

## **Transplantation Infectious Disease/Immunocompromised Host Service Fellowship in Transplant Infectious Disease**

Director: Jay A. Fishman, M.D.

### **I. Structure**

The Transplantation Infectious Disease and Compromised Host Program developed as a part of the comprehensive and life-long care provided to transplant recipients and other immunocompromised individuals with unique susceptibility to infection. The program has been developed in collaboration with the Immunocompromised Host Service at BWH, the MGB Transplantation Services, and Infectious Disease Division of the MGB Department of Medicine. This program facilitates the evaluation, prevention, and treatment of infectious disease in Liver, Kidney, Pancreas, Heart, and Lung recipients. Over 500 solid organ transplants are performed at MGH each year. MGH Transplant ID Fellows will also have the opportunity to participate in the care of hematology-oncology and cellular therapy patients and to rotate on the Immunocompromised Host Service at BWH.

This service provides a unique educational opportunity for Infectious Disease Fellows and other trainees in infectious disease management of immunocompromised individuals. This program has trained many of the leaders in this field worldwide. The training program provides at least one advanced clinical year focused on the clinical care of these “at risk” populations as well as research opportunities. *The extraordinary growth of these patient populations each year provides exposure to all forms of immunosuppression and therapies and to participate in clinical trials and translational research in these populations.*

The Compromised Host Program allows the rapid communication of clinical recommendations to the primary care medical and surgical teams on a continuous basis. Our team members are integrated into the primary care teams for our patients. We are afforded a unique opportunity to participate in the development of antimicrobial and immunosuppressive protocols on the clinical service and in development of clinical trials. Both the ID Division and the MGH Transplant Center have Clinical Trials Units which provide such experiences. Of the MGH Transplant ID Faculty alone, six hold NIH support for investigation of fundamental mechanisms of disease and translational studies. There is an ongoing relationship with basic research scientists studying models of transplantation (in the Infectious Disease Division, Transplant Centers and Transplantation Research Centers, Harvard Immunology Division) with interests in T- and B-cell biology, organ repair and regeneration, bone marrow transplantation, xenotransplantation and in the development of preclinical models of tolerance induction for clinical use. Other sites (Ragon Institute, Broad Institute, Harvard School of Public Health) are available for the interested trainee.

### **II. Clinical Activities – Fellowship Description**

This Fellowship Program is open to those trainees who have successfully completed an approved first year Infectious Disease Fellowship Program and completed Internal Medicine Training. The **Fellows in Transplant Infectious Disease** carry progressively greater responsibility for the clinical care of complex immunocompromised hosts as well as for the education of residents and Fellows in earlier years of training and for presentation of the biomedical literature in related fields at weekly journal clubs and clinical rounds. The Fellows will also develop and complete a research study (targeting publication) that will be developed with one or more of the staff.

Optional added years of training are available in clinical or basic research are designed to allow the Fellows greater independence as Clinical or Basic investigators. Such opportunities are dependent upon the availability of research funding and acceptance by a specific mentor for that experience. The MGH Transplant Center has a training grant in transplant immunology (NIH T32, Fishman, Co-PI) which is available for 2-3 years of support for advanced research training. In the second year, clinical track options include the Program in Clinical Effectiveness at the Harvard School of Public Health (by application, 2 summers) and progressive responsibility for a clinical research project in outcomes research with the Program faculty. In basic science, Fellows will assist in the design and performance of a bench research project in the general field of Transplantation Immunology and Infectious Disease with one or more of the faculty of the Transplant Infectious Disease Program or the faculty of the Transplantation Research Programs at MGH and BWH. The fellows will gain independence as a clinician in the weekly outpatient clinic as a component of these programs.

One attending physician and one first year Infectious Disease Fellow and one-two second year **Fellows in Transplant Infectious Disease and Compromised Host Medicine** staff the inpatient Transplant ID Service, with physicians from outside institutions participating on the service by special arrangement. Transplantation Infectious Disease participates in the pre-transplant evaluation of new patients in the outpatient clinic and, as needed, inpatients. The Fellows and Attending round with the Transplant team each morning and second year fellows will also participate in the outpatient care of Transplant recipients (see below). A formal fellowship program has been in existence since 1997. ***The goals of the Fellowship in Infectious Disease Transplant Medicine have been endorsed by the Infectious Disease Society of America (written by Drs. Fishman and Robin Avery).*** Fellows are active members of both the Infectious Disease Division of the MGH and the MGH Transplant Center. Individualized academic programs are developed for trainees upon acceptance into the program. **Applicants will have completed an ACGME-certified clinical Infectious Disease fellowship or the equivalent by the time they start training.** Transplant ID Fellows will participate in both in-patient and out-patient clinical programs. Each Fellow will complete one clinical year of advanced training under direct supervision of the faculty of this program. This program is designed for those selected fellows completing their first, clinical year in Infectious Diseases and desiring an expanded exposure to patient management in Immunocompromised Hosts. It is separate from a full-time research track which is also available in this area with a commitment of at least 1-2 additional years for training.

