

Division of Gastroenterology & Hepatology Newsletter

High-Resolution Manometry: A Picture is Worth 1000 Words

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High-resolution manometry (HRM) is a novel technology that significantly enhances the ability to diagnose esophageal motor disorders.

With HRM, esophageal motility is displayed in a vibrant color-rich

pressure-topography plot, as opposed to the standard "line-tracings" of conventional esophageal manometry (EM) that gastroenterologists have been taught over the last several decades. Conventional EM is performed by placing a catheter with 4-8 sensors, either uni-directional or circumferential, into the stomach and slowly pulling back until the lower esophageal sphincter (LES) is encountered. LES resting pressure, LES relaxation, esophageal peristalsis, and sometimes UES function are then quantified by standard protocols. Because of the spacing between sensors on a conventional EM catheter, usually 5 cm apart, the precision of the assessment of esophageal and sphincter function is limited. HRM is able to overcome the imprecise nature of conventional EM. The HRM catheter (Sierra Scientific Instruments Inc., Los Angeles, CA) has 36 solid-state sensors spaced at 1-cm intervals. Each sensor detects pressure over a length of 2.5 mm in 12 radially-oriented directions, which are then averaged to obtain a mean pressure at each location.¹ With 36 sensors, the catheter spans the entire length of the esophagus, including both UES and LES, and precisely characterizes pharyngo-UES coordination, esophageal peristalsis, and LES function in each swallow. The outcome of the study is a novel pressure-topography plot, which plots time on the x-axis and length along

the esophagus on the y-axis, with pressure at each point represented by color (see **Figure**). By decreasing the gaps between the sensors and providing circumferential data at each site, HRM vastly improves the sensitivity of the manometric investigation. HRM limits motion artifact that is common in conventional EM, and markedly decreases the time required to complete an entire investigation. Not only is the acquisition of the data improved, but sophisticated software also is able to perform a more complete analysis.

Recent studies have defined normal parameters for the pressure-topography plots and have allowed researchers to develop a new classification system for esophageal motility disorders (EMDs) based on HRM.² Several new parameters, such as the pressure front velocity (PFV) and the distal contractile integral (DCI), to help classify EMDs. Based on the PFV, swallows can be classified more accurately as normal, failed, hypotensive, or rapidly conducted, in which the PFV exceeds 8 cm/s. The DCI can be used to divide hypertensive peristaltic contractions into newly defined categories such as segmental nutcracker and spastic nutcracker. Interestingly, HRM was recently reported to stratify achalasia into 3 distinct subtypes, which predicted response to therapy.³ HRM not only provides a more complete analysis of esophageal function than conventional EM, but also is more tolerable for patients because of the shorter time needed to acquire data.

At the UNC Center for Esophageal Diseases and Swallowing (CEDAS), HRM is the most recent modality added to our arsenal of diagnostic esophageal technologies already in place, including 24-hour pH-impedance and 48-hour wireless pH (Bravo®) testing .

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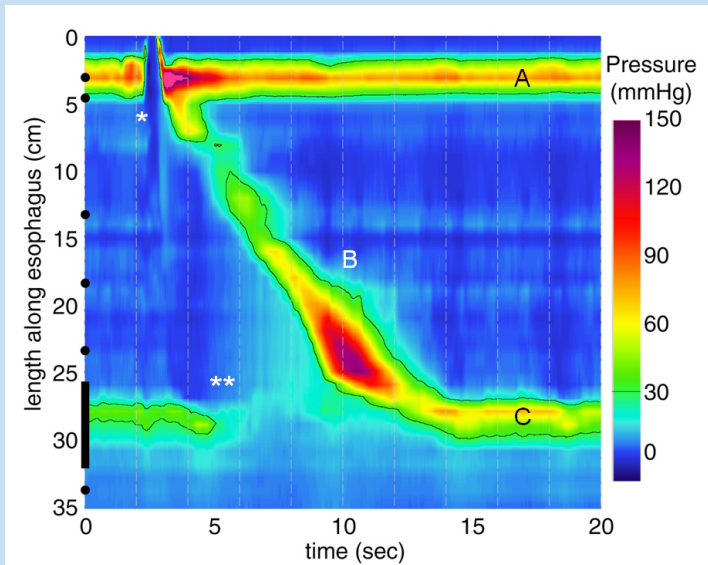
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High Resolution Manometry (continued)

