

The Mount Sinai Division of Gastroenterology at the Beginning of the 21st Century

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Abstract

The Mount Sinai Division of Gastroenterology has an international reputation for outstanding contributions to the study of digestive diseases, especially inflammatory bowel disease. A discussion of the current structure of the gastroenterology (GI) fellowship training program is provided, along with an overview of the GI Division at the turn of the 21st century. **Key Words:** Gastroenterology, The Mount Sinai Hospital, twenty-first century.

Introduction

THE DAWN OF A NEW CENTURY is an appropriate time to survey the medical advances of the past one. The scientific community has just reported the sequencing of the human genome. The tremendous achievement of the Human Genome Project is a tribute to how rapidly scientific knowledge is advancing. Gene therapy may become a reality in the delivery of health care during this new century. It has been said that biological science's knowledge is doubling every 180 days (1). This exponential increase in scientific knowledge probably underlies the fact that half of the increase in the average life expectancy in recorded history occurred within the last century (2). Curiously though, most of this increase occurred in the first half of the old century. Advances in public hygiene and disease prevention, even more than medical interventions, account in large part for the rise in life expectancy from 47 years in 1900 to 78 years in

1995 (2). Preventive medicine has had a tremendous impact in some areas, such as infectious forms of diarrheal illness, although these remain a major cause of death in many underdeveloped countries.

The specialty of gastroenterology combats these and other diseases of the gastrointestinal system. Possibly its greatest single advance in the past century was the development of oral rehydration therapy for cholera, which was based on scientific understanding of the processes involved in intestinal absorption. The abundance of serious gastrointestinal diseases ensures a constant need for individuals trained in the specialty of gastroenterology and committed to advancing public health. This article will provide an overview of the current gastroenterology training program of The Mount Sinai School of Medicine.

Gastroenterology Fellowship Training

There are currently 250 gastroenterology (GI) residency (fellowship) programs in North America. In the mid-1990s, the duration of gastroenterology fellowships in the U.S. was extended from two to three years, in recognition of the growing complexity of the specialty and to provide sufficient time for fellows to pursue

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scholarly activity during their training. Reflecting the major scholarly disciplines within the specialty, the American Gastroenterological Association currently consists of 11 sections (Table 1). Although this structure was created partly for organizational purposes, it reflects the major areas of training and competence that are expected of modern gastroenterologists. Along these lines, the Gastroenterology Leadership Council (GLC) established a curriculum that attempts to standardize education of the gastroenterology trainee (3).

The three-year fellowship program at the Mount Sinai Division of Gastroenterology provides at least 18 months of clinical training. The remaining time is devoted to specialized research. The clinical training consists of consultative experience in both the in-patient and out-patient settings, learning how to perform endoscopic procedures, and training in hepatology (including the complexities of liver transplantation). The Mount Sinai GI Fellowship program presently includes experience on four campuses: The Mount Sinai Hospital, the Veterans Affairs Hospital in The Bronx, The Mount Sinai Services at the City Hospital Center at Elmhurst, and Queens Hospital Center. Thus, it exposes the GI fellow to a variety of patient populations and faculty expertise. There are currently 12 fellows in the program.

All fellows, as part of their training, are required to pursue either clinical or laboratory-based research (Table 2). The fellow selects a topic of interest and is paired with an appropriate faculty mentor, who helps to develop the line of investigation. In addition to personal mentoring, fellows attend institution-wide con-

ferences and lectures that further develop their knowledge base. Fellows also have many opportunities to develop their public speaking skills at internal conferences, and by the end of their three-year fellowship, it is expected that all fellows will have presented their own work at local and national meetings.

A particular strength of the Mount Sinai Division of Gastroenterology is in the field of inflammatory bowel diseases (IBD). Training in IBD is facilitated by the availability of a large patient population with these diseases, and considerable depth of faculty in this area. Research in the field of IBD at Mount Sinai includes a rather comprehensive variety of topics, including basic immunopathogenetic mechanisms, genetic susceptibility, experimental therapeutics, research on classification and natural history of IBD, new surgical therapies for IBD, outcome measures (such as quality of life) and treatment of complications following ileal pouch anal anastomosis procedures, and basic mechanisms and clinical management of colitis-associated neoplasia. Fellows participate in these projects under the guidance of faculty mentors. In addition, a special one-on-one IBD preceptorship has been in place for many years. Under the supervision of a master clinician, this rotation has each senior fellow spending time learning the art of the consultation and gaining experience with ambulatory and in-patient gastroenterology. This valuable training experience, initially under the skilled guidance of Dr. Henry Janowitz (4), has more recently been supervised by other master clinicians, including Dr. David Sachar and Dr. Daniel Present. In 1999, Dr. Present established a new training opportunity for fellows from outside institutions to spend an intensive year of research and patient care devoted to IBD, with the goal of having this fellow return to his or her home program to further enhance its IBD program.

