

# DIGEST



UNC  
SCHOOL OF MEDICINE

*Our mission is to advance the biopsychosocial understanding and care of patients with functional GI & motility disorders through research, training and education.*

## IN THIS ISSUE:



UNC ATTENDS IFFGD'S ADVOCACY DAY IN WASHINGTON DC

UNDERSTANDING GASTROPARESIS: CRYSTAL SALTRELLI, CHC

UNITED EUROPEAN GASTROENTEROLOGY WEEK PUBLICATIONS

## ADVOCACY DAY 2014: ADVOCATING ON BEHALF OF PATIENTS WITH FGID'S

On June 24, Dr. William Whitehead and Stefanie Twist went to Washington D.C. to support the International Foundation for Functional GI Disorders (IFFGD) by lobbying the Senate and the House of Representatives to support multiple functional GI bills and legislation. Every year, the IFFGD holds Advocacy Day to provide patients the opportunity to tell legislators their personal story and experiences with living with a functional GI disorder. Researchers, physicians, and patients also have the opportunity to tell legislators the best way to make a positive difference is by passing meaningful legislation.

The UNC Center representatives visited the offices of Senator Richard Burr, Senator Kay Hagan, Representative David Price, Representative Renee Ellmers, and Representative Walter Jones. The legislation that was discussed with each legislator or aide included, (1) Raising the amount of money allocated to the NIH to \$32 billion dollars, (2) Support H.R. 842 "Functional Gastrointestinal and Motility Disorders Research Enhancement Act of 2013," (3) Continued funding for research into functional GI disorders with Gulf War Illness and other military service connected illnesses, (4) National Pediatric Research Network Act, and (5) discussing medical Foods and the new guidance adopted by the FDA.

At the end of this article, you can find information on how to locate your representative's contact information and IFFGD's update on FGIDs and military service connections.



*Dr William Whitehead, Stefanie Twist, and IFFGD's Elisabeth Vink making congressional visits on Capitol Hill.*

### **Raising the NIH Budget to \$32 Billion in FY2015**

With the recent sequester and reduction of NIH funds, it has been increasingly difficult to obtain NIH grants for research that would focus on new treatment options for patients with functional GI disorders. It is also becoming difficult to recruit and retain junior faculty because they are quickly disillusioned by the lack of grant support for research and find the field to be an unsustainable career option. Dr. Stephen James, Director of the Division of Digestive Diseases and Nutrition at the NIH, said recently that only 15% of submitted requests for research funding

[Continued on Page 8](#)

## UNC FUNCTIONAL GI AND MOTILITY DISORDERS CLINICAL TEAM

The Functional GI and Motility Clinic at UNC provides a comprehensive clinical service for patients with difficult-to-diagnose and challenging-to-treat functional GI and motility disorders. Under the new directorship of Yehuda Ringel, MD the Clinic's services and educational activities have expanded over the past two years. Our unique multidisciplinary, patient-centered approach integrates medical, nutritional, physiological and psychological factors in the evaluation and treatment of patients with these disorders.

Clinical providers also include Yolanda Scarlett, MD, Spencer Dorn, MD, MPH, Danielle Maier MPAS PA-C, Cara O'Connell-Edwards, PhD and Robin Dever, RN. Our clinical team is also routinely involved with consultation on patients hospitalized at UNC Hospitals and with physicians who call for advice regarding their patients. The clinic also serves as a teaching site for medical students, residents, GI fellows in training and visiting health care providers who are interested in learning more about our unique clinical approach and management of patients with functional and motility GI disorders.



*The Center's Clinical Team; Drs. Ringel, Dorn, Scarlett, and Danielle Maier, MPAS, PA-C. Robin Dever, RN, and Jennifer Layton*

*For information on how to schedule an appointment, please visit our website, <http://www.med.unc.edu/ibs/>*

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*DIGEST* is a quarterly publication of the UNC Center for Functional GI & Motility Disorders, a center of excellence within the Division of Gastroenterology and Hepatology, School of Medicine, University of North Carolina at Chapel Hill.

The Center's director is **William E. Whitehead, PhD**, Professor of Medicine and Gynecology.

Over the past decade, the UNC Center for Functional GI and Motility Disorders has enjoyed significant grant support from a number of private foundations and corporations. These grants have ranged from sponsorships of specific events (symposia or CME courses) to unrestricted grants in support of fellowships and the Center's education and training effort. Support for the Digest Newsletter is provided by Takeda Pharmaceuticals North America, Inc.



# DIGEST

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# UNITED EUROPEAN GASTROENTEROLOGY WEEK

OCTOBER 18 - 22, 2014  
VIENNA, AUSTRIA

The United European Gastroenterology Week (UEGW) is the largest GI meeting in Europe with an expected 14,000 medical professionals and researchers to attend this year. The University of North Carolina will be well represented as six abstract submissions were accepted for poster and oral presentations.

## October 20, 2014

**Title:** Abdominal Pain Versus Abdominal Discomfort: Implications For Diagnostic Assessment of Irritable Bowel Syndrome (IBS)

**Session Title:** IBS: Classification and Diagnosis

**Authors:** Olafur Palsson PsyD, Steve Heymen PhD, William E. Whitehead PhD

**Presenting Author:** Olafur Palsson, PsyD

**Presentation Type:** Poster

**Presentation Time:** 9:00AM - 5:00PM

## October 20, 2014

**Title:** Patient Preferences for Terminology Used to Identify Fecal Incontinence

**Session Title:** Lower GI Health Services Research

**Authors:** Steve Heymen PhD, Olafur Palsson PsyD, Sung Min Kim BS, Stefaine Twist BA, William E. Whitehead PhD

**Presenting Author:** Steve Heymen, PhD

**Presentation Type:** Poster

**Presentation Time:** 9:00AM - 5:00PM

## October 21, 2014

**Title:** Diagnostic approach to the patient with constipation: Relevance for choice of treatment.

**Session Title:** Management of constipation based in the underlying pathophysiology: Does it work?

**Presenting Author:** William Whitehead, PhD

**Presentation Type:** Invited Oral Presentation

**Presentation Time:** 4:07PM - 4:29PM

## October 21, 2014

**Title:** Patient Perspectives for Endpoints in Clinical Trials for Fecal Incontinence

**Session Title:** Hepatobiliary Health Services Research

**Authors:** William E. Whitehead PhD, Olafur Palsson PsyD, Steve Heymen PhD, Sung Min Kim BS, Stefanie Twist BA

**Presenting Author:** William Whitehead, PhD

**Presentation Type:** Poster

**Presentation Time:** 9:00AM - 5:00PM

## October 22, 2014

**Title:** Does Perceived Stigma Affect Health Care Consulting and Quality of Life in Fecal Incontinence?

**Session Title:** Neurogastroenterology

**Authors:** Olafur Palsson PsyD, Steve Heymen PhD, William E. Whitehead PhD

**Presenting Author:** Olafur Palsson, PsyD

**Presentation Type:** Poster

**Presentation Time:** 9:00AM - 2:00PM

## October 22, 2014

**Title:** Pathophysiology of functional GI disorders

**Session Title:** Neurogastroenterology and Motility: What's new in 2014?

**Presenting Author:** William Whitehead, PhD

**Presentation Type:** Invited Oral Presentation

**Presentation Time:** 11:00AM - 11:22AM

## October 22, 2014

**Title:** Association of Somatization with Irritable Bowel Syndrome (IBS) and Uninvestigated Dyspepsia in the U.S. General Population

**Session Title:** Neurogastroenterology

**Authors:** Olafur Palsson PsyD, Miranda van Tilburg PhD, William E. Whitehead PhD

**Presenting Author:** Olafur Palsson, PsyD

**Presentation Type:** Poster

**Presentation Time:** 9:00AM - 2:00PM

## October 22, 2014

**Title:** Which Measure of Fecal Incontinence Severity Is the Best Predictor of Fecal Incontinence Quality of Life (FIQL)?

