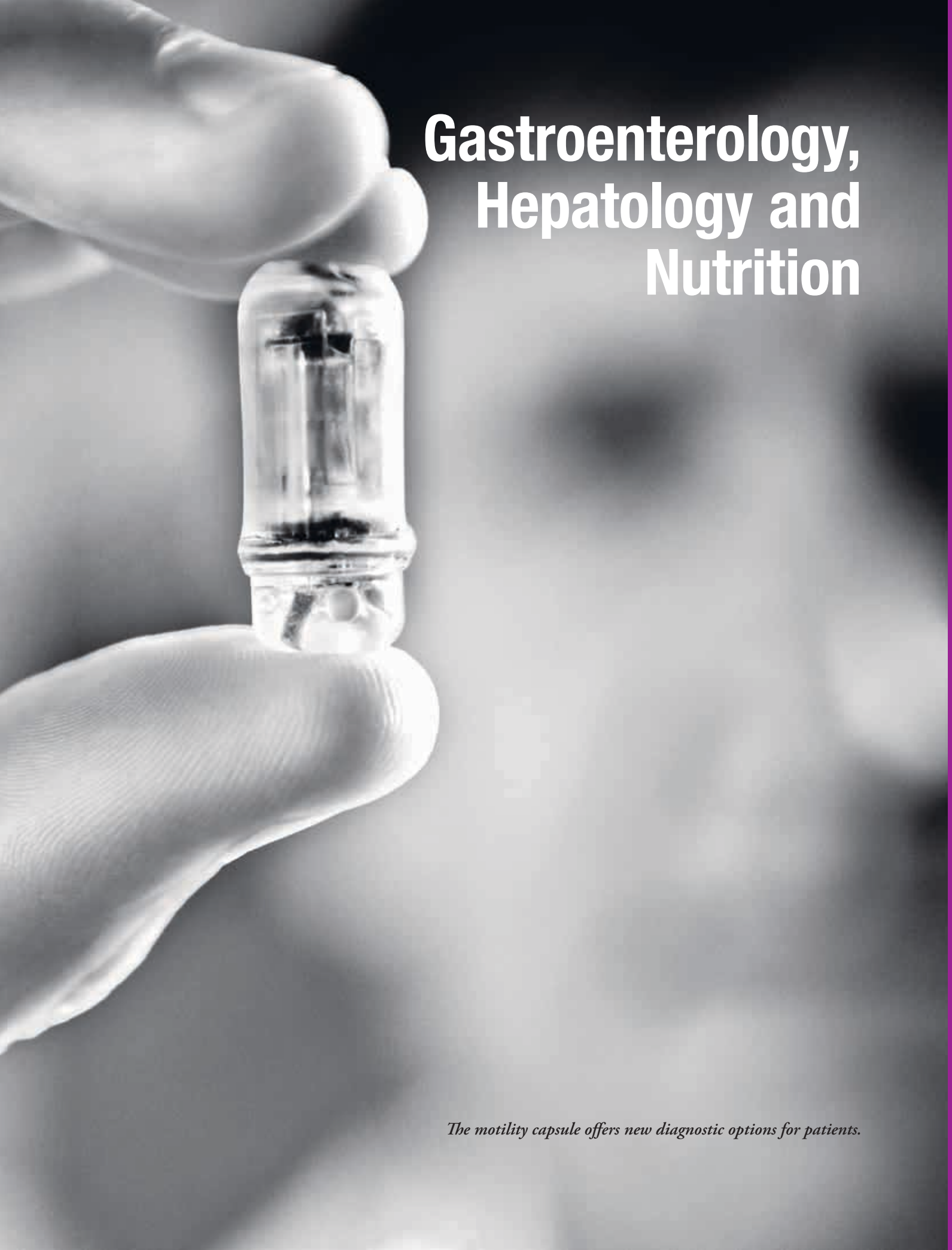
Achieving the best outcomes means doing everything possible for every patient, regardless of that child's unique circumstances. This includes doing what is right and having the same commitment to excellence for patients who come to us with routine problems and for those who are referred for innovative therapies or testing after having exhausted other possibilities. It also means looking ahead, investigating new modalities, training the next generation of specialists, and discovering more opportunities to improve the lives of children through the care we provide.

– Carlo Di Lorenzo, MD
Chief, Gastroenterology, Hepatology, and Nutrition

Gastroenterology, Hepatology and Nutrition



The motility capsule offers new diagnostic options for patients.