The Motility Laboratory at UNC Memorial Hospital is staffed by 2 full-time motility nurses who regularly perform comprehensive esophageal testing for patients with complicated swallowing problems or reflux symptoms. CEDAS's five esophageal specialists, Drs. Shaheen, Madanick, Orlando, Dellon, and Morgan, pride themselves on providing high-quality consultative and therapeutic services for a wide range of complex esophageal problems. **Figure.** High-resolution manometry. A pressure-topography plot in a normal peristaltic swallow, shows (A) the upper esophageal sphincter (UES), (B) esophageal peristalsis, and (C) the lower esophageal sphincter (LES). Time is denoted on the x-axis, length along the esophagus on the y-axis, and pressure in color (see scale on right of Figure). Peristalsis begins just after the UES relaxes (*). Note that the LES is relaxed (**) throughout most of the peristaltic contraction. The thin black line surrounding the brightly colored contracted areas indicates the 30-mm Hg isobaric contour, as noted on the scale at right.



References

1. Ghosh SK, Pandolfino JE, Zhang Q, et al. Quantifying esophageal peristalsis with high-resolution manometry: A study of 75 asymptomatic volunteers. *Am J Physiol Gastrointest Liver Physiol* 2006;290:G988-997.
2. Pandolfino JE, Ghosh SK, Rice J, et al. Classifying esophageal motility by pressure topography characteristics: A study of 400 patients and 75 controls. *Am J Gastroenterol* 2008;103:27-37.
3. Pandolfino JE, Kwiatek MA, Nealis T, et al. Achalasia: A new clinically relevant classification by high-resolution manometry. *Gastroenterology* 2008;135:1526-33.

To refer a patient to CEDAS or to the Motility Laboratory, please contact one of our support staff, Patty Prentice or Jennifer Canders, at (919) 966-2513.

Your Annual Contributions

We established the Gastroenterology and Hepatology Annual Fund to meet the most critical needs of the Division, and we wanted to report to you how these funds are being used. It's no surprise that these needs often occur in our fellowship program. Over the past year, we've sponsored travel for GI fellows to attend a professional meeting through this fund. Each Fall, we send our first-year fellows to the annual meeting of the American Association for Study of Liver Disease. The second- and third-year fellows attend Digestive Disease Week in the Spring. These meetings provide an important opportunity for fellows to present their research, attend postgraduate courses, and learn about advances in the field. In addition to the annual meetings, we also sponsored fellows to attend additional meetings to present posters or oral presentations.

Donor gifts to the Annual Fund also pay for educational materials (books and office supplies), membership dues, and journal subscriptions for fellows. In addition, we use the fund to pay for the annual national in-service exam. Finally, we use the funds to support the weekly pathophysiology seminar.

The Division is very grateful to the generosity of all the donors to the Fund and believe that future contributions will help us continue our first-rate training.

Abbott visits UNC GI



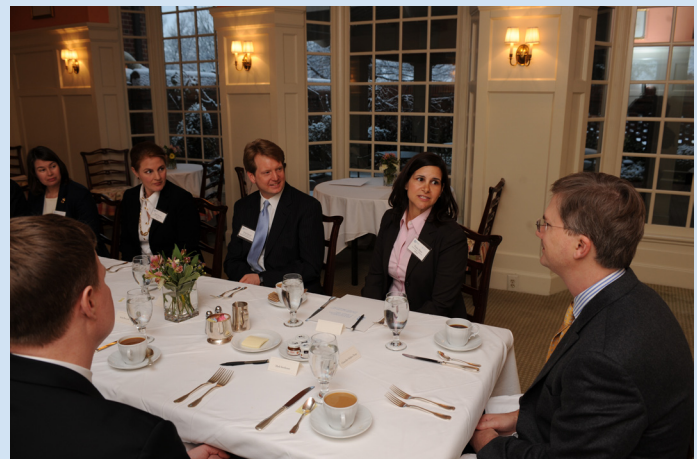
CHAPEL HILL, NC – A team of Abbott representatives visited UNC-Chapel Hill on March 2 to meet with faculty member Scott Plevy, MD and learn more about his research. Dr. Plevy is a nationally recognized gastroenterologist in the Division of Gastroenterology and Hepatology.