**Session Title:** Symptoms in patients with functional gastrointestinal disorders

**Authors:** William E. Whitehead PhD, Olafur Palsson PsyD, Steve Heymen PhD

**Presenting Author:** William E. Whitehead, PhD

**Presentation Type:** Oral Presentation

**Presentation Time:** 2:12PM - 2:24PM

## FIRST PHASE OF FECAL INCONTINENCE SELF-HELP (FISH) STUDY STARTING SOON

In the previous issue of the Digest, we announced that the Center would be starting enrollment into a self-help website research study; the FISH research study. The Center is close to rolling out the first phase of the research and we would like your help in beta testing the website.

The purpose of the website is to provide patients and caregivers of individuals experiencing accidental bowel leakage (ABL) a resource that they can use discretely at their home or over a mobile device as a conservative treatment option. The final version of the website will include educational videos on treatment options and etiology for ABL, suggestions for over the counter (OTC) medications to normalize stool consistency, treatment resources at UNC, educational resources within and exterior to UNC, and helpful tips on how to improve and reduce episodes of ABL.

The first phase of the website research study will allow patients to track their bowel habits on a mobile phone or computer using an e-diary that will utilize daily diary entries to generate automated feedback for self-management techniques for stool frequency and consistency, and tips for reducing accidents. It will also encourage reporting of symptoms by emailing or

texting reminders to patients that they should visit the website. An important feature imbedded into the diary algorithm is a “red flag” warning that alerts the user when they should consult a physician about persistent or worsening GI symptoms.

Once the website has been tested and shown to be effective for reducing ABL, it will eventually be available for public use. We anticipate it will be helpful to the following groups of patients: (1) Those whose primary care provider encouraged them to visit as an additional treatment resource for ABL, (2) patients who participate privately because they feel embarrassed to disclose their condition to a family member or their primary care provider, and (3) patients who do not have access to a health care provider.

The UNC faculty involved in this research project include Drs. William Whitehead, Olafur Palsson, Steve Heymen, Mary Palmer, and Jan Busby-Whitehead.

If you would like to learn more about this research, please contact Stefanie Twist at [sjeremia@med.unc.edu](mailto:sjeremia@med.unc.edu) or 919-843-6961.

## ONLINE EDUCATIONAL RESOURCES

The UNC Center website, [www.med.unc.edu/ibs](http://www.med.unc.edu/ibs), has a wealth of educational resources that are available to patients and care providers. There are also many other helpful websites that help patients and clinicians find information on the diagnostic and treatment options for multiple GI disorders.



**Organization Name**  
International Foundation for Functional GI Disorders (IFFGD)

**Website URL**  
<http://www.iffgd.org>  
(Adult Population)  
[www.aboutkidsgi.org](http://www.aboutkidsgi.org)  
(Pediatric Population)

**Topics Covered**  
All FGIDs



**Organization Name:**  
American College of Gastroenterology (ACG)

**Website URL:**  
<http://patients.gi.org/>

**Topics Covered:**  
All GI Disorders



**Organization Name:**  
American Gastroenterological Association

**Website URL:**  
[www.gastro.org/patient-center](http://www.gastro.org/patient-center)

**Topics Covered:**  
All GI Disorders

## AMERICAN COLLEGE OF GASTROENTEROLOGY RELEASES GUIDELINES ON MANAGEMENT OF BENIGN ANORECTAL DISORDERS

In June 2014, the American College of Gastroenterology (ACG) published clinical guidelines for the medical management of benign anorectal disorders. Disorders covered on this publication include disordered defecation (DD), accidental bowel leakage (ABL), chronic proctalgia disorders, anal fissure, and hemorrhoids. This article will summarize the medical definition, recommendations for diagnostic assessment and recommendations for treatment for each disorder. Consensus recommendations for each disorder are based on literature from 1966 – current published medical articles, adaptations from the 2010-2011 and 2013 American Society of Colon and Rectal Surgeons Practice Parameters, and reviews of published clinical trials, systematic reviews, and meta-analyses. To find the full article see;

Wald A, Bharucha AE, Cosman BC, Whitehead WE. ACG Clinical Guideline: Management of Benign Anorectal Disorders. *Am J Gastroenterol*. 2014. Epub ahead of Print. PMID: 20522811

### *Disordered Defecation*

Disordered Defecation (DD) is a condition where a patient has trouble evacuating stool from the rectum. This is commonly associated with constipation. Scientists believe that disordered defecation is not caused by structural abnormalities or damage to the nerves surrounding the rectum, but with maladaptive learned behavior, such as tensing the pelvic floor muscles during a bowel movement. It is important to recognize other causes for impaired defecation and chronic constipation as they respond to treatments differently than disordered defecation. Structural abnormalities such as rectal prolapse, rectocele, and obstructed defecation can impair normal defecation as well and should be screened for prior to diagnosis of disordered defecation.

#### **Diagnostic Recommendations**

The diagnosis of disordered defecation should not be based on one abnormal test, but should instead rely on medical and symptom history and at least two abnormal tests. Testing can include anorectal manometry, balloon evacuation test, digital rectal exam, or barium/MR defecography. As a conservative diagnostic test, the digital rectal exam is used to check anal sphincter muscle tone. The clinician will insert a gloved finger into the anal canal and assess the sphincter muscle tone at rest and compare it to the muscle tone when a patient is asked to strain as if having a bowel movement. If the patient does not relax or decrease sphincter muscle tone when straining, this may be an indicator of disordered defecation. Most of the above mentioned tests are used to identify two main criteria; (1) inability to relax pelvic floor muscles and, (2) inability to increase rectal pressure.

#### **Treatment Recommendations**

The preferred treatment for disordered defecation in adults is biofeedback. Studies mentioned in the article show that biofeedback has a greater treatment response than laxatives, placebo, and medical management. A biofeedback therapist may use simulated defecation protocols and education on pelvic floor muscles and proper muscle contraction/relaxation to help improve bowel function and symptom management. Simulated defecation training is conducted when a clinician inserts a lubricated deflated balloon that is attached to a catheter into the rectum of a patient. The balloon is then filled with water or air. The patient will then be asked to try and pass the balloon while being reminded to relax the pelvic floor muscles and simultaneously contract

the abdominal wall muscles. The goal is to help the patient learn techniques that will assist in easier passage of stool through the rectum. Biofeedback is effective in adults but has not shown efficacy in the pediatric population.

### *Fecal Incontinence*

Fecal incontinence (FI), also known as accidental bowel leakage (ABL), is the accidental loss of stool. It can consist of amounts as small as smearing or staining on undergarments up to the loss of a full bowel movement. Risk factors for ABL include increased age, increased weight, diarrhea, cholecystectomy, rectal urgency, obstetric injury, non-obstetrical damage to the anal canal, anal fistula, urinary incontinence, and chronic illnesses such as diabetes or stroke.