#### **Transplant Infectious Disease Attending Physicians:**

##### **Dr. Jay A. Fishman, Director**

Dr. Camille Kotton, Clinical Director

Dr. Eric Rosenberg

Dr. Mark Poznansky

Dr. Arthur Kim

Dr. Sarah Hammond

Dr. Joseph ElKhouri

Dr. Michael Mansour

Dr. Alyssa Letourneau

Dr. Sarah Turbett

Dr. Pierre Ankhoma

By the end of their training, they will understand:

- Multidisciplinary approaches to complex patients with organ failure, malignancy, and immunosuppression.

- The pre- and post-transplantation assessment of critically ill patients and the timeline of infection after transplantation (See, e.g., Fishman JA, NEJM, 2007, 357, 25:59-72; Am J Transplant 2017; Am J Transplant. 2017; 17:856-879. doi: 10.1111/ajt.14208 PMID: 28117944.)
- Management of patients with side-effects of immunomodulator therapies.
- The optimal deployment of diagnostic techniques in clinical management including radiological and molecular diagnostic tools
- Development of individualized prophylactic strategies including immunizations
- Important aspects of basic science relevant to transplantation immunology and infectious disease. They will participate in a clinical/basic science research project and will contribute to peer-reviewed publications. Additional research training is available for interested fellows.

#### **Inpatient Clinical time**

Expectation is 7-8 months total inpatient consultation, with optional experiences arranged for individual trainees.

**Outpatient Clinic:** Weekly (generally) on Wednesdays, starts 9:00am, should be done by 12: noon.

- Emergently as needed if not required on inpatient service
- Attending backup for inpatient service as needed when TXID fellow is on service & in clinic
- ID continuity: HIV clinic 2x month, HIV pts only (prior MGH ID fellows only)
- No clinic when on offsite rotations (will have clinic during research periods)

**Joint MGB Transplant ID Rounds and Journal club** (Tuesday 12 noon with the BWH Compromised Host Service): Present carefully reviewed papers on immunocompromised hosts as suggested and reviewed with attending physician. Will include basic and clinical papers preferably from major journal.

#### **Clinical Protocol development**

**Antimicrobial stewardship:** Partake in antifungal and other stewardship activities as they pertain to Transplant ID (may intersect with protocol development)

**Employment Search:** Important component of year – discuss with attendings through year

**Research project** (Coordination and approval by program directors) – may participate in multiple projects through year. Full-time research after the clinical year may be available under a Transplant Immunology Training grant and individual lab mentors as arranged with preceptors. Each Fellow is expected to develop a writing/research project by the end of September with mentor.

**Meetings and funding:** AST Fellows meeting (funded by AST)

**Vacation:** Same time allotment as first year fellows (not taken from independent time)

### **III. Clinical Activities - Transplantation**

The Abdominal Transplant team is responsible for renal, liver, pancreas, and bowel transplants as well as ancillary surgical procedures (dialysis access, general surgery) in solid organ transplant recipients. This team generally includes the Transplant Surgery Attending, 2-3 Surgical Residents, a rotating first year Infectious Disease Fellow from the combined Partners Infectious Disease Program, a Nephrology Fellow and Nephrology Attending, an Attending Gastroenterologist and Fellow, and participation of representatives from Nursing, Pharmacy and Social Service. Fellows may also round with the Leukemia-BMT Service (NP's and/or residents and attending MDs). Consultations on patients on the Cardiac (Heart Failure and Transplant), Pulmonary, Stem Cell,

CAR-T, and Leukemia and Lymphoma services are seen on a routine basis. Visiting fellows who have completed Infectious Disease training elsewhere may apply to join this program.

Weekly activities include:

- Friday morning (8 AM) conference on clinically related topics in solid organ transplantation and Morbidity and Mortality Conference monthly
- Tuesday noon **‘Compromised Host Conference’** (Zoom, with BWH) to discuss ID issues from active patients and present journal articles weekly
- Thursday morning Transplant “Russell Rounds (7:30 AM, Blake 6) and Transplant Center Grand Rounds (quarterly, 7:30 or 8:00 AM in Bigelow Amphitheater, Zoom)
- Special Transplant Immunology (noon Friday) and Immunology (Thursday noon, CNY)
- Special lectures and Visiting Faculty.
- Lectures of the ID Division

### **Outpatient Experience**

A variety of patients are seen in the Transplant Infectious Disease and Immunocompromised Host outpatient clinic:

- Pre-transplant evaluation for patients undergoing kidney, liver, pancreas, heart, and lung transplantation including vaccinations and infectious disease assessments
- Follow-up after inpatient stays for active infectious disease issues
- Urgent access for transplant recipients with acute issues appropriate for outpatient evaluation
- Monitoring via OPAT (Outpatient Antibiotic Therapy) is performed on many transplant patients per year to ensure safety and enhance therapeutic efficacy
- “Travel after Transplant Clinic” provides focused travel advice and care for solid organ and bone marrow transplant recipients

To the degree possible, all Infectious Disease Fellows including the Fellows in Infectious Disease Transplant Medicine participate in the teaching activities of the Infectious Disease Division during their participation on the Transplant Service. All Transplant I.D. Attending physicians also participate in the Clinical and Teaching activities of the M.G.H. Infectious Disease Division. Activities include Management Conference (Monday A.M.), Intercity Rounds with the ID physicians of other Boston Centers (Wednesday AM), and a didactic seminar series. There are additional clinical conferences and journal clubs that are available for those with special interests in the field.