

Shaping GME: The Future of Allergy and Immunology Major Revisions to the Program Requirements for Graduate Medical Education in Allergy and Immunology Summary of Themes and Insights

Overview

Every 10 years, the ACGME Review Committees are required to evaluate the applicable specialty-specific Program Requirements for revision. In 2017, the ACGME re-envisioned the process by which this is done and piloted a new approach within the specialty of internal medicine. The new process, which includes scenario-based strategic planning, requires a writing group (composed of Review Committee members and ACGME Board members, including public members) and the specialty community to think rigorously and creatively about what the specialty will look like in the future prior to proposing any revisions, recognizing that the future is marked with significant uncertainty.

Key Insights about the Practice of the Allergist/Immunologist of the Future

Several themes emerged from the scenario planning efforts that provide insight into the allergy and immunology specialists of the future and their practice. It is recognized that the allergist/immunologist of the future will not achieve mastery of all these competencies during residency alone. Residency must serve as the foundation for career-long professional development and adaptation to a changing health care system and community needs.

Proposed Definition of the Allergy and Immunology Physician

Allergy and immunology specialists are physicians with expertise in diagnosing, treating, managing, and preventing allergic and immunologic disorders in both children and adults. They are experts in human immune system function and its role in maintaining health, and in the variable and often overlapping clinical manifestations of immune system dysfunction, including allergy, asthma, primary and secondary immunodeficiency, immune dysregulation, and disorders of mast cells, basophils, and eosinophils. They have expertise in genomics and its application to diagnosis, genomic manipulation, and pharmacotherapy. They are experts in the therapeutic and diagnostic use of vaccines. They evaluate individuals with allergic/immunologic diseases and perform comprehensive diagnostic testing to investigate these conditions, including allergy testing, food and medication challenges, quantitative and qualitative assessment of the immune system, mast cell assessment, functional testing of the airways, and genetic testing. They have expertise in the use of medications, biologic therapies, allergen immunotherapy, and other treatment modalities that modulate immune dysfunction. They evaluate allergic and immunologic diseases across organ systems, and provide high-quality, comprehensive, patient-centered care. They adapt therapeutic, diagnostic, and preventive strategies based on new medical evidence and continuously modify their practice in a changing health care setting, expanding their expertise as new developments and technologies emerge. They understand the impact of pollution and climate change on allergic and immunologic diseases, and in strategies to reduce related health impacts.

Allergy and immunology specialists serve as advocates and educators for patients with allergic and immunologic diseases and patients' families. They are trained to provide comprehensive and compassionate care for their patients in a variety of settings, including inpatient, outpatient, and virtually/telemedicine. They demonstrate professionalism and cultural humility in communications with patients/families, colleagues, and the broader health care environment. They involve patients/families in shared decision making to optimize care and improve quality of life based on the patient's personal values.

Allergy and immunology specialists actively collaborate and serve as resources for the broader medical community, patients/families, and the public, answering questions related to evaluation, management, and prevention of allergic and immunologic conditions. They understand the health-related needs of their community, including accessibility, affordability, and reducing barriers to care. They have a strong presence within their communities, where they promote health and health equity in ways that build public trust in the profession. They serve as advocates for care which reflects and addresses community needs. They promote a diverse, inclusive, and equitable work and educational environment to strive for improved outcomes for all patients. They are knowledgeable about social determinants of health and their influence on health outcomes, and actively promote efforts to address them to promote health equity.

Allergy and immunology specialists have expertise in leading and participating in interprofessional medical teams to promote optimal patient outcomes. They also have expertise in managing medical practices, including knowledge of system-based payment models, and in incorporating emerging technologies to increase efficiency, cost effectiveness, and quality of care in practice.

Allergy and immunology specialists strive to be self-reflective and to demonstrate emotional intelligence in their interactions with patients/families and colleagues. They maintain personal well-being to promote resilience and ensure optimal patient care; they serve as role-models to promote the practice of well-being for their medical teams.

