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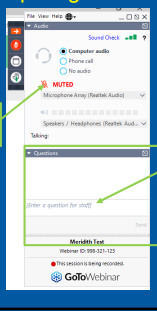
Participating in the Webinar



All attendees will be muted and will remain in Listen Only Mode.

Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.

1

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How to Receive CME and MOC Points

LIVE VIRTUAL GRAND ROUNDS WEBINAR

ACG will send a link to a CME & MOC evaluation to all attendees on the live webinar.

ABIM Board Certified physicians need to complete their MOC activities by December 31, 2020 in order for the MOC points to count toward any MOC requirements that are due by the end of the year. No MOC credit may be awarded after March 1, 2021 for this activity.

ACG will submit MOC points on the first of each month. Please allow 3-5 business days for your MOC credit to appear on your ABIM account.

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MOC QUESTION

If you plan to claim MOC Points for this activity, you will be asked to: Please list specific changes you will make in your practice as a result of the information you received from this activity.

Include specific strategies or changes that you plan to implement. THESE ANSWERS WILL BE REVIEWED.

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ACG Virtual Grand Rounds

Join us for upcoming Virtual Grand Rounds!

Week 13: Health Maintenance for the Patient with IBD
Francis A. Farraye, MD, MSc, FACG
June 18, 2020 at Noon EDT

Week 14: EOE and EGID: Pearls and Pitfalls
Kathy A. Peterson, MD, Msci
June 25, 2020 at Noon EDT

Visit **gi.org/ACGVGR** to Register

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Joint ACG/ANMS Webinar
Restarting Your Motility Practice

Disclosures:


Dr. Pochapin


Dr. Baker


Dr. Gyawali


Dr. Moshiree


Dr. Chey


Dr. Rao


Dr. Khan


Dr. Pandolfino

According to ACCME guidance, because there are no current preventive or specific treatments for coronavirus infection, there are no relevant conflicts of interest for any speakers or moderators.

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ACG/American Neurogastroenterology and Motility Society

Restarting Your Motility Practice During COVID-19

Webinar
Monday, June 15, 2020
8:00 to 9:30 pm Eastern Daylight Time

Presenters
- Mark B. Pochapin, MD, FACG
- Jason Baker, PhD
- C. Prakash Gyawali, MD, MRCP, FACG
- Baharak Moshiree, MD, FACG
- William D. Chey, MD, FACG
- Satish S.C. Rao, MD, PhD, FACG
- Abraham R. Khan, MD, FACG

Moderator: John E. Pandolfino, MD, MSCI, FACG

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Joint ACG/ANMS Webinar
Restarting Your Motility Practice

American Neurogastroenterology and Motility Society (ANMS) Task Force Recommendations for Resumption of Motility Laboratory Operations During the COVID-19 Pandemic

Jason R. Baker, PhD
Atrium Health
University of North Carolina Charlotte

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Joint ACG/ANMS Webinar
Restarting Your Motility Practice

Objectives

- Personal Protective Equipment (PPE) and Motility/GI Physiology Laboratory related to COVID-19 Pandemic
- Motility/GI Physiology Laboratory workflow to protect Allied Health Professionals and Patients from spreading COVID-19
- Suggested additional Motility/GI Physiology Laboratory suite air-filtration techniques related to COVID-19

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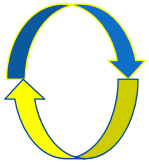
Restarting Your Motility Practice

Personal Protective Equipment and Safety: Allied Health Professional and Patients

- Primary reason to for Allied Health Professionals/Motility Providers to utilize appropriate PPE for GI Physiology/Motility Testing
  - GI Physiology/Motility Testing is a Partnership Relationship
    - Allied Health Professionals and Patient



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Restarting Your Motility Practice

Personal Protective Equipment Recommendations for Motility/GI Physiology Laboratory Testing: Relative to COVID-19

