

## **BIDMC Gastroenterology Clinical, Research & Education Centers**

A defining feature of the Clinical, Research and Educational organization of our Division and our Training Program has been the establishment of “Centers” in multiple areas of Gastroenterology and Hepatology: Advanced Endoscopy, Celiac, Inflammatory Bowel Disease, Liver, Neurogastroenterology & Motility and Pancreas. These centers share several common features that make them ideal environments for the clinical, research and academic training of our fellows.

- a. Comprised of multiple teaching faculty with common clinical and research interests
- b. Multidisciplinary with gastroenterologists operating in close collaboration with surgeons, radiologists, pathologists, nursing staff, dieticians and others.
- c. Provide state-of-the art care in their respective areas of focus and clinical expertise.
- d. Care for patients with difficult to diagnose and to manage GI problems
- e. Technologically advanced and apply the most up-to-date and innovative management plans – often leading their respective fields in these endeavors
- f. Highly productive in clinical research
- g. Dedicated to education and training.

### **Center Descriptions:**

**Advanced Endoscopy** The Center for Advanced Endoscopy at Beth Israel Deaconess Medical Center, formed in 1996, is the largest referral practice for endoscopic retrograde cholangiopancreatography (ERCP) and other advanced endoscopic procedures in New England, and is the second largest in the nation. A core mission of the Center for Advanced Endoscopy is to advance the field through research investigation on new diagnostic/therapeutic techniques. Current areas of active investigation include video laser endomicroscopy for evaluation of Barrett's esophagus and cryoablation techniques for eradication of Barrett's esophagus. Additionally, our team has ongoing research programs on artificial intelligence/deep learning approaches for detection of pre-cancerous colon polyps. Our recent work in pancreatico-biliary medicine has focused on applications of lumen-apposing metal stents for pancreatic drainage and necrosectomy, as well as fine needle biopsy techniques for pancreatic cancer and cysts to grow 'organoids' for discovery and validation of personalized chemotherapeutic approaches. Finally, an overarching theme of investigation has been quality and safety in endoscopy and GI anesthesia. Our general GI fellows, advanced endoscopy fellows, research fellows, and rotating Harvard Medical students and internal medicine residents all participate in aspects of the research program.

**Celiac Center & Harvard Medical School Program in Celiac Disease Research:** The Celiac Center, formed in 2004, is directed by Dr Ciarán Kelly and is a multidisciplinary group encompassing Nutrition, Pathology, Endocrinology, Dermatology, Neurology, Gynecology & Reproductive Medicine, as well GI clinical and research staff. In addition to its clinical faculty the center has well-established BIDMC celiac research faculty (including Drs Ciaran Kelly, Jocelyn Silvester, Daniel Leffler, Rupa Mukherjee and Melinda Dennis) as well as three full-time physicians who are postdoctoral research trainees. In 2013, Dr Kelly spearheaded the union of the BIDMC Celiac Center with those at Massachusetts Hospital (led by Dr Alessio Fasano, now a T32 faculty member) and Boston Children's Hospital (led by Dr Alan Leichtner) to form a new combined Harvard Medical School Program in Celiac Disease Research. Each year the combined group cares for more than 3,000 individual patients with celiac disease, both adults and children, making it the largest such center in existence. In addition to its core clinical faculty of 21 gastroenterologists and 7 nutritionists the Celiac Program supports a broad range of research and provides unparalleled resources and expertise for clinical, translational and basic research in celiac

disease and related disorders. The Harvard Medical School Program in Celiac Disease Research has quickly become one of the most productive celiac disease research centers in the world. This exciting new resource is available to our interested trainees.

**Inflammatory Bowel Disease (IBD) Center:** The Inflammatory Bowel Disease (IBD) Center based in the GI Division provides a strong thematic focus for researchers in Gastroenterology, Immunology, Surgery, Pathology and Radiology. IBD has long been a major clinical focus at BIDMC and we now maintain an IBD registry of more than 4000 active patients. The GI division expansion in recent years has amplified this focus by expanding the research grant base in relevant basic science areas that include purinergic signaling, T-cell phenotypes, the microbiome, mechanisms of action of IBD biologics and vitamin D effects. The clinical research program continues to thrive with a recent focus on the role of therapeutic drug monitoring in optimizing the use of anti-TNF therapies. The IBD Center is co-directed by Drs. Adam Cheifetz (Director) and Alan Moss (Translational Research Director). The center also supports clinical and translational research projects, has full time clinical research coordinators and has developed a biobank of tissues, body fluid and genetic samples that are correlated to a large patient clinical database. The center currently supports more than 10 IRB-approved protocols in IBD and provides a rich environment for trainees pursuing clinical, translational and basic research studies relevant to IBD.

