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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).*

## Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Topic competencies, 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 prevention, diagnosis, and treatment of allergic and immunologic conditions is an everyday occurrence for the practicing family physician, whether it be the management of more benign conditions such as allergic rhinitis or severe and potentially life-threatening diseases such as anaphylaxis or status asthmaticus. In addition to the immediate medical implications of these complex processes, significant social and economic facets may dramatically impact patients and their families and must be anticipated and addressed in a pro-active and conscientious manner. The specialty of family medicine encompasses the care of adults and children with allergic and immunologic diseases and promotes care that is comprehensive and continuous. 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, therapeutic, and preventive services, including identification and management of environmental and occupational factors. A thorough knowledge of allergic and immunologic conditions and the practical application of this knowledge to their patients 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 must be actively engaged in the co-management of their patients. 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 the diagnosis, treatment, and prevention 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 in a compassionate, effective manner. (Interpersonal and Communication Skills)
- Demonstrate respect and sensitivity to patients and their families. (Professionalism)
- Be familiar with the appropriate application of evidence-based guidelines regarding allergic and immunologic conditions. (Practice-based Learning and Improvement)
- Appropriately utilize allergy and immunology consultation and be familiar with established reporting processes for allergies and allergic reactions. (System-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 ability to understand and use the 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. Methacholine challenge testing
  - g. Monitoring of symptoms using peak flow meters
  - h. Appropriate use of preventive measures, such as avoidance of triggers and immunotherapy
  - i. Ability to complete and implement an asthma action plan

- j. 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)
  - k. Identification and management of status asthmaticus
  - l. Management of asthma in patients who have concurrent medical conditions, such as pregnancy, diabetes, preoperatively, and heart disease
  - m. Management of asthma in the athlete, including evaluation and management of exercise-induced bronchospasm
  - n. 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 and response to bronchodilator administration
  - 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

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## **Website Resources**

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

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

U.S. 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/health/indexpro.htm>

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