#### **Diagnostic Recommendations**

Clinicians should talk to patients about presence of ABL rather than waiting on self – reporting of the condition from patients. It is important for a clinician to reassure the patient that FI is not an uncommon problem. Talking with the patient about potential risk factors may help identify reason(s) for the incontinence. Bowel diaries are a useful tool to identify diarrhea, abnormal bowel habits, and urgency. Use of conservative treatments, such as fiber, skin care, and education are recommended prior to the use of other diagnostic tests as conservative management may reduce or resolve symptoms without the need for further testing. Anorectal manometry, balloon evacuation test, endoanal ultrasound, and digital rectal exams are used to help identify problems with the anal canal and rectum. Clinicians are encouraged to perform a digital rectal exam prior to referring for additional diagnostic exams as experienced individuals are able to assess the presence of sphincter muscle deficits similarly to anorectal manometry.

#### **Treatment Recommendations**

Patient education on lifestyle modifications can be an important tool to reduce the incidence of ABL. Caffeine and certain foods can cause stools to become loose, which can worsen incontinence symptoms. Conservative treatment options should be offered first. These include lifestyle modifications, symptom diary, antidiarrheal medications and/or fiber supplements. Individuals who suffer from overflow incontinence (severe constipation or fecal impaction where loose stool passes around the formed stool and leaks out the anus) can be prescribed either osmotic or

stimulant laxatives. Additional treatment options include medications such as loperamide, diphenoxyate with atropine, or bile salt-binding agents. Pelvic floor exercises and biofeedback help teach patients to contract pelvic floor muscles to help increase continence. For individuals who don't respond well to the above mentioned treatments, injectable bulking agents, sacral nerve electrical stimulation, and anal sphincteroplasty may help reduce symptoms.

### *Chronic Proctalgia*

Chronic proctalgia is a condition where an individual experiences pain, aching, or discomfort in the anus or rectum that lasts 20 minutes or more. Additional terms for chronic proctalgia are levator ani syndrome, levator spasm, puborectalis syndrome, and pelvic tension myalgia. The most likely reason for this pain and discomfort is continuous tensing or spasms of the pelvic floor muscles.

#### **Diagnostic Recommendations**

The diagnosis of chronic proctalgia is based on the presence of characteristic symptoms and exclusion of other diseases that could explain the symptoms. Recommended diagnostic criteria used to identify chronic proctalgia include a history of symptom reporting, digital rectal exam, balloon evacuation test, and anorectal manometry. If a patient reports pain during a digital rectal exam when the clinician applies pressure to the levator ani muscles, this predicts a favorable response to treatments designed to reduce the pelvic floor muscles. Other predictors of a favorable response to treatment are when the patient can not pass a 50mL balloon and was unable to relax pelvic floor muscles when straining. Physiological symptoms such as anal fissures, hemorrhoids, and malignancy should be screened for as well to ensure there is no other reason for pelvic floor pain.

#### **Treatment Recommendations**

Biofeedback, electrical stimulation, digital massage, sitz baths, and botulinum toxin injections have all been advocated for treating chronic proctalgia. A randomized controlled trial (RCT) showed biofeedback to be more effective than electrical stimulation or massage. As mentioned above, inability to expel the 50mL balloon and relax the pelvic floor muscles identify patients who are likely to benefit from biofeedback. These results also share some overlap with disordered defecation, where biofeedback has shown to be the most effective at symptom reduction.

### *Anal Fissures*

Anal fissures are ulcers that appear as tears in the anal canal that are parallel with the muscles. Anal fissures that appear horizontal to the muscles in the anus should be inspected carefully as these types of fissures have been associated with incidents of Crohn's disease, tuberculosis, syphilis, HIV/AIDS, and cancer.

#### **Diagnostic Recommendations**

Patients who have anal fissures describe symptoms of a hemorrhoid with pain during and following defecation and sometimes bright red blood when wiping. Endoscopy should be conducted to confirm the diagnosis.

#### **Treatment Recommendations**

Conservative treatment options include sitz baths, psyllium fiber, and topical anesthetics or anti-inflammatory ointments. The goal is to have the fissure heal on its own. Chronic anal fissures can be treated with prescribed medications such as calcium channel blockers, nitrates, local injections of botulinum toxin, or surgery to remove the ulcer.

### *Hemorrhoids*

Hemorrhoids are enlarged veins in the mucosal lining of the anal canal or lower rectum. Internal hemorrhoids don't protrude out of the anus except during a bowel movement but they may cause bleeding and stinging pain. External hemorrhoids, also referenced as thrombosed external hemorrhoids do protrude and cause pain and bleeding.

#### **Diagnostic Recommendations**

External hemorrhoids can be seen during a physical exam and appear bluish in color and are tender to the touch. When diagnosing internal hemorrhoids, if bleeding is occurring, a clinician may order a colonoscopy, endoscopy or sigmoidoscopy to rule out any other condition that may be causing the bleeding.

#### **Treatment Recommendations**

External hemorrhoids can be treated through a variety of different measures including letting the clot resolve and reabsorb and use of over-the-counter ointments and astringents. Internal hemorrhoids can be banded during endoscopy. For acute and painful hemorrhoids, local anesthetic and excision may relieve the pain more quickly and can be done in a physician's office. Patients should not strain during a bowel movement and should reduce the amount of time spent on the toilet. For internal hemorrhoids, treatments that can be offered in the clinic include banding, ligation, sclerotherapy, and infrared coagulation. For severe hemorrhoids, patients need to be referred to a surgical clinic. These procedures include hemorrhoidopexy and doppler-assisted hemorrhoidal artery ligation.

## ADVOCACY DAY 2014: CONTINUED FROM COVER

are granted per cycle. This leaves at least half of good-quality grant applications unfunded and new treatments or basic science undiscovered, forcing patients to wait even longer for life-altering medications, therapies and treatments.

### **Supporting H.R. 842 in the House of Representative or Sponsoring the bill in the Senate**

H.R.842 is a bill sponsored in the House of Representatives. This bill would provide increased money for research opportunities, providing support to establish centers of excellence on FGIDs, and increase public awareness and understanding of FGID's. The text of the bill reads; "Functional Gastrointestinal and Motility Disorders Research Enhancement Act of 2013 - Amends the Public Health Service Act to require the Director of the National Institutes of Health (NIH) to expand, intensify, and coordinate NIH activities with respect to functional gastrointestinal and motility disorders (FGIMDs), including by: (1) expanding basic and clinical research into FGIMDs by implementing the research recommendations of the National Commission on Digestive Diseases, (2) providing support for the establishment of centers of excellence on FGIMDs, (3) directing the National Institute of Diabetes and Digestive and Kidney Diseases to provide the necessary funding for the continued expansion and advancement of the FGIMDs research portfolio through intramural and extramural research, and (4) directing each Institute and the Eunice Kennedy Shriver National Institute of Child Health and Human Development to expand research into FGIMDs that impact children, and authorize the Secretary of Health and Human Services (HHS) to engage in public awareness and education activities to increase understanding and recognition of FGIMDs."

