect and sensitivity to patients. (Professionalism)
- Be familiar with the appropriate application of evidence-based guidelines regarding allergic and immunologic conditions. (Practice-based Learning)
- Appropriately utilize allergy and immunology consultation and be familiar with established reporting processes for allergies and allergic reactions. (Systems-based Practice)

## Attitudes

The resident should demonstrate attitudes that encompass:

- An understanding of the personal and societal impact of allergic and immunologic diseases.
- An awareness of the importance of coordinated care between family physicians and allergy/immunology subspecialists to provide optimal personal medical care.
- Recognition of the importance of family and environmental factors in the prevention and treatment of allergic and immunologic conditions.
- Lifelong learning and contribution to the body of knowledge about allergic and immunologic conditions.
- The willingness to be accessible to and accountable for his or her patients.
- An awareness of the importance of cost-effective care.

## Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge of:

1. The biochemical and histological basis of the immune response, including the role and function of:
  - a. T and B lymphocytes
  - b. Cytokines
  - c. IgE immunoglobulins
  - d. Mast cells
  - e. Complement
2. The classification scheme of immune damage:
  - a. Type I (anaphylactic/immediate, late phase and dual reactions)
  - b. Type II (cytotoxic reactions)
  - c. Type III (Arthus reaction)
  - d. Type IV (delayed)
  - e. Type V (antireceptor)
3. The pathophysiology, identification and treatment of primary and secondary immunodeficiency syndromes.
4. Asthma, including:
  - a. Definition and National Institutes of Health severity index
  - b. Impact on quality of life and cost for both the individual and society
  - c. Major pathologic factors in airway obstruction
    - i. Inflammatory mucosal edema

- ii. Smooth muscle-mediated bronchoconstriction
  - iii. Sputum secretions
  - iv. Airway remodeling
  - d. Triggers of asthma symptoms
    - i. Infection
    - ii. Irritants, including tobacco smoke and environmental pollutants
    - iii. Exercise
    - iv. Allergens
    - v. Drugs
    - vi. Gastrointestinal reflux disease
    - vii. Acute emotional stress
  - e. Triggers of inflammation, such as allergens, occupational exposure, and infection
  - f. Diagnosis and differential diagnosis of asthma, including
    - i. Appropriate history and physical examination
    - ii. Allergy evaluation
    - iii. Pulmonary function testing
    - iv. Methylcholine challenge testing
  - g. Monitoring of symptoms using peak flow meters
  - h. Appropriate use of preventive measures, such as avoidance of triggers and immunotherapy
  - i. Medical treatment of asthma
    - i. Beta-2 agonists
    - ii. Methylxanthines
    - iii. Anticholinergics
    - iv. Mast cell stabilizers
    - v. Leukotriene receptor antagonists
    - vi. Steroids (both inhaled and systemic)
  - j. Identification and management of status asthmaticus
  - k. Management of asthma in patients who have concurrent medical conditions, such as pregnancy, diabetes, preoperatively and heart disease
  - l. Factors in compliance, such as:
    - i. Education
    - ii. Avoidance of environmental triggers
    - iii. Early intervention of social and behavioral components
5. Rhinitis, including:
- a. Symptoms, signs and pathophysiology of:
    - i. Seasonal allergic rhinitis
    - ii. Perennial allergic rhinitis
    - iii. Perennial nonallergic rhinitis
    - iv. Vasomotor rhinitis
    - v. Rhinitis medicamentosa
  - b. Triggers
    - i. Inhalant allergens (household, outdoor environmental)
    - ii. Irritants

- iii. Physiologic factors
    - iv. Endocrinologic factors
    - v. Occupational agents
  - c. Appropriate use of diagnostic testing, such as nasal smears, skin testing and in vitro testing (RAST)
  - d. Management
    - i. Environmental
    - ii. Pharmacotherapy
      - 1). Antihistamines
      - 2). Sympathomimetics
      - 3). Mast cell stabilizers
      - 4). Steroids (inhaled and systemic)
      - 5). Anticholinergics
    - iii. Immunotherapy
  - e. Associated conditions
    - i. Sinusitis
    - ii. Orthodontics
    - iii. Otitis media, serous otitis media, nasal polyps, anosmia, allergic conjunctivitis
    - iv. Sleep disorders
6. Adverse reactions to drugs, foods and biologicals
- a. Drugs
    - i. Classification: toxicity, intolerance, side effects, allergic, interactions, genetic, idiosyncratic
    - ii. Diagnosis: history, physical examination, skin testing
    - iii. Management: pharmacotherapy of acute reactions, avoidance, therapeutic desensitization
  - b. Foods
    - i. Classification: toxicity, intolerance, physiologic reactions, genetic, allergic, additives, dermal allergy
    - ii. Diagnosis: history, physical examination, in vitro testing, elimination diet, challenge diet
7. Dermatitis
- a. Etiology and pathophysiology of allergic contact dermatitis and atopic dermatitis
  - b. Distribution and clinical characteristics
  - c. Patch testing
  - d. Management: avoidance, environmental control, soaks and baths, lubricants, steroids, antipruritic drugs, diet
8. Anaphylaxis
- a. Precipitating factors: stinging insects, latex, pharmaceuticals
  - b. Pathophysiology
  - c. Signs and symptoms: skin, respiratory, gastrointestinal tract, cardiovascular

