Motility Disorders from Simple to Complex

The Motility Center at Nationwide Children's diagnoses and treats an array of motility problems. The following is a list of some common disorders:

Chronic Intestinal Pseudo-Obstruction
This is a rare disorder where the intestines act as if there is a mechanical obstruction or blockage, but no physical evidence of a blockage is found. It is considered a failure of the "intestinal pump," much like heart failure is a failure of the heart pump. The consequence of this failure is that food and other intestinal contents fail to move efficiently from the more proximal to the most distal portions of the intestine.

Constipation
Many children have trouble with constipation at one time or another. Usually, this is not a long-term problem; however, some children may be constipated for many months or years. While constipation may have different meanings to different people, it can be defined as:

- More than three days between bowel movements
- Stools that are large, hard and painful to pass
- Incomplete bowel movements where stool backs up in the bowel despite daily bowel movements

Encopresis
The accidental loss of control of bowel contents, encopresis most often occurs in children with chronic constipation and abnormalities of the spinal cord, as well as children who have had anal surgery and those who have emotional problems, such as oppositional defiant behavior and conduct disorders. Encopresis reported in children younger than 4 years of age may be the result of the child not yet being fully toilet trained.

Gastroesophageal Reflux
Gastroesophageal reflux is very common and considered normal in infancy. For those infants with more severe reflux, physicians at Nationwide Children's are pioneering the use of impedance, a relatively new technology that detects all reflux events and assesses the height of the esophagus reached by those reflux episodes.

Gastroparesis
Gastroparesis occurs when the stomach contracts less frequently and less powerfully, causing food to lie in the stomach for prolonged periods of time. Many conditions can cause gastroparesis, including viral infections, diabetes, adrenal and thyroid gland problems, scars and fibrous tissue, prescription medication, previous stomach surgery and neurologic disorders. In up to 60 percent of cases, the cause of gastroparesis in children is not known.

Hirschsprung's Disease
Hirschsprung's disease occurs when nerves in a part of the bowel do not develop properly, preventing that part of the bowel from working as it should. Treatment requires surgical removal of the affected portion of the bowel, with or without temporary placement of a colostomy.

For an urgent consultation, call the Physician Direct Connect Line at (614) 355-0221 or (877) 355-0221. To make a referral, call (614) 722-6200 or (877) 722-6220, fax (614) 722-4000, or visit **NationwideChildrens.org/GI.**

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Gastroenterology, Hepatology and Nutrition

Motility Disorders in Children

NATIONWIDE CHILDREN'S

When your child needs a hospital, everything matters.℠

Diagnosing and Treating Motility Problems

Motility problems may cause vomiting, diarrhea, constipation, abdominal distension, abdominal pain, and difficulty swallowing, and can result in significant physical and emotional distress. Diagnosis and treatment of such disorders is often elusive and associated with much uncertainty.

Advanced Diagnostic Techniques
Children are diagnosed through advanced techniques that allow the study of how the intestine moves, contracts and relaxes. The techniques can also measure intestinal perception, including the threshold for discomfort and pain from the intestine.

- Esophageal manometry
- Esophageal impedance studies
- Antroduodenal manometry
- Colonic manometry
- Anorectal manometry
- Transit studies
- Electronic barostat
- Electrogastrography
- High-resolution imaging
- Scintigraphic colonic transit time

Technology Highlight

Esophageal Impedance (Multi-Channel Intraluminal Impedance)
This is a relatively new technique designed to detect intraluminal bolus movement allowing for the detection of both acid and non-acid reflux. Impedance testing depends upon measurement of changes in resistance to alternating electrical current when a bolus passes by multiple sensors (channels) placed on the catheter. The electrical current between the sensors is conducted by the few ions present in the esophageal mucosa. Multi-channel measurement of impedance allows for determination of direction of bolus movement based upon temporal differences in bolus entry and exit.

Antroduodenal Manometry
Antroduodenal manometry is used to study how the stomach and the first part of the small intestine are working. It helps measure both the strength and coordination of muscle contractions. A small flexible tube (catheter) is passed through the nose, down the esophagus, through the stomach and into the small intestine. The tube is passed after the child is sedated, but the manometry test is done after the child wakes, often the next day. If the child has a gastrostomy tube, the catheter will be passed through the gastrostomy instead of through the nose.

Indications:

- Recurrent vomiting
- Abdominal pain or distension
- Post-fundoplication feeding disorders

Colonic Manometry
This procedure helps discriminate normal colonic motor function from neuromuscular disorders. It guides medical and surgical management in patients with defecation disorders.

Indications:

- Differentiation of behavioral versus organic causes of constipation
- Post surgical repair in Hirschsprung's disease: fecal incontinence, constipation, poor growth
- Assessment of colonic function in gastrointestinal (GI) neuromuscular diseases
- Prior to multivisceral transplant

Disorders Most Commonly Referred to the Motility Center

Suspected Disorder	Clinical Presentation	First-line Diagnostic Procedures	Motility Center Diagnostic Procedures
Chronic intestinal pseudo-obstruction	Feeding intolerance, abdominal distension, vomiting and constipation	UGI-SBFT*, EGD*, gastric emptying scan	Antroduodenal manometry, colonic manometry, anorectal manometry
Hirschsprung's disease	Constipation, abdominal distension, fecal incontinence, diarrhea	Barium enema, rectal biopsy	Colonic manometry, anorectal manometry, scintigraphic colonic transit time
Gastroparesis	Early satiety, bloating, excessive belching, nausea, vomiting, weight loss, abdominal pain	UGI*, EGD*, gastric emptying scan	Antroduodenal manometry, electrogastrography (EGG), esophageal impedance
Severe chronic constipation	Bloating, abdominal distension, fecal incontinence	Barium enema, sitz marker transit study	Colonic manometry, anorectal manometry, scintigraphic colonic transit time
Gastroesophageal reflux	Vomiting, failure to thrive, recurrent aspiration pneumonia	UGI*, EGD*	Esophageal dual pH/impedance, antroduodenal manometry
Food aversion	Food refusal, failure to thrive, weight loss	UGI*, video swallow study, EGD*	Esophageal manometry, esophageal dual, pH/impedance

* Upper gastrointestinal series (UGI); small bowel follow through (SBFT); esophagogastroduodenoscopy (EGD)

What to Expect at the Initial Consultation with the Motility Center
Upon referral, patients presenting with these symptoms will be evaluated in the GI Clinic at Nationwide Children's. The evaluation may include: upper/lower endoscopy, small bowel imaging with an upper gastrointestinal series and small bowel follow-through, and/or gastric emptying scan. Depending on the results of the GI evaluation, the gastroenterologist will make the determination whether the patient should be referred to the Motility Center for more specialized diagnostic procedures. Motility results are reported to the gastroenterologists who will coordinate communication with the referring pediatrician's office.