### **Continued financial support for functional GI disorders and military service connection**

A growing population of patients with FGID illnesses is the active duty and veteran populations. A recent study (Savas LS, et al. Irritable bowel syndrome and dyspepsia among women veterans: prevalence and association with

psychological distress. *Ailment Pharmacol Ther.* 2009; 29(1): 115-125) found that for every 1 point increase in PTSD score, the odds of reporting IBS and dyspepsia symptoms increased by 3%. Combat-related stress, compounded with pathogen-induced vomiting and diarrhea, increases risks of developing a FGID. During each visit, we specifically asked for all elected officials to request continued funding of the Gulf War Health Research Program in the FY15 Defense Appropriations at \$20 million.



*Stefanie Twist visiting Senator Kay Hagan's Office to speak about Military Service Connection and the associations with Functional GI disorders. The map in Senator Hagan's represents everyone who has visited her office.*

### **National Pediatric Research Network Act**

National Pediatric Research Network Act of 2013 amends the Public Health Service Act to authorize the Director of the National Institutes of Health (NIH), in carrying out the Pediatric Research Initiative, to act through the Director of the Eunice Kennedy Shriver National Institute of Child Health and Human Development to provide for the establishment of a National Pediatric Research Network.

The bill includes legislation that would enhance the research and treatment options for pediatric populations. The bill would authorize the Director of the NIH to:

1. Award funding to public or private nonprofit institutions
2. Require that each research entity that receives an award to assist the Centers for Disease Control and Prevention (CDC) in the establishment or expansion of patient registries
3. The legislation as would require the Director of NIH to establish a data coordinating center to distribute research findings and provide assistance in the design and conduct of research projects.

### **Medical food guidelines recently passed by the FDA**

Recent guidance issued by the FDA, "Guidance for Clinical Investigators, Sponsors, and Institutional Review Boards on Investigational New Drug Applications—Determining



*Dr. William Whitehead spoke about the sequester and need for an increase of NIH funds to support research for new treatments for patients. He also spoke on the importance of supporting and passing H.R.842. Dr. Whitehead advocated for the FDA to review the recommendations for medical food, as they would impose a large burden on the research community and slow down novel treatment options for patients.*

Whether Human Research Studies Can Be Conducted Without an Investigational New Drug Application,” FDA-2010-D-0503-0017, would require that an investigational new drug (IND) application be submitted for all research on foods used to help manage FGIDs. Previously foods, medical foods, and food supplements were exempt from this requirement. The new guidance was issued without an opportunity for public comment, and it is ambiguous. While some categories of food-related research could be exempted, the distinctions between what is exempt and what requires an IND are confusing and depend in part on the researcher’s “intentions” in how the research findings will be used. This guidance would impose a large burden on the research community. We requested that each elected representative reach out to the FDA and recommend to postpone implementation of these guidelines and allow time for public comment and possible revisions.

After all congressional visits were completed, we at UNC felt that we took one step further in continuing the Center’s mission to further patient care, research, professional training, and public education.

If you are interested in speaking or writing to your elected representative to ask for support for any functional GI bill, you can find their contact information at <https://www.govtrack.us/>

To find out more about supporting functional GI veteran’s issues and military service connection, visit <http://www.dha.org/take-action/veterans-issues>



## CENTER DIRECTOR VISITS UNIVERSITY OF GOTHENBURG



In August, Dr. William Whitehead, Director of the Center, was invited to the University of Gothenburg to consult on the development of a pelvic floor diagnosis and treatment program. He was the guest of Dr. Magnus Simren, Director of the Neurogastroenterology and Motility Center. Dr. Whitehead gave presentations on (1) Clinical management of accidental bowel leakage (ABL) and constipation, (2) physiological testing for pelvic floor disorders, and (3) theory and practice of pelvic floor biofeedback. He also participated in the diagnostic assessment of three patients with chronic constipation.

Later this year, Pernilla Jerlstad, RN from the University Of Gothenburg Neurogastroenterology Program will visit Chapel Hill to receive further training in pelvic floor biofeedback. She will work with Drs. Whitehead, Steve Heymen, and Mary Scholz. Dr. Magnus Simren will be starting a one-year sabbatical at the UNC Center for Functional GI and Motility Disorders beginning in August 2015. We anticipate our two centers will collaborate on clinical research studies related to pelvic floor disorders.

## RESEARCH SUBJECTS NEEDED

## CAUSES OF SYMPTOMS STUDIES

### Parents of Children who suffer from frequent stomach-aches needed for a Research Study

Would you like to learn new ways to manage your child's stomachaches?  
Researchers at UNC are conducting a research study evaluating different methods for parents to manage their child's stomachaches.

You may be eligible if:

- Your child is between the ages of 7 - 12.
- Your child has frequent stomachaches.

Participation

- 3 - 30 minute training sessions
- Parents and children complete 5 surveys over the course of 1 year
- Parents receive \$150 and children receive \$25.

**Principal Investigator**  
**Dr. Miranda van Tilburg**

#### Contact Information

Dr. Miranda van Tilburg  
919-843-0688  
tilburg@med.unc.edu

### Diagnostic Evaluation of Functional GI and IBS Networks (DEFINE)

The UNC Center for Functional GI and Motility Disorders is looking for eligible subjects to participate in the DEFINE study.

You may be eligible to participate if:

- You have experienced any of the following GI symptoms for at least 3-6 months without a definitive diagnosis:
  - Abdominal pain or discomfort
  - Bloating
  - Constipation
  - Diarrhea
- You have not had any definitive testing for your GI symptoms
- You are at least 18 years of age

Eligible participants may receive up to \$214 for time and travel.

The development and validation of a blood test to identify IBS: DEFINE  
(Diagnostic Evaluation of Functional GI and IBS Networks)  
IRB #13-2900

**Principal Investigator**  
**Dr. Yehuda Ringel, MD**

#### Contact Information

Charles McLendon  
919-843-1003  
aycockmc@email.unc.edu

## TREATMENT STUDIES

## RESEARCH SUBJECTS NEEDED

### Recruiting adult women with diarrhea predominant irritable bowel syndrome for a research study

We are looking for adult women with a specific type of irritable bowel syndrome (IBS) to join a research study assessing a potential new medication for IBS.

The RESTORE 5 Study will last for up to 8 weeks and involve about 5 clinic visits.

You may be able to take part in the RESTORE 5 Study if you:

- Are a woman 18 - 65 years of age
- Have had symptoms of IBS (including abdominal pain/discomfort and diarrhea) for at least 6 months
- Have loose or watery stools > 25% of the time and hard or lumpy stools < 25% of the time.

To participate in this trial, you must NOT have been diagnosed with;

- Crohn's Disease
- Ulcerative Colitis
- Diabetes mellitus
- Lactose Malabsorption
- Malabsorption syndromes
- Celiac Sprue

- Be pregnant or planning to become pregnant.

Qualified participants will receive study-related care including comprehensive physical exam and investigational study drug at no cost. Monetary compensation for study visits will be provided.

**Principal Investigator**  
Lisa Gangarosa, MD

**Research Coordinator**  
Angela Kibiy, RN,  
MPH  
919-537-3841  
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## TREATMENT STUDIES

## RESEARCH SUBJECTS NEEDED

**Need Men and Women who have Chronic Constipation**

Do you have chronic constipation?

The UNC Center for Functional GI and Motility Disorders is conducting a research study to evaluate an investigational drug.

Eligibility: To be eligible, you must be between the ages of 18-81, and have chronic idiopathic constipation.