- d. Diagnosis
  - e. Treatment: epinephrine, fluids, antihistamines, steroids, vasopressors, endotracheal intubation
  - f. Prevention:
    - i. Patient education: anaphylactic kit, sting avoidance, sources of allergens
    - ii. Indications for venom immunotherapy
9. Urticaria and angioedema
- a. Classification
    - i. Acute urticaria and angioedema
    - ii. Recurrent acute urticaria
    - iii. Chronic urticaria
    - iv. Hereditary angioedema
  - b. Wheal and flare response
  - c. Immunologic and nonimmunologic mechanisms
  - d. Diagnosis
  - e. Management: environmental, diet, antihistamines, sympathomimetics, steroids

## Skills

In the appropriate setting, the resident should demonstrate the ability to independently perform or appropriately refer:

1. Appropriate performance and interpretation of pulmonary function tests:
  - a. Peak expiratory flow rate (PEFR)
  - b. Spirometry, including measurements of forced expiratory flow (FEV), forced vital capacity (FVC), and FEV/FVC ratio
  - c. Flow volume loops
  - d. Exercise challenge testing
2. Appropriate ordering and interpretation of:
  - a. Skin testing
    - i. Puncture or prick testing
    - ii. Intradermal
    - iii. Interfering conditions and medications
  - b. In vitro testing
    - i. IgE assay techniques
    - ii. Methods of reporting
    - iii. Interpretation, sensitivity and specificity
3. Counseling patients and their families about the proper techniques to avoid environmental triggers for allergic conditions.

4. Conducting a comprehensive history and physical examination with special emphasis on the diagnosis of allergic and immunological conditions.
5. Integrating factors in the patient's family, home and general lifestyle into the diagnostic and therapeutic process.
6. Consulting with physicians and other healthcare professionals, including the critical evaluation and selective use of consultant advice and the integration of management in critical care situations.
7. The use of local and national reporting systems for allergic reactions to pharmaceutical agents.

## **Implementation**

The development of core cognitive knowledge and appropriate skills in the care of the allergic patient requires experience in a structured educational component of a family medicine residency program. Written goals and educational objectives are necessary. This need not be a "block rotation," but the educational experience must be appropriately identified and structured. Most of this experience will be in an outpatient setting with qualified physician teachers and allergy/immunology consultants.

If a block rotation is developed, a typical week of activities might include hospital rounds, departmental conference, informal discussion with the allergy/immunology consultant, evaluation of patients under the supervision of the allergy/immunology consultant and participation in administration of immunotherapy, skin testing and pulmonary-function tests. Adequate time to perform detailed examinations of patients (both new and established) should be provided. Residents will obtain substantial additional clinical experience in allergy/immunology therapy throughout the three years of their experience in the family medicine center. A significant number of patients who have allergic and immunologic conditions should be a part of each resident's family medicine panel of patients.

## **Resources**

Expert panel report 3: guidelines for the diagnosis and management of asthma. Bethesda, Md.: National Heart, Lung, and Blood Institute, 2007.

Joint Task Force on Practice Parameters; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma & Immunology; Joint Council of Allergy, Asthma and Immunology. The diagnosis and management of anaphylaxis. *J Allergy Clin Immunol.* 1998;101(6 pt 2):S465-528.

Northwestern University Allergy-Immunology Syllabus: Residents and Students. *Allergy and Asthma Proceedings.* July-August 2004;25(suppl 1):4.

Busse WW, Lemanske RF Jr. Expert panel report 3: moving forward to improve asthma care. *J Allergy Clin Immunol* 2007;120:1012-4.

Adelman DC, Casale TB, Corren J. Manual of Allergy and Immunology. 4<sup>th</sup> ed. Philadelphia, Pa.: Lippincott Williams & Wilkins, 2002.

Adkinson FN, Middleton E. Middleton's Allergy: Principles & Practice. 6<sup>th</sup> ed. Philadelphia, Pa.: Mosby, 2003.

## **Web Sites**

The American College of Asthma, Allergy and Immunology  
<http://www.acaai.org>

The British Society for Allergy & Clinical Immunology  
<http://www.bsaci.org/>

Department of Health and Human Service, National Institute of Health, National Heart Lung and Blood Institute – Information of Health Professionals  
<http://www.nhlbi.nih.gov/guidelines/asthma/>

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