Motility Laboratory Procedure	PPE Recommendations
Esophageal Physiologic Procedures	N95 mask, double gloves, face shield (and/or alternate protective eye wear), and gown
Antroduodenal Manometry	N95 mask, double gloves, face shield, (and/or alternate protective eye wear), and gown
Colon Manometry	N95 mask, double gloves, face shield (and/or alternate protective eye wear), and gown
Wireless Motility Capsule	N95 mask, or surgical mask with a face shield, gloves, face shield (and/or alternate protective eye wear), and gown
Gastric Emptying Breath Test	N95 mask, gloves, face shield (and/or alternate protective eye wear), and gown
Anorectal Function Testing	N95 mask or surgical mask with face shield (and/or alternate protective eye wear), double gloves, and gown
Hydrogen Breath Testing	N95 mask, gloves, face shield (and/or alternate protective eye wear), and gown

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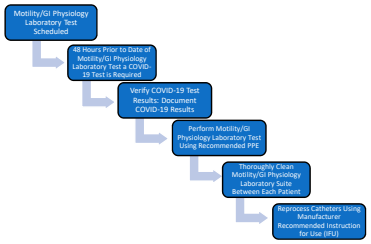
Motility/GI Physiology Laboratory Workflow to Limit the Spread of COVID-19



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Additional Air Filtration Devices for Motility/GI Physiology Laboratory Suites: COVID-19

- High-Efficiency Particulate Air (HEPA) Filters:
  - Device used to prevent airborne infections
    - Filters up to 99.7% of airborne particles of 0.3 µm in diameter
  - Time and Speed
    - Adjusted by the number of exchanges and square foot of the Motility/GI Physiology Laboratory suite
- If HEPA is unavailable:
  - Follow institutional control measures

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Summary

- Personal Protection Equipment (PPE) measures will provide safety for both the Motility/GI Physiology Allied Health Professional and Patient in relation to COVID-19
- Implementing a COVID-19 Motility/GI Physiology Laboratory strategic workflow enhances safety and effective communication
- Utilizing additional air-filtration system may be an adjunct to standard institutional quality control measures related to COVID-19 cleaning standards

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Esophagus

C. Prakash Gyawali, MD
Washington University in St. Louis

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Restarting Your Motility Practice

Facts Uncovered by Pandemic

Most esophageal physiologic testing is elective

esophageal manometry has alternatives: barium esophagography, endoscopy, FLIP
medical reflux management can proceed without ambulatory reflux monitoring
emergent anti-reflux surgery can be performed without physiologic testing
neuromodulators and complementary approaches used when reflux symptoms persist

Emergent reflux monitoring is hardly ever needed

wireless pH monitoring can be performed during endoscopy

Esophageal manometry confirms achalasia diagnosis prior to LES disruption

symptoms can be temporized by adjusting diet and eating habits
botulinum toxin injection during diagnostic endoscopy can provide short term relief
a timed upright barium study can demonstrate esophageal outflow obstruction in achalasia
FLIP during endoscopy can diagnose achalasia; hydraulic FLIP dilation can treat achalasia

Lee YY et al. CGH 2020

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Clinical Indications for HRM

Accepted indications

- Transit symptoms not explained by endoscopy and/or barium studies
- Suspicion of major motor disorders (especially achalasia)
- Assessment of esophageal peristaltic performance
- Assessment of unexplained esophageal symptoms
- Diagnosis of rumination syndrome and supragastric belching
- Evaluation of post fundoplication dysphagia
- Diagnosis of functional esophageal disorders (by exclusion of major motor disorders)
- Localization of the LES for appropriate placement of pH and pH-impedance catheters

Emerging indications

- Assessment of morphology and integrity of the esophagogastric junction
- Measurement of hiatus hernia size
- Assessment of esophageal peristaltic performance prior to bariatric procedures

Savarino E, Roman S, Gyawali CP, et al., Nature Reviews Gastroenterol Hepatol 2017 14:665-676

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Indications for Reflux Monitoring