Participation includes:

- Completing daily symptom diaries on a handheld electronic device
- Documenting bowel movements on a handheld electronic device
- Giving blood samples and urine samples
- Completing a no-cost physical exam
- Completing 6 -7 visits during the 14-week study
- Self-administering study medication once a day

Qualified participants may receive compensation from the site for participation and travel expenses. Potential subjects should not be participating in any other clinical trials.

**Principal Investigator:**  
Spencer Dorn, MD

**Contact Information**

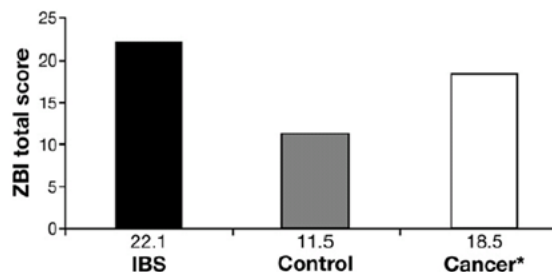
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## UNC PATIENT EDUCATION DAY 2014: EDUCATION ON FGIDS REACHES AN INTERNATIONAL AUDIENCE

The Center hosted its iconic “Expert Update on Treatments for Functional GI Disorders: A Symposium for Patients” on June 22, 2014 in Washington DC. This event was attended in person and by a large international online audience. Two hundred and fourteen people attended online throughout the day with people participating in 36 U.S. states and 13 different countries, including Russia, India, Pakistan, China, Australia, and New Zealand. The event featured prominent experts in the field of functional gastroenterology including many faculty members from UNC at Chapel Hill.

The symposium was divided into four main sections; (1) the illness burden of functional GI disorders, how to make the most out of a physician office visit, and a patient perspective of living with FGIDs; (2) Upper GI disorders including heartburn, dyspepsia, and gastroparesis; (3) lower GI disorders including irritable bowel syndrome (IBS), chronic constipation, accidental bowel leakage (ABL), and the GI risks of pain medications; and (4) probiotics, diet, and effective psychological treatment options. Speakers included Drs. William Whitehead, Olafur Palsson, Ryan Madanick, Yehuda Ringel, Yolanda Scarlett, Doug Drossman, Jay Pasricha, Lin Chang, Richard Saad, dietician and author Kate Scarlata, and patient advocate Louise Mott.

The event was covered over Twitter by UNC’s Ryan Madanick, MD (@RyanMadanickMD), Olafur Palsson, PsyD (DrPalssonUNC), Stefanie Twist, BA (@FGIFYI), and Functional GI blogger, Jacqueline Gaulin (@GastroGirl). Patients in the audience and those attending online were able to submit questions to the speakers.



Wong, R.K. et al., Partner burden in irritable bowel syndrome, Clinical Gastroenterology and Hepatology, 2013; 11:151-5. [1]

**Prevalence and Illness Burden of FGIDs**

Dr. Laurie Keefer discussed the prevalence of IBS. France has the lowest prevalence and USA, Pakistan, and UK have the highest. Diagnosis of IBS is associated with increased health care visits, high health care costs, and work absenteeism. The psychological and partner burden on partners is also increased in IBS patients when compared to control patients and cancer patients (see graph) [1] Stigma, symptom severity, psychological factors such as depression and/or anxiety, and poor self-management all were identified as factors that have been shown to increase the burden of having a FGID.

**Making the Most of a Visit to Your Doctor**

Dr. Douglas Drossman, co-founder of the UNC Center for Functional GI and Motility Disorders, described the importance of the doctor-patient relationship and what a patient can do to maximize the benefits of the office visit

and listed some of the beliefs and misunderstandings people and physicians have of patient reported symptoms. These misconceptions can make patients experience feelings of stigma, social isolation, embarrassment, and cause them to believe that others minimize the importance of symptoms associated with the FGID. For an effective physician – patient relationship, there are guidelines that should be addressed during the visit. The physician needs to explain all pertinent medical information so that the patient can fully understand it. For example, the physician should explain the causes for symptoms, reassure the patient, and not be dismissive of their symptoms.

During the appointment, the patient and physician need to set realistic goals such as a reduction in symptoms rather than elimination of the disorder. The physician should encourage the patient to take an active role in health maintenance and to accept responsibility for the plan of care. A study conducted at UNC by Dr. Drossman in 2004 found that GI fellows in training at UNC perceive a patient's problem more positively if they believe the patient has an organic GI disorder such as Crohns or ulcerative colitis, versus a functional GI disorder: see chart below.

| Physician and Patient Perceptions of Functional vs. Organic Diagnosis [2] |                          |            |                        |            |
|---|--------------------------|------------|------------------------|------------|
|   | Physician Perception (%) |            | Patient Perception (%) |            |
|   | Organic                  | Functional | Organic                | Functional |
| Problem was Serious   | 35                       | 3          | 60                     | 78         |
| Patient Was Disabled  | 36                       | 6          | 45                     | 69         |
| Request was Reasonable  | 67                       | 25         | 95                     | 100        |
| Doctor was Helpful  | 58                       | 41         | 91                     | 85         |
| Satisfied with Recommendation   | 74                       | 67         | 88                     | 81         |
| Liked Doctor / Patient  | 61                       | 33         | 94                     | 94         |

### **The Patient's Experience with Seeking Care for a FGID**

Louise Mott, RN, finished the first section by speaking on her own experiences of living with accidental bowel leakage after the birth of her son. She spoke about the difficulty she had speaking with her primary care physician as she believed her physician minimized her symptoms and did not want to treat her. She spoke about spending years dealing with the stress, stigma, and hesitation about going into the public for fear of bowel leakage. She also kept this hidden from her husband which strained their relationship. After years of silently dealing with it, she sought help on her own and found GI specialists who helped her gain control of her bowels and gain control of her life back. She also was open with her husband and they worked through the disorder together. She also spoke on how this experience has helped her become a patient advocate for other's who are going through similar situations.

### **What causes symptoms in the stomach & small intestine?**

Dr. Pankaj Jay Pasricha, Professor of Medicine at Johns Hopkins, explained how the enteric nervous system works in the stomach and small intestine by regulating muscle and nerve function and movement of food through the

digestive tract. The enteric nervous system is often referred to as “the little brain in the gut.” It is a primitive but very complex network of nerves that is located throughout the gut from the esophagus to the anus. It contains as many neurons as the spinal cord and it coordinates the reflexes that are responsible for contractions and secretion in the GI tract. The vagus nerve in the stomach also plays a role in the muscle contractions that help move the food through the stomach into the intestine. Gastroparesis is one of the FGIDs associated with impaired muscle contractions. The name, gastroparesis, literally means –gastro and –paralysis, as there are problems associated with the nerves in the stomach that cause impaired muscle contractions and delayed gastric emptying. This leads to symptoms of vomiting, pain, and nausea among other symptoms. Stress can also cause the changes in contractions of the intestine. Dr. Pasricha described a case study where an individual was stressed and their colonic muscle contractions increased as a reaction to stress and decreased once the stress was reduced. This emphasizes the concept that the brain is directly hard wired into the GI tract. It also shows how psychological stressors can directly affect GI functioning.