The visiting executives met and had breakfast with UNC-Chapel Hill Chancellor Holden Thorp and School of Medicine Dean and UNC Health Care CEO Bill Roper. The group discussed the challenges facing the

university and Abbott's plans for the future, particularly with regard to the faltering US economy. The Abbott group then toured the labs of the GI faculty and met with the current research fellows in Plevy's lab. The Abbott group included the following team members:

- Tracie Haas, general manager, immunology
- Mark Stenhouse, marketing director, gastroenterology
- Ken Farah, national sales director, immunology
- Tony Camut, regional sales manager – Eastern US
- Beth Styron, senior district manager, immunology
- Matt Gaaney, clinical science manager, immunology
- Wendy Sellers, immunology specialist

Plevy has been building his laboratory since 2006, when he joined UNC as both a physician who treats patients with Crohn's disease and ulcerative colitis and a researcher exploring the causes of these diseases. These serious conditions of the intestines are the result of an overactive autoimmune response. The research in the Plevy lab explores why this response occurs and how to manage it. The team is also studying the role of bacteria in the development of these diseases and new drugs and other compounds that may combat them.



Annual CME Event and Open House

Our annual CME event will be held on April 17-19 at the William and Ida Friday Center for Continuing Education in Chapel Hill, North Carolina. Ryan Madanick has developed a superb conference covering the entire field of GI. Many of our speakers are frequently invited to speak at national conference. You can have a chance to hear them without leaving the state. This year the John Sessions lecture will be given by Eugene Schiff from the University of Miami.

On April 17 the Division will host a brunch and open house starting at 10:00 AM in room 4137 Bioinformatics. Bob Sandler will update attendees on the state of the division followed by a tour of lab and clinical facilities.

We hope that you will join us for the open house and the CME

Conference Information

The conference is presented as *Update in Gastroenterology and Hepatology: Applying Sound Principles in Daily Practice*. The course is designed to provide an update in the most useful and recent developments in the diagnosis and management of gastrointestinal disorders as they are encountered by primary care physicians, surgeons, nurses and specialists.

Target Audience

The program is intended for Gastroenterologists, General Surgeons, Internal Medicine Physicians, Family Practice Physicians, Physician Assistants, Nurse Practitioners and Registered Nurses.

Educational Objectives

The information presented at this educational activity should improve your ability to:

- 1) Appropriately use testing algorithms for patients with gastrointestinal complaints
- 2) List comprehensive and ordered differential diagnoses for common gastrointestinal symptom constellations
- 3) Implement treatment options for common gastrointestinal illnesses
- 4) Discuss common side effects of treatments for gastrointestinal illnesses

Conference Location

The conference will be held at the William and Ida Friday Center for Continuing Education, location approximately three miles east of the UNC-Chapel Hill campus on Friday Center Drive, just off Hwy 54 East. If you will be traveling I-40, you will need to take Exit 272-A from Raleigh and 273 from Greensboro. A map to the Friday Center will be mailed to you with your receipt. Participants may be reached during the conference at 919.962.3000.

FRIDAY, APRIL 17

1200-1330	Registration	
1330-1340	Welcome & Introduction	Madanick
UGI		
1340-1420	Dysphagia: New Thoughts on an Old Problem	Madanick
1420-1450	Non-Cardiac Chest Pain: A Common Conundrum	Dellon
1450-1515	Dyspepsia: Diagnosis, Drugs, and Dilemmas	Bozymski
1515-1530	BREAK	
1530-1600	GERD by the Book: What Therapy Does the Evidence Support?	Shaheen
1600-1630	Surgery for GERD: The Right Option for the Right Patient	Kohn
1630-1700	Q&A Roundtable	