Wireless Motility Capsules May Enable Non-Invasive Diagnosis of Gastroparesis

Already used for the diagnosis of digestive problems in adults, wireless motility capsules—tiny data recorders that collect information on how food moves through the gut—may also offer an informative and noninvasive diagnostic option for children with gastrointestinal motility disorders, a new study suggests. The research, led by **Carlo Di Lorenzo, MD**, offers promising news for families hoping to avoid the invasive and inconvenient diagnostic procedures often required to conclusively identify gastroparesis, a condition in which there is difficulty moving food out of the stomach and through the intestines.

The study, published in June in *The Journal of Pediatrics*, explored the capsules' relative usefulness in identifying disturbances caused by gastroparesis. Dr. Di Lorenzo and colleagues at Nationwide Children's and Massachusetts General Hospital compared the results from various diagnostic methods to study gastrointestinal motility on 22 children age 8 to 17. Antroduodenal manometry (ADM) is currently the standard diagnostic procedure in the pediatric population to diagnose the motility disturbances that cause gastroparesis.

The motility capsules were more sensitive in detecting gastroparesis than another minimally invasive method, scintigraphic gastric emptying. Furthermore, the capsules surpassed ADM in their ability to detect motor abnormalities.

"We are focused on trying to find a less invasive way to study and treat GI disturbances in children, and compared to standard diagnostic techniques, the wireless motility capsules were well-tolerated, safe, feasible and provided helpful information," says Dr. Di Lorenzo, senior author on the paper. "It would be premature to say we should use just the motility capsule any time a diagnosis of a motility disorder is needed, but preliminary results do show that it can be effective at diagnosing certain gastrointestinal problems in children."

Green AD, Belkind-Gerson J, Surjanhata BC, Mousa H, Kuo B, Di Lorenzo C. Wireless motility capsule test in children with upper gastrointestinal symptoms. *J Pediatr.* 2013 Jun, 162(6):1181-7.

Carlo Di Lorenz
Gastroenterol

GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

Consistently ranked as a top digestive disorders program by *U.S. News & World Report*, the Division of Gastroenterology, Hepatology and Nutrition at Nationwide Children's Hospital provides comprehensive patient care for a broad range of gastrointestinal, liver, and nutritional problems. The division strives for excellence in research, teaching, and clinical care, and maintains a team of physician-scientists committed to the creation of new knowledge in the discipline. Our physicians work as a team with pediatric nurse practitioners to diagnose and treat gastrointestinal diseases and disorders while collaborating with other specialists, such as dietitians and behavioral and developmental psychologists, to provide comprehensive, coordinated care for each child.

STAFF PHYSICIANS AND FACULTY

Carlo Di Lorenzo, MD
Chief
Professor of Clinical Pediatrics

FULL-TIME FACULTY

Jane P. Balint, MD
Associate Professor of Clinical Pediatrics
John A. Barnard, MD
Professor of Pediatrics
Brendan M. Boyle, MD, MPH
Assistant Professor of Clinical Pediatrics
Ryan S. Carvalho, MD
Associate Professor of Clinical Pediatrics
Wallace V. Crandall, MD
Professor of Clinical Pediatrics
Jolanda M. Denham, MD
Assistant Professor of Clinical Pediatrics
Molly C. Dienhart, MD
Assistant Professor of Clinical Pediatrics
Jennifer L. Dotson, MD, MPH
Assistant Professor of Clinical Pediatrics
Tracy R. Ediger, MD, PhD
Assistant Professor of Clinical Pediatrics
Steven H. Erdman, MD
Professor of Clinical Pediatrics
Cheryl E. Gariepy, MD
Associate Professor of Pediatrics
Jonathan M. Gisser, MD
Assistant Professor of Pediatrics
Ivor D. Hill, MD
Professor of Clinical Pediatrics
Sandra C. Kim, MD
Associate Professor of Clinical Pediatrics
Hayat M. Mousa, MD
Professor of Clinical Pediatrics
Carol J. Potter, MD
Associate Professor of Clinical Pediatrics
John M. Russo, MD
Assistant Professor of Clinical Pediatrics
Kent C. Williams, MD
Assistant Professor of Clinical Pediatrics
Desalegn Yacob, MD
Assistant Professor of Clinical Pediatrics

The Motility Center at Nationwide Children's leads the nation in the care of children with motility disorders. From behavior-related motility disorders to complex abnormalities of the enteric nervous system, our physicians are pioneering innovative tests and treatments to give families new hope for their children.