### **Heartburn and Chest Pain**

Dr. Ryan Madanick described esophageal and stomach disorders such as heart burn, acid reflux, and GERD. He also explained the medications that are available and how each medication works to reduce symptoms. The burning sensation associated with heartburn may feel similar chest pain. It was advised that cardiovascular risks be addressed first to make sure the chest pain is associated with the GI tract and not the heart. Once cardiovascular events are ruled out, the physician can then address the severity of the acid reflux with the appropriate medication. Treatment should be tailored for the patient; it does not have to be a one-size-fits-all approach and can be addressed by over the counter (OTC) medications and if needed, prescribed stronger medications.

### **Bloating and Dyspepsia**

Dr. Yolanda Scarlett addressed upper GI symptoms such as bloating and dyspepsia. Patients with dyspepsia can experience bloating, fullness after eating a small amount, and epigastric burning or pain. Tests to rule out organic problems, such as ulcers or H-pylori infection which can cause similar symptoms. After a diagnosis of dyspepsia, physicians should manage the condition with (1) patient education; (2) reassurance; (3) information on lifestyle modifications (including dietary guidance); (4) medication management; and (5) in some cases offered psychological treatment. Changes in lifestyle and diet to manage symptoms include frequent small meals, avoiding coffee and carbonated beverages, ceasing smoking and alcohol, and reducing high fat foods. Medications such as acid suppression, prokinetics, antidepressants, and drugs that relax the stomach have been shown to help reduce symptoms associated with dyspepsia.

### **What causes symptoms in the large intestine and rectum?**

Dr. Lin Chang, Professor of Medicine at UCLA, explained that common GI symptoms associated with the intestine and rectum include diarrhea, constipation, abdominal

pain, bloating, and distension. She referenced a study [3] that monitored colonic contractions after consuming a meal which showed that patients with IBS have increased gut motility as well as increased pressure of the contractions after a meal. The nerves in the gut transmit and provide feedback to the brain [and vice versa] to modulate pain control within the intestine. Dr. Chang described several studies where the colon was distended by repeated inflation of a balloon in the rectum (simulating the presence of stool by increasing the pressure of the balloon). This caused increased sensitivity and pain in patients with IBS and produced a temporary increase in pain in healthy individuals.[4] The concept was that repetitive exposure to a stressor can make the gut hypersensitive and lower the pain threshold. The same sensation of increased sensitivity to pain in the rectum was correlated with greater symptom severity, including pain and bloating.

### **Constipation**

Dr. Richard Saad, Associate Professor at the University of Michigan Health System, spoke on treatment options for chronic constipation. Symptoms associated with constipation include passing hard and lumpy stools, a feeling of blockage or incomplete evacuation, bloating and/or belly pain, and overall decreased frequency of bowel movements. There are “red flag symptoms” that should warn us to seek medical attention such as a sudden change of bowel habits, weight loss, history of colon cancer, and rectal bleeding. He reviewed several treatment options. For conservative home treatments, Dr. Saad suggested lifestyle modifications (increase dietary fiber, liquid intake and exercise) fiber supplements, probiotics, and stool softeners. Osmotic and stimulant laxatives were listed as a more aggressive treatment option if conservative options do not adequately resolve the symptoms. Osmotic laxatives work by creating an osmotic gradient in the bowels to draw water into the colon and stimulant laxatives irritate the colon wall, thus increasing colonic contractions. Newer medications for chronic constipation work by increasing the secretion of water into the intestines (lubiprostone and linacotolide) or by stimulating serotonin receptors to increase colonic contractions.

### **Accidental Bowel Leakage**

Dr. William Whitehead, Director of the UNC Center for Functional GI and Motility Disorders, spoke about risk factors and treatment options for accidental bowel leakage (ABL), also known as fecal incontinence. ABL is defined as passing liquid or solid stool in amounts as small as smearing on under clothes up to loss of a full bowel movement. ABL affects 8-9% men and women and the risk of ABL increases with age. Other risk factors include chronic diarrhea, strong and sudden urges to have a bowel movement, and having multiple chronic illnesses. Treatment choices depend on what is causing the incontinence. Conservative treatment options are absorbent pads and medical management. Medical management consists of patient education on physiological reasons for ABL, identifying foods that may cause diarrhea, toilet use schedules, over-the-counter medications for diarrhea and/or constipation, and pelvic floor exercises. In a study conducted at UNC, conservative medical management led to an average 60% decrease in frequency of accidents,

and the benefits lasted at least one year. If conservative treatments do not adequately control episodes of ABL, the next step for treatment includes biofeedback. More invasive treatment options include surgery interventions of sewing separated ends of damaged sphincter muscles back together, sacral nerve electrical stimulation, and injecting bulking agents around the anal canal. If all other measures fail, an individual may opt for a colostomy.

### **Unintended Effects of Medication for Chronic Pain**

Chronic or recurring pain in the gastrointestinal tract can have many causes including stretching due to large amounts of gas or stool, inflammation, and trauma to the nerves during surgery or procedures. Differences between people in their sensitivity to visceral pain may also play a role in symptom development.

Dr. Doug Drossman, co-founder of the UNC Center for Functional GI and Motility Disorders, described several classes of drugs that are used to treat GI pain including antispasmodics, antidepressants, antibiotics, opiates, and gabapentin (an anti-seizure medication). Antidepressants block or impede pain signals from reaching the brain, but have side effects that differ based on the type of antidepressant prescribed. Serotonin reuptake inhibitors (SSRIs) decrease GI pain, but also have side effects of diarrhea, weight loss, sexual dysfunction, and insomnia whereas tricyclic antidepressants cause constipation and dry mouth. Antispasmodics reduce spasms and muscle contractions within the intestine; their side-effects include constipation, dry mouth, dizziness, and rapid heart rate. Opiates and narcotic pain medications are used to treat moderate to severe pain, but potential side effects include constipation, nausea, vomiting, and addiction. Gabapentin is an anti-seizure medication used to treat peripheral nerve pain, fibromyalgia, and chronic nonspecific pain, but side-effects may include constipation, sedation, weight gain, and dizziness.

Bloating or excess flatus can be caused by proliferation of bacteria within the gut which digest carbohydrates in our diet and give off gas. Antibiotics such as rifaximin, metronidazole, and ciprofloxacin reduce bacterial overgrowth which reduces fermentation and gas in the bowel.

### **Probiotics and “Functional Foods”**

Dr. Yehuda Ringel discussed the growing use of probiotics, herbs, and fiber. All probiotics, prebiotics, and fibers fall under the category of “functional food” which are “foods or dietary components that provide health benefits beyond basic nutrition.” There are differences in the use of probiotics, prebiotics, and the use of both simultaneously. Probiotics are live microorganisms that are consumed to benefit the individual. Prebiotics are non-digestible foods that stimulate the growth of specific strains of helpful bacteria. Synbiotics are the use of both prebiotics with probiotics together. Dr. Ringel pointed out that probiotics are considered a supplement and are not regulated by the FDA. Patients are advised to consult with their physician before using a supplement as there is a possibility that the supplement could contain ingredients that have a

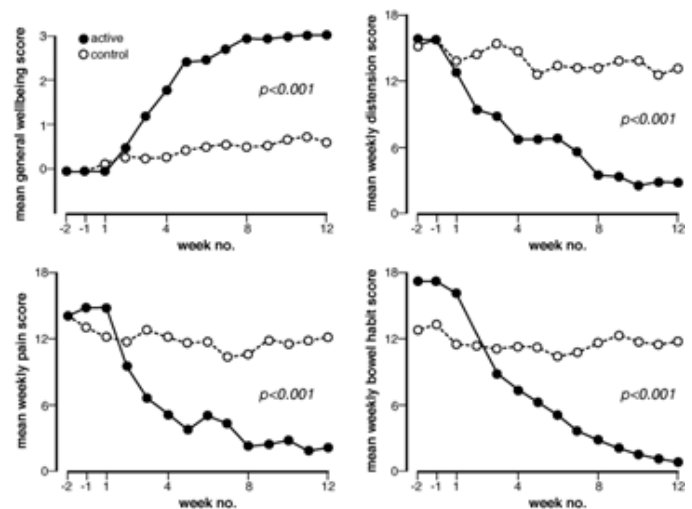
strong biological effect and may not be safe for all people. In 2010, the Dietary Guidelines for Americans, provided by the US Department of Agriculture (USDA), stated "...the Dietary Guidelines Advisory Committee believes that the gut microbiota do play a role in health, although the research in this area is still developing...No recommendations for intake of prebiotics or probiotics for the American people can be made..."

