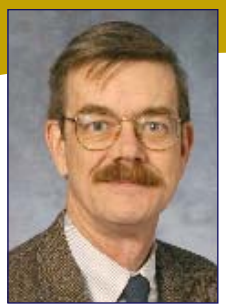
Division of Allergy and Inflammation



Peter F. Weller, MD, Chief

Overview

The Division of Allergy and Inflammation at Beth Israel Deaconess Medical Center has as its mission to provide excellent patient care, teaching and research pertinent to allergic and related immunologic diseases. Clinical and research faculty are nationally and internationally recognized for their expertise. The staff of the Division includes physicians, supported by experienced nurses and a nurse-practitioner. Educational activities are aimed at Harvard Medical School students, medical residents in training at Beth Israel Deaconess Medical Center and others. Research activities, focusing on basic mechanisms of allergies and inflammation, have coordinated with international centers and provided research training opportunities for national and international research fellows. The Division includes three clinical physicians, six research faculty, four research fellows and three research associates.

Clinical Activities

The Division provides clinical services and expertise related to allergic diseases, asthma and immunodeficiency disorders in both inpatient and outpatient settings. With the needs of patients in mind, the Division emphasizes quick access to care. Services provided include consultative, diagnostic evaluations and primary allergy clinical care. The Division's clinical services are provided in a team approach with physicians, a nurse-practitioner and other nursing staff working collaboratively. The Division provides general outpatient Allergy and Clinical Immunology services in its new offices at 1 Brookline Place, Brookline Village and at the main Beth Israel Deaconess Medical Center campus, as well as the Lexington and Chelsea satellite facilities. Our physicians have expertise in the diagnosis and management of allergic and inflammatory diseases, including allergic rhinitis, allergic conjunctivitis, sinusitis, asthma, food allergy, atopic dermatitis, urticaria, angioedema, anaphylaxis, drug hypersensitivity, latex allergy, hypereosinophilic syndromes, mast cell disorders, and immunodeficiency disorders. The Division's clinical outpatient volume is approximately 3700 patients each year.

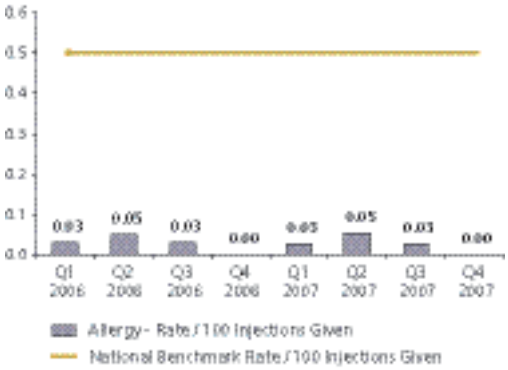
The Division also maintains an inpatient consultation service at the main Beth Israel Deaconess Medical Center campus. We are available to assist with any inpatient allergic or immunological issues, including the evaluation and management of drug allergy, drug desensitization, cutaneous eruptions, anaphylaxis, hypereosinophilic disorders and primary immunodeficiency workup. We have also developed an interdisciplinary program for the evaluation and management of systemic mast cell and eosinophilic disorders, which is a coordinated effort between Allergy & Inflammation, Hematology/Oncology, Dermatology, Gastroenterology, Clinical Pathology, and the Division of Experimental Pathology. Approximately 35 patients with eosinophil or mast cell disorders are evaluated per year.

Dr. Javed Sheikh, the Clinical Director of the Division, is trained in Allergy & Clinical Immunology and has special interests in urticaria, mast cell disorders, eosinophilic disorders, asthma, and allergic rhinitis. He also has expertise in food-related allergic/immunologic disorders, and is a member of the BIDMC Celiac Center. The clinical activities of Dr. Peter Weller, Division Chief, fall in both the Division of Infectious Diseases and the Division of Allergy and Inflammation. Dr. Weller has special interests in eosinophil-associated diseases. Other clinical staff includes Dr. Martin G. Ostro and Kathleen Corley, Nurse Practitioner, who has expertise in general allergy and asthma evaluation and coordinates patient education services.

Quality Improvement

The Division has an ongoing Quality Assurance Program. We have been tracking the rate of anaphylactic reactions to desensitization therapy, which has been well below the national standards.

We are also tracking documentation of administration of injectable epinephrine to patients with a history of anaphylaxis, which has steadily improved since the beginning of tracking. In line with the Department of Medicine initiatives, we have been tracking time to appointment access and clinic customer service measures.



Rates of systemic reactions to immunotherapy

Educational Programs

The Division plays a major role in the education of BIDMC Internal Medicine housestaff, Harvard Medical School students, and Harvard Allergy/Immunology clinical fellows. BIDMC medicine residents have the option of a three-week outpatient rotation in Allergy & Clinical Immunology and have designed basic science or clinical research electives with Division faculty. Third-year Harvard Medical School students may rotate through the outpatient Allergy practice as part of their Core Medicine rotation. Faculty members frequently give didactic presentations on the BIDMC campus, other Harvard Medical School campuses, and at regional and national meetings.

Sheila Mansfield, RN, and Dr. Javed Sheikh reviewing a patient's charts.