As part of their learning experience in consultative gastroenterology, all fellows receive superb training in endoscopic procedures. The chief of Endoscopy, Dr. Jerome Wayne, is a highly gifted teacher, who along with a staff of highly proficient endoscopy faculty, personally supervises fellows in the indications and techniques of endoscopy.

Mount Sinai also has a strong tradition in the study of liver diseases (5), which led to the creation of a separate Division of Liver Disease. All gastroenterology fellows at Mount Sinai obtain outstanding training in hepatology. During the rotation on the Liver Disease ser-

TABLE 1

Sections of the American Gastroenterological Association

Biliary Disorders
Clinical Practice
Esophageal, Gastric, Duodenal Disorders
Gastrointestinal Oncology
Growth, Development and Aging *
Hormones, Transmitters, Growth Factors and their Receptors
Immunology, Microbiology and Inflammatory Disorders
Intestinal Disorders
Motility and Nerve Gut Interactions
Nutrition
Pancreatic Disorders

* As part of the Strategic Plan of the AGA to enhance research and education in nutrition, in the Year 2000 the Growth, Development and Nutrition section was renamed Growth, Development and Aging, and a new Nutrition section was established.

TABLE 2
Research Projects in the Division of Gastroenterology

Field	Topic	Principal Investigator(s)
Basic Research		
Gastrointestinal Oncology	Pathobiology of mucins in GI cancer Gene therapy of metastatic colon cancer <i>H. pylori</i> in gastrointestinal lymphoma	Steven Itzkowitz Steven Itzkowitz, Mark Babyatsky Steven Itzkowitz, Lawrence Werther
Mucosal Immunity	Neuropeptides in IBD Epithelial cells in IBD Mucosal cytokines in IBD Genetic susceptibility to IBD	Mark Babyatsky Lloyd Mayer Lloyd Mayer, Scott Plevy Scott Plevy, Lloyd Mayer
Clinical Research		
Inflammatory Bowel Disease	Novel immunomodulatory agents/IBD Ileal pouchitis — therapy, natural history Quality of life — outcomes research	Daniel Present, David Sachar, Lloyd Mayer, Asher Kornbluth, James Marion, Ellen Scherl, Simon Lichtiger, Samuel Meyers, James George, Lisa Toy David Sachar, James Aisenberg Anthony Weiss
Gastrointestinal Oncology	Cancer in IBD High-risk colon cancer registry Neuroendocrine tumors	Steven Itzkowitz, David Sachar, Jerome Waye, Daniel Present, Peter Rubin, Thomas Ullman Steven Itzkowitz Richard Warner
Endoscopic Research	Colonoscopic tattooing Novel endoscopic cautery techniques Biliary endoscopy Endoscopic ultrasound Ischemic bowel disease	Jerome Waye Jerome Waye David Jaffe Harry Snady, Thomas Riley, Anthony Borcich James George
Motility Disorders	Spinal cord injury Gastric and small intestinal motility Collagen vascular diseases Pelvic floor dysfunction; incontinence Esophageal motility disorders	Mark Korsten Mark Korsten Barry Jaffin Suzanne Rose Lawrence Cohen
Irritable Bowel Syndrome	Combined medical/psychological therapy Novel probiotic therapies	Charles Gerson Gerald Friedman

vice, they focus on the evaluation and treatment of patients with complex liver disease (pre- and post-transplant). The other three campuses feature unified GI/liver consultative experiences, affording additional training in liver disease. For the GI fellow with a particular interest in pursuing a career in hepatology, the third year of the three-year fellowship can be completely devoted to training in liver disease. In addition, the Division of Liver Disease offers a specialized fourth year of training.

As an integral part of fellowship education experience, the GI Division offers an extensive menu of teaching conferences (Table 3). In ad-

dition to these conferences, fellows rotating on the other campuses are exposed to separate pathology, radiology, and clinical conferences conducted on those campuses. While rotating on the Mount Sinai Liver Disease service, fellows attend conferences within the Division of Liver Disease, including liver pathology, ambulatory liver diseases, journal club and grand rounds. All GI and Liver fellows at Mount Sinai are expected to attend weekly Department of Medicine grand rounds, weekly GI/Liver Research Seminar and the bi-weekly Molecular Medicine/Dean's Lecture Series, which features outstanding scientists dis-