### **Diet and Functional GI Disorders**

Kate Scarlata spoke on foods that are FGID friendly, including the FODMAP diet. FODMAP is an acronym that stands for "Fermentable, Oligosaccharides, Disaccharides, Monosaccharide, and Polyols." Foods that are highly fermentable such as carbohydrates and sugars feed the microbes in our gut and by-products of that process are gasses, vitamins, and digested material that our cells use for energy and nutrients. When too much fermentable foods are eaten, this increases the amount of gas the microbes produce. Kate described different microorganisms that produce different types of gasses during fermentation. Hydrogen gases have been associated with speeding up gut motility while methane gas production has been associated with slowing down gut motility. The FODMAP diet is described as a learning diet to help patients identify foods that may trigger symptoms and should not be used for long term treatment of FGIDs. She also suggested to do so in collaboration with a nutritionist who can ensure the patient is on a balanced diet. Kate emphasized that the patient should focus on what they can eat versus what they may need to avoid. She suggested that if an individual were looking to reduce lactose in their diet, they could substitute high lactose dairy products (cow milk, goat milk, ricotta cheese, yogurt) with low lactose foods such as feta, cheddar, and lactose free dairy products. Other foods that are FODMAP friendly include bananas, blueberries, grapes, bell peppers, carrots, cucumber, eggplant, chicken, fish, beef, and olive oil.

### **Psychological Treatments**

Dr. Olafur Palsson, PsyD, Professor of Medicine at UNC-CH, presented on effective psychological interventions for multiple GI disorders, including IBS, constipation, diarrhea, and dyspepsia. Evidence supporting effective psychological treatment is strong, as Dr. Palsson pointed out over 100 studies have been conducted and of those, 86 have been randomized controlled trials. Interventions include cognitive behavioral therapy (CBT), biofeedback, hypnosis, relaxation training, dynamic therapy, and mindfulness/meditation training. The main theory behind the effectiveness of psychological interventions involves the brain-gut axis. As we experience emotions and perceive events around us, they influence how our nervous and endocrine [hormone] systems react and respond. The nerves and hormones in our gut directly impact muscle activity, fluid secretions, blood flow, and immune/inflammation activity. As our body responds and interprets these signals and sensations, the body sends signals back to the brain which can alter our emotions and perception of physical sensations such as bloating, pain, and other GI sensations. A hypnosis randomized placebo-controlled trial has the strong evidence as an effective treatment showed significant improvement in well-being and improvement in bowel pain and bowel habits. [5]



[5]

This article provides a taste of the presentations by the experts who spoke at the Patient Day Symposium. The entire symposium, over eight hours of educational information, is available online as a video series for patients and medical professionals to view on demand for up-to-date treatments and etiology for functional gastrointestinal disorders. The videos are 20 - 30 minutes clips and are labeled to make it easier to find information on specific functional GI topics. All video clips can be found at [www.fgidpatientupdate.com](http://www.fgidpatientupdate.com)

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# UNDERSTANDING & MANAGING GASTROPARESIS

## CRYSTAL SALTRELLI, CHC



*Crystal Saltrelli, CHC graduated from Dartmouth College, completed professional training in Health Counseling and Holistic Nutrition at the Institute for Integrative Nutrition, and is certified as a Health Coach by the American Association of Drugless Practitioners.*

*She is a published author including "Eating for Gastroparesis and Living (Well!) with Gastroparesis." She also volunteers her time as a nutritional specialist for the Gastroparesis & Dysmotilities Foundation. Additional information on Crystal and gastroparesis can be found on her website, [www.livingwithgastroparesis.com](http://www.livingwithgastroparesis.com)*

Though gastroparesis is estimated to affect at least two percent of the population, much about the condition remains poorly understood. A great deal of conflicting information can be found both among the patient population and the medical community, making attempts at symptom management particularly confusing for those who are newly diagnosed. Obtaining a better understanding of the condition and adopting a comprehensive management plan may help to lessen the sense of overwhelm and increase the success of treatment.

Gastroparesis is a functional gastrointestinal disorder (FGID) in which the stomach empties more slowly than normal. There is no physical obstruction or structural abnormality within the stomach. The problem is in the way the stomach functions. Specifically, the motility (movement) of the stomach is impaired.

Because gastroparesis is a functional disorder, proper diagnosis requires testing that allows a doctor to watch the stomach empty a meal. This is called a gastric emptying study (GES). While testing procedures vary among medical centers, a four-hour GES is the most accurate means of diagnosing gastroparesis.

Common symptoms of gastroparesis include nausea, vomiting, early satiety, abdominal pain, bloating, reflux, and fatigue. The severity of these symptoms does not always correspond to the severity of the delay in gastric emptying, a factor that may complicate both diagnosis and treatment.

Differences in symptom patterns may also be attributed to the wide array of causes of gastroparesis. Possibilities include viral infections, abdominal surgery, trauma, and acute eating disorders, as well as underlying medical conditions like diabetes, hypothyroidism, mitochondrial disease, autoimmune conditions, collagen vascular

disorders, and neurological conditions. In a significant number of cases, the cause is unknown resulting in a diagnosis of idiopathic gastroparesis.

Regardless of the cause, gastroparesis is typically best managed with a multi-faceted plan that includes dietary and lifestyle changes, in conjunction with appropriate medical care. Complementary therapies may be helpful, as well.

### Medical Treatment

Unfortunately there is no single drug, or even combination of drugs, that is universally effective for the treatment of gastroparesis. The medications prescribed for gastroparesis typically fall into two categories: those that increase the rate of gastric emptying and those that decrease symptoms of nausea, vomiting, and pain.

Drugs that increase the rate of gastric emptying are called prokinetic medications. There are only two prokinetic medications currently approved by the Food and Drug Administration for the treatment of gastroparesis, metoclopramide and erythromycin.

Metoclopramide (Reglan) stimulates contractions of the stomach muscle, while also decreasing nausea and vomiting. Unfortunately this drug carries the risk of significant side effects, including a neurological condition called tardive dyskinesia, especially at higher doses. The FDA issued a black box warning for all metoclopramide-containing products in 2009.

Erythromycin is an antibiotic, used at very low doses to speed up gastric emptying. The efficacy of this drug tends to decrease over time with consistent use, so it's often necessary to cycle on and off the medication or to use it only during symptom flare-ups.