They use advanced diagnostic techniques including antroduodenal and colonic manometry, esophageal impedance, high-resolution manometry, and wireless motility capsules. These specialized tests study how the intestine moves, contracts, and relaxes. They can also measure intestinal perception, including the threshold for discomfort and pain from the intestine. Carlo Di Lorenzo, MD, chief of gastroenterology, and Hayat Mousa, MD, medical director of the Motility Center, are internationally recognized experts in diagnosing and treating pediatric gastrointestinal motility disorders. Desalegn Yacob, MD, joined the Motility Center this year.

The GI division includes the IBD Center, which is dramatically improving the care of children with inflammatory bowel disease. By helping lead the national collaborative ImproveCareNow, Nationwide Children's and other organizations are following thousands of patients from across the country and developing systems of care to improve outcomes for all IBD patients.

The GI division also provides unique expertise in diagnosing and treating hereditary polyposis disorders. Steven H. Erdman, MD, has built an international reputation caring for children and adolescents with hereditary polyp disorders and colorectal cancer syndromes, as well as using unique diagnostic and therapeutic approaches, such as double balloon enteroscopy (DBE) used in conjunction with capsule endoscopy. Nationwide Children's continues to be one of only a few institutions in the United States to provide both the equipment and the expertise for the use of DBE in pediatric patients.

The Intestinal Support Service led by Dr. Jane Balint and Dr. Molly Dienhart continues to provide cutting edge care to a large cohort of patients with intestinal failure achieving among the best results in the country in the rehabilitation of infants with short bowel.

With Ivor Hill, MD, joining the GI faculty in 2013, NCH has also established a comprehensive multidisciplinary Celiac Disease Center focused on providing the best care to children with gluten-related disorders. Clinical research and quality improvement projects are also areas of emphasis for the new Celiac Disease Center. A multidisciplinary Eosinophilic Esophagitis Clinic has also been implemented under the leadership of John Russo, MD.

The division has a long history of contributions to the scientific laboratory, clinical and translational research, and continues to be on the cutting edge of research in a broad array of areas. Some of the division's current research includes developing less-invasive technology to evaluate gastrointestinal motility, investigating the role of parenteral nutrition on the trace element composition in infants with short bowel, understanding the function of the stomach in adolescents with eating disorders, uncovering the role of acid and nonacid reflux on the development of sleep apnea, using novel treatments for children with feeding disturbances, describing the role of emotions and stress in children with inflammatory bowel diseases, and improving our understanding of the prevalence and pathophysiology of GI symptoms in children with autism spectrum disorders. These research studies provide the patients at Nationwide Children's with access to the newest diagnostic and treatment protocols available.

Surgeons and gastroenterologists at Nationwide Children's have continued to work together to offer gastric pacemakers to children with gastroparesis and other severe upper GI symptoms. Currently, Nationwide Children's has the most substantial experience in the world in using this innovative procedure in children. Recently, they have also started to implant a novel device, the sacral nerve stimulator, in children with urinary and defecatory disturbances. The Motility Center clinicians have also developed a very successful multidisciplinary treatment to rehabilitate children with rumination syndrome, a condition that makes it impossible to hold down any food that is ingested.

The division offers one of only two fellowships in motility – highly specialized training in a subspecialty of gastroenterology – in the country. As part of the Stecker Scholar Program at Nationwide Children's, every year the division provides opportunities for collaboration to physicians from the University of Amsterdam.

RESEARCH FUNDING (OVER $50,000) AWARDED

July 2012 – June 2013

Russo, John
ORAL Study Drug in Adolescent and Young Adult Subjects (12-25 years of age) With Eosinophilic Esophagitis: a Randomized, Double-Blind, Placebo-Controlled Study in Children With an Open Label Extension
Industry Sponsor
$73,315

PUBLICATIONS

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FAST FACTS

July 2012 – June 2013

Total Discharges: 1,165
- Inpatient Discharges: 795
- Observation and Outpatient-in-a-Bed Discharges: 370
- Total Patient Days*: 4,544
- Average Length of Stay*: 5.7
- Average Daily Census*: 12.4

Total Surgical Procedures: 2,065

Total Clinic Visits: 14,709
- Dublin Gastroenterology Clinic Visits: 1,553
- GI Allergy Clinic: 29
- Gastroenterology Clinic Visits: 10,890
- GI Motility/Surgery Clinic Visits: 28
- GI Procedure Room Visits: 299
- Mansfield Gastroenterology Clinic Visits: 251
- Westerville Gastroenterology Clinic Visits: 1,466
- Lima Gastroenterology Clinic Visits: 193

**Excludes Observation and Outpatient-in-a-Bed Cases.*