TABLE 3
Conferences in the Division of Gastroenterology

Conference	Description
1. GI Grand Rounds	
<i>Summer Lecture Series:</i>	This series of 10–12 weekly Friday morning conferences introduces fellows to basic and clinical pathophysiology and to fundamentals of managing the most common sites and categories of disease seen in GI practice.
<i>Controversies in Gastroenterology:</i>	Interdisciplinary panels discuss realistic cases of the commonest clinical problems in gastroenterology, exploring diverse viewpoints concerning the safest and most cost-effective approaches to prevention, diagnosis, and treatment.
<i>Clinical Trends & Topics:</i>	Clinical outcomes, complications, and quality assurance issues are discussed in depth, centering around real cases identified in quality review exercises. The Gastroenterology fellow prepares presentations of literature reviews and evidence-based conclusions in collaboration with the faculty moderator.
<i>Fellow's Pathophysiology Seminar Series:</i>	With a single thematic topic running throughout the academic year, each GI fellow chooses a particular aspect of the topic, researches it in depth, and presents a full and formal slide-illustrated lecture on it to the entire division. Fellows are supervised by a faculty mentor.
<i>IBD Case Conference:</i>	GI fellows present a patient with IBD who exemplifies a particular management problem. A multidisciplinary panel discusses the medical, surgical, pathological, and radiological aspects of the case, followed by a literature review prepared by the fellow.
<i>Invited Lectures:</i>	Clinical and basic science topics are covered by speakers from inside and outside the Medical Center.
2. GI Endoscopy Conference	A weekly conference led by the chief of Endoscopy, highlighting interesting diagnostic or management problems. Videotapes are presented by gastroenterologists and laparoscopic surgeons.
3. GI Fellows' Endoscopy Conference	A weekly conference attended by GI fellows during which the chief of GI Endoscopy demonstrates lesion recognition, and discusses the latest innovative therapeutic endoscopic technologies and issues related to proper indications for performance of endoscopy.
4. GI Pathology Conference	A weekly conference at which fellows present their biopsies of the preceding week to the senior GI Pathology attending and other GI attendings for review and discussion regarding diagnostic and management decisions. Operative specimens and autopsy results are also presented and discussed.
5. Chief's Rounds	At this bi-weekly conference, fellows meet with the director or director emeritus of the division to present a noteworthy recent case. A strong emphasis is placed on the reading and interpretation of GI x-rays. Fellows are expected to provide literature that offers some insights into the clinical entity they are presenting.
6. GI Journal Club	A bi-weekly journal club is held, consisting of a topic-oriented approach to interpreting the medical literature and mastering the statistical methods. Statistical concepts and study design are addressed in detail through homework assignments at each session.
7. Ambulatory Care Conference	This bi-weekly conference immediately precedes Continuity Clinic. Fellows present one of their own clinic patients who manifests a particular management problem, and use an evidence-based medicine (EBM) approach to review the literature on the subject. A final management decision for the patient is then reached in conjunction with faculty.
8. Motility/Dysphagia Conference	A monthly conference that gives fellows an understanding of the indications and potential pitfalls in the performance of motility studies.
9. Pancreaticobiliary Conference	This monthly interdisciplinary conference brings together physicians and investigators from Gastroenterology, Liver Disease, Laparoscopic Surgery, Hepatobiliary and Transplant Surgery, and Diagnostic and Interventional Radiology to discuss interesting, problematic, and illustrative pancreatic and biliary cases.
10. GI/Liver Research Seminars	This weekly conference provides a forum for principal investigators from outside and within the institution to present research related to GI and liver disease.

Discussing a broad range of clinical and basic science topics.

The GI Division is also responsible for undergraduate teaching programs. The first-year medical students are taught basic histology and anatomy of the GI tract by the Gastroenterology faculty in conjunction with faculty in the Department of Anatomy and Cell Biology. Second-year students receive an intensive, 6-week course on GI/liver pathophysiology, which integrates concepts of pathophysiology, diagnostic strategies, medical and surgical management, geriatrics, pediatrics, and bioethics. In addition to core lectures, case-based small group discussions are led by GI and Liver faculty. Medical students in third- and fourth-year clinical clerkships are expected to see and examine patients with gastrointestinal and liver diseases and interact with faculty preceptors, including those in Gastroenterology and Hepatology.

Leadership of the Gastroenterology Division of The Mount Sinai School of Medicine

In 1958, the Division of Gastroenterology was founded by Dr. Henry D. Janowitz, who served as its director until 1983. As a tribute to Dr. Janowitz's service to the GI Division and his international reputation, in 1992 the GI Division was officially endowed as the Dr. Henry D. Janowitz Division of Gastroenterology, becoming the first named GI division in the country.

In 1983, Dr. David B. Sachar became the second chief of Gastroenterology. Dr. Sachar was invested as the first Burrill B. Crohn Professor of Medicine in 1992.