Any form of reflux monitoring off PPI

- high pre-test probability of reflux, confirmation prior to invasive or long-term GERD therapy
- any situation with *unproven* GERD and typical reflux symptoms

pH-impedance monitoring off PPI (with limited exceptions)

- persisting reflux symptoms despite PPI in *proven* GERD (testing performed on PPI)
- suspicion of reflux-related micro-aspiration, especially pre-lung transplant
- repetitive belching syndromes
- suspicion of rumination syndrome
- persistent symptoms following invasive antireflux procedures

Wireless pH monitoring off PPI

- intolerance of the transnasal catheter
- infrequent symptoms, where reflux-symptom association is needed
- high clinical suspicion of GERD but negative 24-hour reflux monitoring
- very low clinical suspicion of GERD, to rule out GERD

Sifrim D, Gyawali CP. Am J Gastroenterol 2020

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Urgent Esophageal Procedures (<2 weeks)

	Clinical Qualifiers	Alternative approach if procedure is not available
HRM in suspected achalasia with severe symptoms	Significant dysphagia with inability to maintain hydration and nutrition.	EGD with endotracheal intubation and FLIP for diagnosis. Barium esophagography for diagnosis. EGD with endotracheal intubation and Dobhoff tube or gastrostomy tube placement if treatment is delayed.

Lee YY et al. CGH 2020; ANMS Task Force document 2020, motilitysociety.org

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Semi-Urgent Esophageal Procedures (2-4 weeks)

	Clinical Qualifiers	Alternative approach if procedure is not available
HRM	Dysphagia with weight loss (Transition to an urgent HRM procedure if nutrition is compromised over 2-4 weeks) Frequent/daily symptoms Impacting quality of life Negative endoscopy/barium	Empiric management with PPI, soft/liquid diet

Lee YY et al. CGH 2020; ANMS Task Force document 2020, motilitysociety.org

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Elective Esophageal Procedures (>4 weeks)

	Clinical Qualifiers	Alternative approach if procedure is not available
HRM and reflux testing	Dysphagia/Chest Pain without weight loss Frequent/daily symptoms Impacting quality of life Negative endoscopy/barium	Empiric management with PPI, soft/liquid diet, esophageal muscle relaxants (nitrates or calcium channel blockers), Neuromodulators

Lee YY et al. CGH 2020; ANMS Task Force document 2020, motilitysociety.org

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Precautions for Esophageal Procedures

	Measures and Precautions
Pre-procedure	COVID testing based on institutional policy Symptom screening Temperature check Physically distanced waiting area

Lee YY et al. CGH 2020; ANMS Task Force document 2020, motilitysociety.org

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Final Thoughts

	Measures and Precautions
Understand why procedures are being performed	*how will management change *what is the approach to a 'positive' result *what is the approach to a 'negative' result *can these approaches be undertaken without testing

Lee YY et al. CGH 2020; ANMS Task Force document 2020, motilitysociety.org

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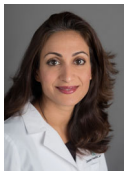
Motility testing for stomach, small bowel and colonic dysmotility during COVID-19



Baha Moshiree, MD, FACG
Atrium Health, UNC Charlotte

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Gastric Motility Testing

Modalities for Gastroparesis rule out :

- Gastric emptying scintigraphy (GES) → Radiology team
- Wireless motility capsule (WMC)
- Gastric emptying breath test (GEBT)
- Antroduodenal manometry (ADM)

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Wireless Motility Capsule

- Low risk procedure but has alternatives: GES, Whole gut scintigraphy
- Provides for evaluation of whole gut transit.
- Only FDA-approved for adults: Gastroparesis and slow transit constipation
- Swallowing of capsule may generate coughs or choking when swallowing (aerosolized)
  - Social distancing from patient during capsule and meal ingestion advised
  - PPE indicated
- Contraindication in patients with dysphagia or obstruction

Rao SS et al. Neurogastroenterol Motil 2011;23:8-23.
Kuo B et al. Aliment Pharmacol Ther 2008;27:186-96.