SATURDAY, APRIL 18

LGI		
0800-0830	Getting Back on Track: Constipation and Pelvic Floor Dysfunction	Scarlett
0830-0900	Managing Common Anorectal Disorders	Sadiq
0900-0930	Optimizing Optics in Obscure GI Bleeding	Morgan
0930-0945	BREAK	
0945-1010	Current issues in Colon Cancer Screening	Ransohoff
1010-1040	Screening Groups at High Risk for Colorectal Cancer	Sandler
1040-1100	Q&A Roundtable	
1100-1200	Breakout Session#1	

LIVER		
1300-1330	Cirrhosis: Preventing and Managing Complications	Hayashi
1330-1400	Autoimmune Liver Diseases: Diagnosis and Therapy	Zacks
1400-1430	Hepatitis B: Reducing the Burden of Disease	Fried
1430-1450	Q&A Roundtable	
1450-1500	BREAK	
1500-1600	Breakout Session#2	
1600-1700	HCV Therapy: How Far Have We Come? How Far Can We Go?	Schiff

SUNDAY, APRIL 19

Pancreaticobiliary Disease		
0800-0825	Acute Pancreatitis in 2009	Grimm
0825-0850	Sorting out Jaundice and Biliary Disease	Gangarosa
0850-0920	Pancreatic Masses: A Rational Approach	Meyers
0920-0945	Q&A Roundtable	
0945-1000	Break	
	IBD Mini-Symposium: A Young Woman with Diarrhea	Sartor
1000-1030	Does she have IBD? Making the Diagnosis	Herfarth
1030-1100	Dealing with her disease: Selecting Therapy in IBD	Plevy
1100-1130	Difficult Situations in IBD	Isaacs
1130-1200	Q&A Roundtable	

Breakouts		
	H pylori Diagnosis and Therapy	Morgan
	Eosinophilic Esophagitis	Dellon
	Extraesophageal and Refractory GERD	Orlando
	Fatty Liver Disease: Resistance is Futile	Zacks
	Liver as The Innocent Bystander: Drug injury and other toxins	Hayashi
	Maintaining Good Health in IBD	Isaacs
	IBD Management: Traditional therapies and beyond	Herfarth
	Barrett Esophagus in 2009	Shaheen
	Endoscopic Ultrasound: Peeling Back the Layers	Gangarosa
	The Difficult Polyp	Grimm
	What Every Nurse Should Know about Preps and Procedures	Streeter
	IBD: A Nurse's Perspective	Powers

Honors and Awards

[Robert Sandler](#) completes his term as the President of the American Gastroenterological Association Institute and becomes the Chair of the American Gastroenterological Association. He gave invited talks at the United European GI Week in Vienna and the Pan American Congress in Santiago, Chile

[Evan Dellon](#) gave an oral presentation during the ACG Plenary Session. He received an ACG Junior faculty Development Award and was selected as an AstraZeneca Emerging Leader.

[Douglas Drossman](#) was named in Who's Who in the World, in Medicine and Healthcare and America. He gave a keynote talk at the Neurogastroenterology and Motility meeting in Lucern, Switzerland

[Donna Evon](#) was awarded a Multidisciplinary Clinical Research Scholar Award by UNC.

[Michael Fried](#) has been named the deputy director of the Translational and Clinical Sciences Institute (TraCS) and the director of the Clinical Translational Research Center (formerly the General Clinical Research Center). He is the chair of the publications committee of the AASLD and the chair of the steering committee for an NIH study of silymarin in HCV and NASH.

[Lisa Gangarosa](#) won the 2008 Eugene Bozymski Award for excellence in teaching endoscopy presented by the GI fellows.

[Paul \(Skip\) Hayashi](#) completed courses at the University of Michigan in meta-analysis and analysis of clinical trials. He is a member of the AASLD hepatobiliary neoplasia special interest group.

[Hans Herfarth](#) was awarded the best clinical poster presentation at the 2008 Crohn's and Colitis Foundation National Research and Clinical Conference. He successfully organized the second patient education day for IBD.