In other parts of the world, domperidone (Motilium) is a third prokinetic medication commonly used in the treatment of gastroparesis. Like metoclopramide, it both increases the rate of gastric emptying and decreases nausea and vomiting. While domperidone does not carry the same risk of neurological side effects as metoclopramide, there are cardiac risks associated with the drug.

As mentioned above, the symptoms experienced with gastroparesis do not always correspond in severity to the documented delay in gastric emptying. For this reason, additional medications are often prescribed to alleviate particular complaints, such as nausea, vomiting, and pain.

Antiemetic medications are those that treat nausea and vomiting. There are a number of antiemetic drugs, which work through a variety of mechanisms. Experimentation under the supervision of a motility specialist or general gastroenterologist may be necessary to find the most

effective treatment for on-going nausea or vomiting.

Pain management is another area of targeted drug treatment. A doctor may prescribe low-dose antidepressants for this purpose, as well as narcotic or non-narcotic pain medication. It's important to note that narcotics exacerbate delays throughout the gastrointestinal tract and may compromise other attempts at gastroparesis management.

When medication proves ineffective or nutrition is severely and consistently impacted, there are a limited number of medical procedures that may be used in the treatment of gastroparesis. These include pyloric Botox injections, enteral or parenteral nutrition, and the implantation of a gastric neurostimulator.

Note that not all treatment options are appropriate for everyone. For some, appropriate medical treatment may mean regular check-ups with their doctor while following a plan that focuses on supportive lifestyle practices and dietary modification.

### **Dietary Changes**

Those diagnosed with gastroparesis typically benefit from reducing both fat and fiber in their diet. Foods higher in dietary fat and fiber empty more slowly from the stomach than foods lower in fat and fiber. That said, both dietary fat and fiber are important for overall health and should not be completely eliminated from the diet. General recommendations are between 10 and 15 grams of fiber and 25 to 45 grams of fat per day. Experimentation is often necessary to determine individual tolerances.

It's important to choose as many nutrient-rich whole foods as possible to avoid further complications like malnutrition, unintentional weight loss or gain, and vitamin and mineral deficiencies. A well-balanced "gastroparesis-friendly" diet may include lean or ground meats and poultry, eggs, fish, well-cooked and/or pureed vegetables and fruits, small amounts of healthy fats such as coconut and olive oil, and gluten-free grains, preferably soaked prior to cooking. Processed foods, such as breads, crackers, cookies, and cereals, contribute to satiety but do not provide balanced nutrition and should be minimized.

For those who notice continued gas, pain, and bowel disturbances on a gastroparesis-friendly diet, reducing foods high in FODMAPs may prove helpful. FODMAPs are highly-fermentable carbohydrates that feed gut bacteria. For those with bacterial overgrowth, including an estimated one-third of gastroparesis patients, these foods can exacerbate symptoms. Reducing high-FODMAPs foods, including those typically regarded as gastroparesis-friendly, such as wheat, lactose, apples, pears, and peaches, may provide additional symptom relief.

Eating five to six small meals rather than three larger meals may also help to alleviate symptoms, especially early satiety, as meal size is a significant factor in gastric emptying time. Eating behaviors should also be considered. Digestion begins in the mouth, so it's important to chew food thoroughly before swallowing. Eating in a relaxed environment, eating slowly, and addressing food-related anxiety may also help to support digestion and reduce overall symptoms.

### **Stress Management**

Both acute and chronic stress can have a significant impact on the gastrointestinal tract, and therefore management of functional gastrointestinal disorders like gastroparesis. This is due to the body's stress response, also known as the "fight or flight" response. The stress response is triggered when a primitive part of the brain called the amygdala senses a threat, whether real or imagined.

The stress response causes an increase in heart rate, blood pressure, and blood sugar, as well as decreased blood flow to the brain and digestive tract. Production of digestive enzymes decreases and the churning of the stomach slows down, essentially halting digestion in the stomach. This happens each time the stress response is triggered, whether due to a true emergency or a simple traffic jam, and is why chronic stress, anxiety, or unresolved trauma may interfere with symptom management despite attention to other aspects of the management plan.

The first step in managing stress is to address as many existing stressors as possible, including work-related responsibilities, dysfunctional relationships, and past traumas. The second step is to mitigate the impact of remaining stress, such as that of living with an illness like gastroparesis, by engaging in practices that elicit relaxation in the body and mind. Mindfulness Based Stress Reduction (MBSR), for example, is a simple practice that has been shown to reduce anxiety, as well as physical symptoms, in the context of functional gastrointestinal disorders.

### **Lifestyle Changes**

There are a number of day-to-day choices and activities that can have a significant impact on one's experience with gastroparesis. Consistent physical activity, for example, can be a valuable symptom management tool. Mild to moderate physical activity, such as walking, swimming, yoga, or biking, supports gastric emptying and may help to decrease symptoms such as fullness, bloating, and pain. Vigorous physical activity, on the other hand, tends to decrease gastric emptying and may exacerbate symptoms.

Adequate sleep, both in terms of quality and quantity, is necessary for the proper functioning and cleansing of the digestive tract, as well as overall health and well-being. To create a supportive sleep environment, the bedroom should be dark, quiet, cool, and free of electronic devices.

If gastroparesis symptoms currently interfere with sleep, it may necessary to address all other areas of the comprehensive management plan first.

Generally unhealthy habits, such as smoking and excessive alcohol consumption, can also impact gastroparesis management. Smoking cigarettes has been shown to slow gastric emptying of solid food, so quitting is an especially important goal for anyone diagnosed with the condition. Alcohol, in addition to being a gastric irritant, has been found to slow gastric emptying when consumed with high-fat meals. Abstaining from alcohol may be beneficial at least until symptoms are well-controlled.

Even habits as seemingly benign as chewing gum can play a role in symptom management. While gum chewing has been found to decrease reflux and other gastrointestinal symptoms, it may exacerbate bloating and pain due to excessive air swallowing and poorly absorbed sugar alcohols.

### **Complementary Therapy**

Complementary therapies are treatments that don't fall within conventional medicine. They are often holistic in nature, targeting both physical and emotional aspects of disease. These treatments are considered complementary in that they are used in conjunction with conventional medical treatments, as well as dietary and lifestyle modifications.

Acupuncture is arguably the most accepted and well-researched complementary therapy, though studies specific to functional gastrointestinal disorders have shown mixed results. Acupuncture is performed by inserting thin, sterile needles into the body along energy pathways called meridians. Several treatments are often necessary to obtain relief of symptoms like nausea, anxiety, and insomnia.

Clinical hypnosis, which involves relaxing the conscious mind and providing targeted suggestions to improve a specific condition, has repeatedly proven effective in the treatment of abdominal pain and other gastrointestinal symptoms. Though it hasn't been studied in the context of gastroparesis, the results for other functional gastrointestinal disorders have been remarkable with over 70% of participants experiencing a 50% or greater improvement in their symptoms after a 12 week course of hypnosis.

Though there is still much to learn about gastroparesis, a comprehensive approach to management that includes appropriate medical treatment, as well as dietary modifications, stress reduction, supportive lifestyle practices, and targeted complementary therapies may be the best way to alleviate symptoms and improve quality of life. Patients are encouraged to work closely with their healthcare team to devise the specific treatment strategy that best suits their condition and goals.

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