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Gastric Emptying Breath Test

- FDA-approved (2015) Breath Test for diagnosis of delayed gastric emptying in adult patients ≥ 18 years
- Utilized mostly in clinical trials
- Measures gastric emptying by evaluating CO_2 excretion of a meal after ingestion of 13C-labeled S plantensis enriched meal.
- High risk procedure as it is aerosol generating
- PPE required with N95 if done in office-based setting

Szarka LA et al. CGH 2008;6:635-643.e1.

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Gastric electrical stimulation

- Surgically implantable device for management of refractory gastroparesis
- Done through FDAs Humanitarian Device Exemption Program
- Interrogation of device in clinic setting.
- COVID-19 precautions: Follow local guidelines for PPE (Mask, face shield, gloves and gown if adjusting settings)
  - This is a non-aerosolizing procedure in most settings

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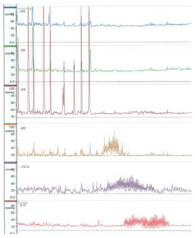
Antroduodenal Manometry

- Done in comprehensive motility centers
  - (pediatrics and adult)
- Evaluates for chronic intestinal pseudo-obstruction and other small bowel motility disorders.
- Usually elective
- Can be semi-urgent :
- 1. Decision for enteral feeding versus parenteral nutrition
- 2. Multi-visceral transplantation



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Antroduodenal Manometry

No more like this!

- COVID-19 era recommendations:
- Placed by fluoroscopy or upper endoscopy
- Follow same PPE recommendations as with N95/KN95 as for all aerosol-generating procedures
- Minimize broad aerosolization by getting patient private room for the motility recordings (if in observation unit)
- Patient should wear surgical mask

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Colonic manometry

- Neurogenic bowel evaluation in severe constipation
- Usually done as part of Pre-op workup for surgical constipation management -----semi-urgent
- Alternatives: Scintigraphy and radiopaque markers
- Other choices in pediatrics- Malone antegrade continence enema (MACE)
- Performed via colonoscopy (fecal soiling a risk with COVID-19)
  - Following same PPE guidelines as for colonoscopy

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Recommended PPE for Motility testing

LAB PROCEDURE	PPE RECOMMENDATION
Wireless motility capsule	N95 mask, or surgical mask with a face shield, gloves, face shield (and/or alternate protective eye wear), and gown, gloves, and gown
Gastric emptying Breath test	N95 mask, double gloves, face shield (and/or alternate protective eye wear), and gown
Antroduodenal Manometry	N95 mask, double gloves, face shield, (and/or alternate protective eye wear), and gown
Colonic manometry	N95 mask, double gloves, face shield (and/or alternate protective eye wear), and gown

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Triaging Motility Procedures Pertaining to the Stomach, Small Intestine, and Colon

	Clinical Qualifiers	Alternative approach if procedure is not available
Urgent (<2 weeks)		
None	There are no urgent indications for antroduodenal and colonic manometry	None
Semi-Urgent (2-4 weeks)		
Antroduodenal manometry	Malnutrition in patient with gastroparesis, weight loss, severe distension, pseudo-obstruction, preop for multi-visceral small bowel transplantation	CT or MRI enterography Small bowel follow through Whole gut scintigraphy
Colonic Manometry	Severe constipation Suspected neurogenic bowel	Wireless motility capsule (in adults only) Radio-opaque marker study with KUB x-ray Colonic/Whole gut scintigraphy
Elective (>4 weeks)		
Wireless motility capsule (WMC)	Significant constipation not optimized with medical management, nausea and vomiting with negative endoscopy	Prokinetics given empirically to treat gastroparesis, Optimization of laxatives and antiemetics. Whole gut scintigraphy Gastric emptying study plus radiopaque marker studies
Gastric emptying breath testing	Nausea /vomiting with upper abdominal pain (negative upper endoscopy)	WMC or gastric emptying scintigraphy

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Thank you to our senior #Healthcareheros