Dr. Steven H. Itzkowitz assumed leadership of the Dr. Henry D. Janowitz Division of Gastroenterology on July 1, 1999, and was inducted as the second Dr. Burrill B. Crohn Professor of Medicine in September 1999. Dr. Itzkowitz, an alumnus of the Mount Sinai School of Medicine (Class of 1979) was recruited from the University of California at San Francisco, where he served as a GI fellow and subsequently as assistant professor of Medicine. He served as associate director of the division from 1993–1999, and is currently chair of the GI Oncology Section of the American Gastroenterological Association, and president of the New York Gastroenterological Association.

Faculty of the Division of Gastroenterology

The division's faculty currently consists of 50 physicians, including seven full-time gas-

troenterologists, representing a broad diversity of expertise. Faculty members contribute to the teaching program by mentoring GI fellows in research, supervising endoscopy, teaching fellows, medical residents and students on the consultation service and in the clinic, and participating in conferences.

Many of the currently active gastroenterologists have achieved international prominence and recognition for making major contributions in their area of expertise (see also Table 2). These include Jerome Waye (chief of Endoscopy; founder and developer of new endoscopic techniques), Daniel Present (developer of novel immunomodulatory therapies in IBD), J. Lawrence Werther (role of the gastric mucous barrier and *Helicobacter pylori* in acid peptic disease and gastric cancer), Mark Chapman (role of gastric acid secretion in peptic ulcer disease), Charles Lieber (alcoholic liver disease), Richard Warner (neuroendocrine tumors), Gerald Friedman (gastrointestinal pharmacotherapeutics and irritable bowel syndrome), Charles Gerson (physiology of the small intestine and irritable bowel syndrome), Samuel Meyers (medical therapy of IBD), Peter Rubin (endoscopic management of neoplasia in IBD), Simon Lichtiger (medical therapy of IBD), Mark Korsten (pancreatitis and gastrointestinal motility disorders), Blair Lewis (small bowel enteroscopy and endoscopic evaluation of gastrointestinal bleeding), Asher Kornbluth (medical therapy of IBD), Mark Babyatsky (role of neuropeptides in IBD and mucosal restitution), Lawrence Cohen (esophageal diseases), Barry Jaffin (gastrointestinal motility disorders) and Suzanne Rose (gastrointestinal motility disorders and medical education).

The Gastroenterology Service of The Mount Sinai Hospital

The Mount Sinai Hospital has more than 1200 beds, of which 600 are on teaching services. Two hundred of these are occupied by patients with gastrointestinal disease. The facilities include a new state-of-the-art pavilion designed by the famous architect, I.M. Pei, completed in 1992. In 1995, gastroenterology patients on both medical and surgical services were consolidated into an autonomous, integrated GI Care Center with its own dedicated teams of house staff and teaching attending physicians. Recently renamed the GI-Surgical Subspecialties Care Center (GISS-CC), it offers the benefit of centralized administration. Per-

haps more important, it streamlines the delivery of nursing care and social service support by staff who are familiar with issues relevant to the GI patient (for example, adjusting to and caring for a new ileostomy). House staff in the Department of Internal Medicine rotate on the GI-Surgical Subspecialty Care Center for two months during their three years of internal medicine training and become familiar with the diagnosis and management of complex GI and liver diseases. During their rotation, they are supervised by a GI and a Liver attending whose primary purpose is to teach these residents. With teams of medical and surgical residents making rounds on the same ward(s), interaction between them is greatly facilitated. The Gastroenterology fellow assists the medical house staff with the management of GI patients, including any procedures that are indicated, and also functions as a liaison between the house staff and the Gastroenterology attending physician. To assure continuity of care, upon discharge from the hospital, any patient who does not have his/her own private doctor can be followed in the clinic by the Gastroenterology fellow who cared for him/her in the hospital.

In addition to caring for patients on the inpatient GISS-CC Teaching Service, Gastroenterology fellows are assigned to handle requests for consultations from other services in the hospital. Daily clinical records, consultations, and the performance of procedures during the three weekly endoscopy sessions are always under the supervision of an attending physician.

In the ambulatory GI clinic, new patients are seen by Gastroenterology fellows alone with those they have seen previously in the

clinic or hospital. A separate Continuity Clinic is specifically designed for fellows to see their own cadre of patients, with whom they have established a relationship based on prior inpatient or outpatient care. The regular Mount Sinai GI clinics meet twice a week and are supervised by the same attending physicians throughout the entire year. The fellows have complete responsibility for their outpatients, who may call them for medical advice at any time.

Conclusion

Training in gastroenterology is becoming increasingly more complex and specialized, in keeping with rapid advances in medical knowledge and technology. We live in an exciting time, when sophisticated biotechnology can make a tremendous impact on how we treat, and even think about, disease. The application of new knowledge together with powerful molecular tools to treat and prevent digestive diseases should allow us to make an even greater impact on public health in the next century.

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