Future Allergy and Immunology Residency Education and Training

In each strategic planning scenario, strategies were developed to successfully educate and train the allergist/immunologist of the future. The strength of each strategy was then assessed in each of the other three scenarios. Strategies that were most successful across scenarios were considered most likely to be useful in any potential future. Six themes emerged from the consolidation of the diverse strategies, with specific sub-themes described below:

- 1. Adopting New Educational Content**
- 2. Embracing New Teaching and Learning Paradigms**
- 3. Meeting Technological Challenges**
- 4. Answering the Call on Climate and Environment**
- 5. Cultivating Leaders and Professionals**
- 6. Instilling Resilience and Adaptability**

1. Adopting New Educational Content

Allergy and immunology specialists adapt education to new knowledge and technologies, adjusting their scope of expertise and practice to provide for the comprehensive care needs of their patients in a rapidly evolving health care environment.

Allergy and immunology residency programs will:

- Incorporate dedicated training in human genetics and epigenetics of allergy and immunology mechanistic pathways into the curriculum, to include:
 - interpretation of results of genetic testing, including whole exome sequencing, whole genome sequencing, and variants of uncertain significance; and,
 - involvement of medical geneticists and genetic counselors in training.
- Strengthen the education in immunology to include inborn errors of immunity, secondary immunodeficiency, and immune dysregulation, to include:
 - detailed, mechanistic immuno-biology knowledge correlated with clinical manifestations of disease and pathway-driven therapies;
 - understanding of inflammatory disease pathways and implications for immune diseases; and,
 - demonstration of competence in selecting and interpreting complex quantitative and functional immunology lab testing alongside immunomodulatory therapies.
- Incorporate advanced immunopharmacology training, including immunomodulatory therapies.
- Institute formal education in genomic manipulation.
- Institute formal education in pharmacogenomics.
- Enhance the curriculum to understand critical aspects of immunization health care.
- Incorporate education in the prevention of allergic diseases.

2. Embracing New Teaching and Learning Paradigms

Training of allergy and immunology specialists includes innovative teaching methods to ensure comprehensive training in allergic and immunologic diseases, and is adaptive to ensure that individual learners are prepared for autonomous practice.

Allergy and immunology residency programs will:

- Promote innovative methods of learning to develop adaptive, creative, and critical-thinking skills.
- Provide education on actionable and timely feedback.
- Provide individualized curriculum and experience based on the learner's developmental needs and intended practice environment.

3. Meeting Technological Challenges

Allergy and immunology specialists are trained to use emerging technologies to enhance practice, and to develop and critically analyze clinical and epidemiologic studies to inform practice.

Allergy and immunology residency programs will:

- Provide experiences that support the development of resident proficiency in conducting comprehensive and humanistic telemedicine visits.
- Incorporate skill development in understanding the applications, benefits, and limitations of emerging technologies such as artificial intelligence.
- Cultivate the principles of applicable medical informatics to optimize the quality of care.

- Educate residents in evaluation and response for data that signal emerging public health priorities in allergy and immunology.

4. Answering the Call on Climate and Environment

Allergy and immunology specialists are experts in understanding the effects of climate and environmental exposures on allergic and immunologic disorders, as well as methods to limit their effects.

Allergy and immunology residency programs will:

- Incorporate training in health effects of climate change and air quality and the role of the allergy and immunology specialist in limiting effects of environmental exposure to patients.
- Incorporate training in health effects from occupational exposures that impact allergic and immunologic diseases.
- Provide education of the role that the indoor environment plays in development and management of allergic and immunologic health.

5. Cultivating Leaders and Professionals

Allergy and immunology specialists are trained to competently work in and lead interprofessional health care teams in complex environments.

Allergy and immunology residency programs will:

- Provide training in developing and leading interprofessional teams.
- Provide education in clinical operation and management that incorporates both efficiency and value.
- Teach communication strategies related to difficult situations that are sensitive to patients' values and belief systems.

6. Instilling Resilience and Adaptability

Allergy and immunology specialists are adaptable and prepared to work in multiple environments.

Allergy and immunology residency programs will:

- Encourage exposure of learners to diverse practice environments to promote professional adaptability.
- Educate residents on the development and incorporation of skills related to self-reflection and burnout mitigation to promote high-functioning teams.