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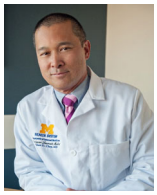
Hydrogen-Methane Breath Testing



William D. Chey, MD, FACG
Nostrant Professor of GI & Nutrition
Michigan Medicine
Board of Trustees, ACG
Counsel, ANMS

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Indications for Breath Testing

Consensus statement	Percentage of agreement	Quality of evidence (GRADE)
1. Current small bowel culture techniques are not satisfactory for the assessment of SIBO.	Agree (88.9% agree, 0% uncertain, 11.1% disagree)	⊕⊕⊙⊙
2. If culture is considered for diagnosis of SIBO, based on the current evidence, we suggest the threshold of >10^3c.f.u./ml for the definition of SIBO	Agree (77.8% agree, 11.1% uncertain, 11.1% disagree)	⊕⊕⊙⊙
3. We suggest breath testing in the diagnosis of small intestinal bacterial overgrowth.	Agree (100% agree, 0% uncertain, 0% disagree)	⊕⊕⊕⊙
4. Until a true gold standard is established, we suggest breath testing in assessing the presence of antibiotic-responsive microbial colonization of the gastrointestinal tract.	Agree (77.8% agree, 11.1% uncertain, 11.1% disagree)	⊕⊕⊕⊙
5. We suggest to evaluate for excessive methane excretion on breath test in association with clinical constipation and slowing of gastrointestinal transit.	Agree (88.9% agree, 0% uncertain, 11.1% disagree)	⊕⊕⊕⊙
6. We suggest that breath testing should not be used for assessment of orocecal transit time.	Agree (77.8% agree, 11.1% uncertain, 11.1% disagree)	⊕⊕⊕⊙
7. We suggest breath testing for the diagnosis of carbohydrate maldigestion syndromes.	Agree (88.9% agree, 11.1% uncertain, 0% disagree)	⊕⊕⊕⊙
8. We suggest breath testing in the assessment of conditions with bloating.	Agree (88.9% agree, 11.1% uncertain, 0% disagree)	⊕⊕⊙⊙

Rezai et al. Am J Gastroenterol 2017; 112:775–784

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Main Categories of Breath Testing

- Bacterial Overgrowth
  - Glucose
  - Lactulose
- Carbohydrate Maldigestion
  - Lactose
  - Sucrose
- Carbohydrate Malabsorption
  - Fructose

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Breath Testing: Preparation

- Before:
  - Avoid antibiotics for 4 weeks
  - Avoid promotility agents & laxatives for 1 week.
  - Day before test, avoid fermentable foods (e.g., complex carbohydrates) and patient should fast for 8–12
- During the breath test,
  - Avoid smoking & minimize physical exertion

Pimentel et al. Am J Gastroenterol 2020;115:165-78

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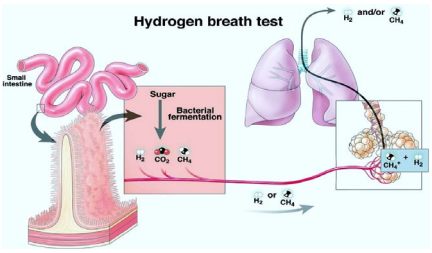
Breath Testing for SIBO



Saad & Chey, Gastroenterol 2007;133:1763

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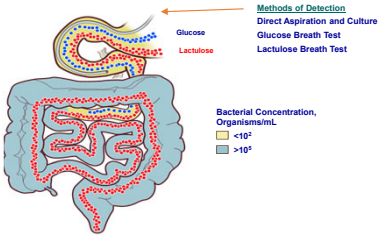
Breath Testing for SIBO



Adapted from Lin HC. *JAMA*. 2004;292:852-858

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SIBO Breath Test Protocols: Rome & North American Consensus'

Substrate	Dose	Abnormal Rise in H_2	Abnormal Rise in CH_4
Lactulose	10 grams	>20 ppm (90 minutes)	>10 ppm (90 minutes)
Glucose	50-75 grams	>12-20 ppm (90 minutes)	>10 ppm (90 minutes)