[Kim Isaacs](#) is a councilor for the Clinical Immunology Society. She precepted 3 fellows for the CCFA National Fellowship Program. Along with Hans Herfarth she received the top rank of 27 proposals for a trial concept investigating the role of methotrexate in the therapy of ulcerative colitis.

[Christian Jobin](#) serves on study sections for the NIH and the Canadian Institutes of Health

[Temitope Keku](#) served on NCI special emphasis panels. She was a guest speaker at the AACR Cancer Prevention Meeting.

[Ryan Madanick](#) directed the second year medical student GI System Course. He completed the Teaching Scholars Program.

[Scott Magness](#) obtained North Carolina Biotechnology Center and University Research Council grants

[Douglas Morgan](#) served on a UNC delegation to the University of Nicaragua, Leon with Dean William Roper. He is a member of the International Committee of the AGA. He presented an oral presentation at a distinguished abstracts plenary at DDW.

[Roy Orlando](#) was named associate editor for Digestive Diseases and Sciences.

Scot Plevy is a charter member of the NIH Gastrointestinal Mucosal Pathobiology Study Section. He is the chair of the AGA Foundation Fellowship To Faculty Transition Awards committee

Richard Rippe is an editorial board member for Hepatology, World Journal of Gastroenterology, Journal of Gastroenterology and a full member of the HBPP NIH Study Section

Balfour Sartor is the chair of the Immunology, Microbiology and IBD Section of the AGA.

Nicholas Shaheen is the Ray and Christine Hayworth Medical Alumni Distinguished Professor. He was President of the NC Society of Gastroenterology and chair of the Clinical Practice Section of the AGA. He was course director for the AGA Clinical Congress and Spring Postgraduate Course.

William Whitehead was appointed to the NIH Behavioral Medicine review panel. He was appointed to the NIDDK Scientific Advisory Committee of the Multidisciplinary Approach to the Study of Chronic Pelvic Pain research network.

Fellow Accomplishments

Shehzad Sheikh was awarded the Ruth L Kirschstein National Research Service Award (NRSA) and the Crohn's and Colitis Post-doctoral Research Fellowship Award in Fall 2008. He will have two oral presentations at DDW 2009.

Announcements

Tiffany McDougald is the new education coordinator for the Division.

Michael Fried, M.D. has been appointed co-chair of the steering committee for the Hepatitis B Research Network, sponsored by the National Institutes of Health (NIDDK). The NIH HBV Research Network is a consortium of 13 academic medical centers and numerous subsites in the U.S. and Canada that will perform cooperative clinical studies on the epidemiology, natural history, and treatment of chronic hepatitis B over the next 7 years..

Douglas Morgan, MD receives Bill and Melinda Gates grant. The Latin America consortium for the prevention of gastric cancer has received funding from the Bill & Melinda Gates Foundation, 2008-11. The consortium includes 6 countries and 4 U.S. universities. The focus in the initial phase is on the optimization of H pylori eradication regimens, assessment of gastric cancer biomarkers, and streamlining of the cancer epidemiology network. The initiatives will facilitate inclusion of the Spanish Rome III instrument and its dissemination in Latin America. Douglas Morgan, MD MPH, serves as a member of the consortium's steering committee. In addition, the UNC Gastroenterology collaborative partners in Central America are core members of the consortium: Honduras (Ricardo Dominguez MD) and Nicaragua (Rodolfo Peña MD DrPH, Loreto Cortes MD MPH).

Procedures Appointments

Outpatient general endoscopic procedures such as colonoscopy, EGD, and sigmoidoscopy can be scheduled directly through the GI Procedure Unit (919-966-5563; after hours, messages may be left at 919-966-2319).

These are considered "open access" procedures, meaning that they can be scheduled by any referring physician. Services provided by the UNC Motility Unit are also "open access". All other procedures require approval by a UNC faculty member (after completion of a referral form or following a telephone consultation).

For questions regarding urgent or complex cases, call the GI Procedures Unit (919-966-5563) and ask to speak to an attending physician in the procedures area.

Clinic Appointments

Phone: GI Program - (919) 966-2511 • Hepatology Program - (919) 966-2516
Fax: GI Program - (919) 966-6842 • Hepatology Program - (919) 966-1700

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