**Liver Center:** The *Liver Center*, directed by Michael P Curry, MD, is one of the largest referral centers in the New England Region with active clinical trials and substantial basic and clinical research support. Clinical Services in hepatology are organized around four comprehensive programs: *Non-alcoholic steatohepatitis (NASH)*, *liver failure/liver transplant*, *liver tumors and viral hepatitis*. Multidisciplinary teams of hepatologists, hepato-biliary and transplant surgeons, interventional radiologists and oncologists see patients in a common setting for multidisciplinary liver transplant- and liver tumor care, that enables us to provide patients with a consensus opinion from multiple providers. The Liver Center offers research programs in NASH, alcoholic liver disease, viral hepatitis, autoimmune liver diseases and liver transplant biology. The Liver Center has a registry of 2000 patients with hepatitis C, NASH and hepatocellular cancer with clinical information, banked sera and DNA available for clinical research projects. The Liver Center employs six full-time research and clinical nurse practitioners and physician assistants, and has IRB approval for more than 20 ongoing trials and projects. The center's investigators have made major contributions to the recent advances in the management of HCV and NASH.

**BIDMC Gastrointestinal Motility and Functional Bowel Disease (FBD) Center at BIDMC.** The BIDMC Motility Center is directed by its founder Anthony Lembo, MD. The center houses a busy clinical practice that provides second opinion consultations for patients with complex GI Motility and FBDs from across the US and internationally. The Center also includes one of the busiest GI motility Laboratories in the East Coast. The Center has grown substantially over the past 5 years with the addition of 4 additional full-time faculty members. The center also enjoys the services of a dedicated Clinical Psychologist. Center faculty regularly lecture at the premier GI Association meetings (i.e., Digestive Disease Week and American College of Gastroenterology), at leading Universities as visiting professor, as well as international GI meetings (e.g. World Congress of GI, Hong Kong GI Association). Dr Lembo is at the forefront of his field and has co-authored several of the guidelines and position statements endorsed by the US GI associations (AGA and ACG). He is also a committee member of the International Rome Foundation for Functional GI Disorders who developed the Rome IV diagnostic criteria for IBS, Chronic Constipation (CC), Opioid Induced Constipation, among others. These diagnostic criteria have been adopted throughout the world as the standard for diagnosing these Functional GI disorders as well as by regulatory agencies, such as the Federal Drug Administration (FDA) and the European Medicines Agency (EMA), as the current standard for diagnosing IBS and these other functional disorders. The Motility

Center faculty has established a monthly Combined GI Motility Conference in collaboration with the Brigham and Women's Hospital. They also helped to establish the Annual Harvard GI Motility Symposium, which is in now in its 18<sup>th</sup> year. This HMS CME symposium regularly draws between 50 -75 participants each year. The Motility center runs an Advanced GI Motility and FBD fellowship. It hosts several research fellows and has a full-time research administrator and three Clinical Research Associates to support the work of its research faculty and fellows.

**Pancreas Center:** In 1998, the GI Division established *The Pancreas Center* under the leadership of Dr. Steven Freedman whose laboratory research is in the area of cystic fibrosis and pancreatic pathophysiology. Professional staff includes Dr Sunil Sheth (co-director) and four other pancreatologists. This multidisciplinary tertiary referral center also has the close involvement of researchers in Surgery, Radiology, and Oncology. We are a major center for study of exocrine pancreatic disease and pancreatic cancer at a clinical and basic science level. Current studies include the role of cystic fibrosis gene mutations in chronic idiopathic pancreatitis, the effects of fatty acid modulation on disease outcomes, cost effective and novel treatment strategies in acute and chronic pancreatitis, organoid modeling of disease, and visceral pain therapies. The center supports research projects by providing access to tissue and body fluid samples, genetic testing and a database of >4,000 patients with acute, recurrent, and chronic pancreatitis. Currently the center supports 11 IRB-approved research protocols. In 2018, a dedicated Pancreas Fellowship was begun with the first fellow accepted for 2 years for both clinical and research training. Lastly, Dr. Freedman is leading a national initiative through the Cystic Fibrosis Foundation to train advanced fellows and junior faculty in the GI care of patients with Cystic Fibrosis. Called DIGEST, trains up to 20 individuals per year through a combined didactic program and web based case presentation. The goal is to develop best practice guidelines for GI care in cystic fibrosis and to spark new research initiatives.