- Double peak not necessary for SIBO
- Authors acknowledge that data to justify their suggested abnormal thresholds is poor

Recent studies which performed glucose* or lactulose** breath testing and scintigraphy found that 65-85% of positive breath tests were falsely positive for SIBO
B. Infantis 35624 may cause false positive LBT for methane but not hydrogen***

Gasbarrini et al. Aliment PharmacolTher. 2009;29(suppl 1):1-49
Rezaie et al. Am J Gastroenterol 2017; 112:775–784
**Cheeseman et al. Gut 2011;60:334 –340*
***Lin & Massey. Clinical Gastroenterol Hepatol 2016;14:203–208*
****Kumar et al. Dig Dis Sci 2018;63: 989-995*

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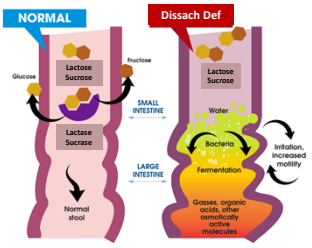
Carb Maldigestion Pathophysiology: Lactose or Sucrose

Disaccharides:
- Lactose
  - Glucose/Galactose
- Sucrose
  - Glucose/Fructose
- Maltose
  - Glucose/Glucose



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CHO Malabsorption Breath Test Protocols: Rome & North American Consensus'

Substrate	Dose	Abnormal Rise in H_2	Abnormal Rise in CH_4
Lactose	25 grams	>20 ppm (3 hours)	>10 ppm (90 minutes)
Fructose	25 grams	>20 ppm (3 hours)	>10 ppm (90 minutes)
Sucrose	50 grams	>20 ppm (3 hours)	>10 ppm (90 minutes)

Rezaie et al. Am J Gastroenterol 2017; 112:775–784

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What do we know about methane?

- Methanogens are archaea
  - prokaryotic organisms distinct from bacteria & eukaryotes
- *Methanobrevibacter smithii* is the key methanogen responsible for breath methane production in humans
- Methane is associated with slowing of gut transit
- A meta-analysis found that methane is associated with chronic constipation (OR 3.51, 95% CI 2.00-6.16)
- Very limited treatment data:
  - Rifaximin 550 mg tid and Neomycin 500 mg bid x 14 days recommended
  - Lovastatin?

Pimentel et al. Am J Gastroenterol 2020;115:165-78

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Breath Testing in the COVID 19 Era

Elective	Clinical Qualifiers	Alternatives
Breath testing for SIBO (glucose, lactulose) **Breath testing for CHO malabsorption (lactose, fructose, sucrose)**	With rare exceptions, breath tests are **elective**.	• SIBO – empiric trial of antibiotics, small bowel aspiration for quantitative culture • CHO malabsorption: Dissacharidase deficiencies (lactose, sucrase isomaltase) can be diagnosed with a) Small bowel biopsy and dissacharidase assay, 2) Trial of an exclusion diet, 3) Substrate challenge, 4) Enzyme replacement therapy, 5) Blood testing for gene variants can identify patients with congential hypolactasia or sucrase-isomaltase deficiency • Home breath testing by a third party vendor is another option

Breath tests are aerosol generating procedures.
Negative COVID 19 testing should be documented before testing
If COVID 19 testing not done, consider deferring test or wearing full PPE

ANMS and ACG websites

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Restarting Your Motility Practice

Anorectal & Colonic Motility Tests & Treatments in the Era of Covid-19 Pandemic?