Research Activities

The research activities of the Division include both clinical research and basic research. Basic research is supported by approximately $1.2 million of NIH grant support and is now conducted in the new Center for Life Sciences building.

Clinical Research – The Division also maintains a program for industry-sponsored clinical research. In an multinational study of a neutralizing antibody to interleukin-5 for eosinophilic diseases, the Division was the only study center in New England. The Division has also collaborated on clinical projects with other HMS institutions and divisions, and has collaborated on epidemiological research with the Channing Lab and the Harvard School of Public Health.

Research Funding • AY'07

Federal Direct	450,428
Federal Indirect	434,337
Other Direct	430,282
Other Indirect	41,551

Basic Research – Cellular and Molecular Bases of Inflammation – Studies by Peter F. Weller, MD and colleagues are centered around understanding mechanisms of leukocyte functioning in forms of inflammation. The two principal areas of investigation are: 1) the immunobiology of eosinophilic leukocytes and 2) the intracellular regulation and compartmentalization at cytoplasmic lipid bodies of inducible mediators of inflammation in neutrophils and other leukocytes. Studies of human eosinophils are aimed at defining mechanisms whereby eosinophils may collaboratively interact with other cellular elements of the immune system. The investigations of eosinophils include studies of the cellular biology of secretion and other responses of these cells and their roles as antigen-presenting cells in allergic airways diseases.

Studies of the Complement System – Ionita Ghiran, MD and Anne Nicholson-Weller, MD, are interested in the normal regulation of the human complement system and how inflammation is modified through complement activation, and specifically the role of CD35 (complement receptor 1, or CR1). The complement system is an integral part of the innate immune system, and as such, complement participates in immune surveillance for pathogens and augments the adaptive immune system.

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Faculty

Ionita Ghiran, MD
Zhuang Jin, PhD
Rosanna Melo, PhD
Anne Nicholson-Weller, MD
Martin G. Ostro, MD
Javed Sheikh, MD
Lisa A. Spencer, PhD
Haibin Wang, MD, PhD
Peter F. Weller, MD

Awards and Honors

Dr. Peter F. Weller, has been selected as among the Best Doctors in America 2002-2008. He is Associate Editor, *American Journal of Respiratory Cell and Molecular Biology* and *Journal of Infectious Diseases* and Co-Editor for *UpToDate: Infectious Diseases,* a CD-ROM-based textbook of medicine

Dr. Javed Sheikh, was named as among Best Doctors in Boston 2007-2008 and is an Editorial Board Member, eMedicine Online Textbooks, Allergy & Immunology Section. Dr. Lisa A. Spencer, PhD won an American Academy of Allergy, Asthma and Immunology Women in Allergy Junior Faculty Award (2007-2009).

Selected Publications

Wang HB, Ghiran I, Mattaei K, Weller PF. Airway eosinophils: allergic inflammation recruited professional antigen-presenting cells; *J Immunol* 2007; 179:7585-92.

Wan HC, Melo RCN, Jin Z, Dvorak AM, Weller PF. Roles and origins of leukocyte lipid bodies: proteomic and ultrastructural studies. *FASEB J* 2007; 21:167-78.

Sheikh J, Weller PF. Clinical overview of hypereosinophilic syndromes (HES). *Immunol Allergy Clin of NA.* Klion A (ed). 2007; 27:333-355.

Wang H-B, Weller PF. Pivotal Advance: Eosinophils mediate early alum adjuvant-elicited B cell priming and IgM production. *J Leuko Biol* 2008; 83:817-21.

Rothenberg ME, Klion AD, Roufosse FE, Kahn JE, Weller PF, Simon H-U, Schwartz LB, Rosenwasser LJ, Ring J, Griffin E, Haig AE, Frewer PIH, Parkin JMM, Gleich GJ, on behalf of the Mepolizumab HES Study Group. Treatment of hypereosinophilic syndrome with mepolizumab, an anti-IL-5 antibody. *N Engl J Med* 2008; 358:1215-28.

Melo RCN, Spencer LA, Dvorak AM, Weller PF. Mechanisms of eosinophil secretion: large vesiculotubular carriers mediate transport and release of granule-derived cytokines and proteins. *J Leuko Biol* 2008; 83:229-36.

Akuthota P, Wang H, Spencer LA, Weller PF. Immunoregulatory roles of eosinophils: a new look at a familiar cell. *Clin Exp Immunol* 2008; 38:1254-63.

Weller PF. Eosinophils and eosinophilia. Chap 23. In: Rich RR, Shearer W, Fleisher T, Schroeder H, Weyand C, Frew A (eds). Clinical Immunology: Principles and Practice. Third Edition. Mosby, London, 2008; 361-374.

Costa M, Ghiran I, Peng C-K, Nicholson-Weller A, Goldberger AL, Complex dynamics of human red blood cell flickering: Alterations with *in vivo* aging, *Phys Rev E* 2008; 78:020901.

Weller PF. Eosinophilia and eosinophil-related disorders. Chap 50. In: Adkinson NF, Jr, Busse WW, Bochner BS, Holgate ST, Simons FER, Lemanske RF, Jr (eds). Middleton's Allergy. 7th edition. London, Elsevier 2008.