Next Steps

The Allergy and Immunology Writing Group respectfully requests feedback regarding the major themes described above, including the vision of the future allergist/immunologist and program strategies. The group seeks diverse perspectives—from the public, patients, families of patients, community agencies, clinicians within and outside allergy and immunology, and all stakeholders in health care and population health.

The feedback received will help inform the development of the new Program Requirements for Graduate Medical Education in Allergy and Immunology, which will then be posted for public comment.

Questions for Stakeholders to Consider

Considering that the requirements developed under the above program strategies will affect physicians practicing from approximately 2025-2050:

- What, if any, additional educational experiences should be considered in support of meeting the aspirational definition of the allergist/immunologist, as proposed above?
- Describe any potential challenges a program might face in providing the experiences described above. What additional resources might be required to support implementation of these experiences?
- In addition to the themes and strategies described above, what, if any, additional issues should be addressed in the revised Program Requirements?
- Describe any potential unintended consequences that may result from implementing the strategies above.
- What general areas within the existing Program Requirements for Graduate Medical Education in Allergy and Immunology do not support the future strategies described above?

Addendum

What is scenario-based planning?

Scenario-based planning is a technique by which organizations develop and test their readiness for the future using a range of alternative futures or scenarios. In this case, these scenarios are detailed, systematically developed descriptions of operating environments that the US medical profession might face over the next 25 years or more. This is a technique for managing uncertainty, risk, and opportunity. It yields a strong strategic framework for understanding future needs and a practical basis for immediate action. The intent is not to predict what the future will be and then build a master plan, but rather to ask what the future might hold and identify actions that can be taken today that are most likely to be valuable regardless of how the future turns out. As a result, the technique relies far more on expert judgment and less on quantitative trend forecasts.

What has taken place so far?

In 2013, the ACGME Board of Directors engaged in a scenario-based planning exercise using four widely varied, plausible, internally consistent scenarios describing the range of the future context for health care delivery. These same scenarios were used again during two workshops for the Review Committee for Internal Medicine's Program Requirement revision process in 2017.

The process resulted in a summary of general insights about the practice of medicine in the future, followed by key insights about the internist in 2035 that worked well and were viable regardless of scenario, and final recommendations for what residency programs should do to prepare the internal medicine resident to practice in 2035. The Review Committee for Internal Medicine then used this information to design the recent major revisions to the Program Requirements for Graduate Medical Education in Internal Medicine.

The process was refined as a result of the experiences with internal medicine, and subsequently with family medicine, pediatrics, general surgery, emergency medicine, vascular surgery, colon and rectal surgery, and ophthalmology. Allergy and immunology is the ninth specialty to embark on this new major revision process through scenario-based planning. New scenarios were developed and updated for envisioning the future in 2050 or beyond. These are:

- Now You're on Your Own – A dynamic, high-technology world characterized by a novel mix of libertarian economics and progressive social policies, with a rich economy.
- New New Deal – Following decades of political division and economic stagnation, this world is based on social democracy, civic unity, bold government actions, economic rebound, and public optimism.
- Ex Uno, Plures – A world with a weak federal government, strong independent states, divisive culture wars, no safety nets, isolationism, and near-depression economics.
- One Giant Leap – A world of rapid temperature rise and extreme weather causing havoc and widespread anxiety, and a large shift in government priorities, with sluggish economics.

Forty-five participants representing the allergy and immunology community, other specialties, and related fields attended a workshop in November 2023. The focus was to provide the Review Committee with insights regarding what the practice of allergy and immunology could look like in each scenario.

Additionally, a literature review on key topics identified by the Allergy and Immunology Writing Group was conducted, along with a series of one-on-one interviews with patients, allergist/immunologists who recently completed residency, and health care channel influencers.

Above is a summary of the results of these efforts—key insights about the allergist/immunologist of the future that worked well and were viable regardless of the scenario, and recommendations for what programs should do to prepare allergy and immunology residents to practice in 2050. The Writing Group will use these findings and public comments to begin its major revision process in later this year.