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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).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, behaviors, 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), www.acgme.org. The family medicine curriculum must include structured experience in several specified areas. Much of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center, although additional experience gained in various other settings (e.g., an inpatient setting, a patient's home, a long-term care facility, the emergency department, the community) is critical for well-rounded residency training. The residents should be able to develop a skillset and apply their skills appropriately to all patient care settings.

Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum to supplement experiential learning, with an emphasis on outcomes-oriented, evidence-based studies that delineate common diseases affecting patients of all ages. Patient-centered care, and targeted techniques of health promotion and disease prevention are hallmarks of family medicine and should be integrated in all settings. Appropriate referral patterns, transitions of care, and the 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 website. Current AAFP Curriculum Guidelines may be found online at 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 are everyday occurrences for the practicing family physician, whether it be the management of more benign conditions (e.g., allergic rhinitis) or severe and potentially life-threatening conditions (e.g., anaphylaxis, 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 proactive and conscientious manner. The specialty of family medicine encompasses the care of adults and children who have 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 patient and his or her family, and be able to perform diagnostic, therapeutic, and preventive services, including identification and management of environmental and occupational factors. Gaining thorough knowledge of allergic and immunologic conditions and being able to apply this knowledge to patients in practice are integral parts of family medicine education.

Family physicians are expected to 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 comanagement of their patients. In some severe cases, management by an allergist or immunologist may be indicated.

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

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) by taking care of such patients appropriately (Patient Care, Medical Knowledge)
- Be familiar with the performance and interpretation of spirometry and skin testing (Patient Care, Medical Knowledge)

- Be able to discuss diagnostic, therapeutic, and preventive strategies for 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. Accept constructive feedback and provide constructive feedback to others. (Professionalism)
- Be familiar with the appropriate application of evidence-based guidelines regarding allergic and immunologic conditions. Acknowledge gaps in personal knowledge and expertise, and appropriately ask for feedback. (Practice-based Learning and Improvement)
- Appropriately utilize allergy and immunology consultation, and be familiar with established reporting processes for allergies and allergic reactions. Demonstrate understanding of how individual disease burden, health care resources, and costs impact patients, families, populations, and the health care system. (Systems-based Practice)

Attitudes

The resident should demonstrate attitudes that encompass:

- Understanding of the personal and societal impact of allergic and immunologic conditions
- Awareness of the importance of coordinating care between family physicians and allergy/immunology subspecialists to provide optimal patient care
- Recognition of the importance of family, community, 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
- Willingness to be accessible to and accountable for his or her patients
- Awareness of the importance of cost-effective care

Knowledge

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

1. 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. 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. Pathophysiology, identification, and treatment of primary and secondary immunodeficiency syndromes
 4. Asthma, including the following:
 - a. Definition of asthma, and ability to understand and use the National Institutes of Health (NIH) asthma classification and severity index
 - b. Impact on quality of life and cost for both the individual and society
 - c. Defined strategies to reduce impairment and risk
 - d. Major pathologic factors in airway obstruction
 - i. Inflammatory mucosal edema
 - ii. Smooth muscle-mediated bronchoconstriction
 - iii. Sputum secretions
 - iv. Airway remodeling
 - e. Triggers of asthma symptoms
 - i. Infection
 - ii. Irritants, including tobacco smoke and environmental pollutants
 - iii. Exercise
 - iv. Allergens
 - v. Drugs
 - vi. Gastroesophageal reflux disease (GERD)
 - vii. Acute emotional stress
 - f. Triggers of inflammation, such as allergens, occupational exposure, and infection
 - g. Diagnosis and differential diagnosis of asthma, including the following:
 - i. Appropriate history and physical examination
 - ii. Allergy evaluation
 - iii. Pulmonary function testing
 - iv. Bronchoprovocation challenge testing (e.g., methacholine, exercise)
 - h. Monitoring of symptoms using peak flow meters

- i. Appropriate use of preventive measures, such as avoidance of triggers and immunotherapy
 - j. Ability to complete and implement an asthma action plan
 - k. Medical treatment of asthma
 - i. Beta-2 agonists
 - ii. Steroids (both inhaled and systemic)
 - iii. Mast cell stabilizers
 - iv. Leukotriene receptor antagonists
 - v. Anticholinergics
 - vi. Methylxanthines
 - l. Identification and management of status asthmaticus
 - m. Management of asthma in patients who have concurrent medical conditions (pregnancy, diabetes, heart disease) and preoperatively
 - n. Management of asthma in the athlete, including evaluation and management of exercise-induced bronchospasm
 - o. Factors in compliance, such as:
 - i. Education
 - ii. Avoidance of environmental triggers
 - iii. Early intervention of social and behavioral components
5. Rhinitis, including the following:
- a. Symptoms, signs, and pathophysiology of the following:
 - 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 (radioallergosorbent test [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 used in diagnosis of various types of dermatitis
 - 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
 - iii. Knowledge of epinephrine delivery systems

9. Urticaria and angioedema
 - a. Classification
 - i. Most common causes of acute urticaria versus 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 the following skills:

1. Appropriately performing and interpreting pulmonary function tests
 - a. Peak expiratory flow rate (PEFR) versus symptomatic monitoring. PEFR is not considered superior to symptomatic monitoring but is still recommended for patients who have difficulty recognizing symptoms (e.g., patients on beta blockers, patients who have diabetes and neuropathy)
 - b. Spirometry, including measurements of forced expiratory volume (FEV), particularly forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and FEV/FVC ratio and response to bronchodilator administration
 - c. Flow volume loops
 - d. Exercise challenge testing
2. Appropriately ordering and interpreting the following:
 - 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 and management of allergic and immunologic conditions
5. Integrating factors in the patient's family, home, and general lifestyle into the diagnostic and therapeutic process
6. Demonstrating an awareness of over-the-counter products and proper utilization of these products versus the need for prescription medications
7. Consulting with physicians and other health care professionals, including critically evaluating and selectively using consultant advice, and integrating management in critical care situations
8. Using local and national reporting systems for allergic reactions to pharmaceutical agents

Implementation

The development of core cognitive knowledge and appropriate skills for the care of the allergic patient requires experience in a structured educational component of a family medicine residency program. Written competency-based goals and educational objectives are necessary. This need not be a "block rotation"—it could be a longitudinal experience—but the educational experience must be appropriately identified and structured. Most of this experience will be in an outpatient setting with appropriately 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. Each resident's panel of patients in the family medicine center should contain an appropriate number of patients who have allergic and immunologic conditions.

Resources

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Website Resources

American Academy of Allergy, Asthma & Immunology (AAAAI). www.aaaai.org

American College of Allergy, Asthma & Immunology (ACAAI). www.acaai.org

British Society for Allergy & Clinical Immunology (BSACI). www.bsaci.org/

National Institutes of Health, National Heart, Lung, and Blood Institute. Health Professionals. www.nhlbi.nih.gov/health/indexpro.htm

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