Satish S.C. Rao, MD, PhD, FACG
J. Harold Harrison Distinguished University Chair in Gastroenterology, Professor of Medicine
Director, Digestive Health Clinical Research Center
Augusta University, Augusta, GA

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OBJECTIVES

- Review common anorectal/colonic tests
  - Can they be performed or alternatives
- Review biofeedback & other treatments
- Discuss recommendations of ANMS taskforce

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Tests for Colonic Function/Motility

- Stool diary
- Colonic transit studies:
  Sitz markers, scintigraphy

- Wireless Motility Capsule Test
- Colonic Manometry

•Rao et al Am J Gastroenetrol 2005

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Stool Diary-Constipation©

NAME:
Hosp. No:

Record your stool habit for one week

Date	Time of Bowel Movement	Straining Yes/No	Feeling of incomplete BM Yes/No	Stool Consistency (1-7)	Urge Yes/No	Digital Yes/No	Drug	Comments
								

Rao SSC. *Gastroenterol Clin N Am* 36 (2007) 687

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Restarting Your Motility Practice

Tools for Improved Understanding of Symptoms

Constipation Stool APP

FI Stool Diary APP

Yan Y, Jiminez E, Rao SSC, et al. Gastroenterol. 2020;15896); S-400:DDW
Jiminez E, Yan Y, Sharma A, Rao SSC, Gastroenterology 2020; 158(6);5380-1. DDW

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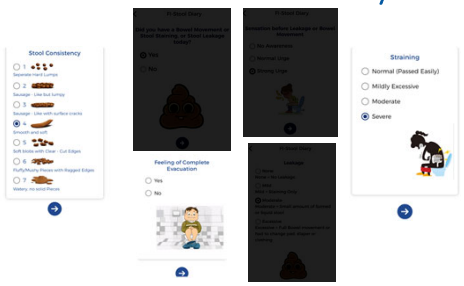
Fecal Incontinence Stool Diary APP



Yan Y, Jiminez E, Rao SSC, et al. Gastroenterol. 2020;15896); S-400:DDW
Jiminez E, Yan Y, Sharma A, Rao SSC, Gastroenterology 2020; 158(6);5380-1. DDW

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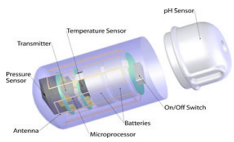
Evaluation of Colonic Function

Wireless pH and Pressure



Colonic Transit Study with Sitzmarks

Day 1- Bisects
Day 2- Rings
Day 3-Trisects
Day 6 (120 hrs)
- Plain abdomen x-ray

Rao SSC. *Gastroenterol Clin N Am* 36 (2007) 687-711

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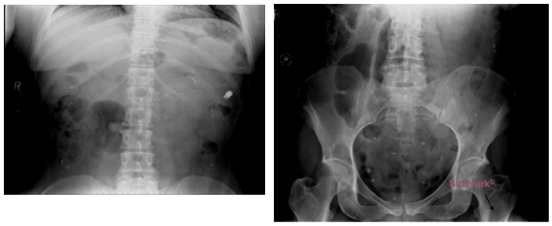
Colonic Transit Test



Abdominal X-ray – 120 hours

Rao SSC. Am J Gastroenterol 2007 ACG

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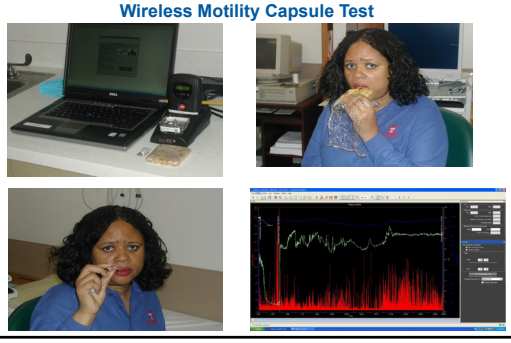
Wireless Motility Capsule Test



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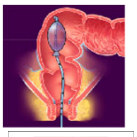
Tests of Anorectal Function

- Anorectal manometry
- Anal Endosonography
- Rectal Compliance Test
- TAMS test or Pudendal Nerve Terminal Latency
- Balloon expulsion test
- Defecography



Modified from Rao, ACG Guidelines, Am J Gastro 2004
Baker J, Neshatian L, Rao SSC et al. ANMS Recommend. 2020

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Ambulatory Colonic Manometry

Rao et al Am J Physiol 2001

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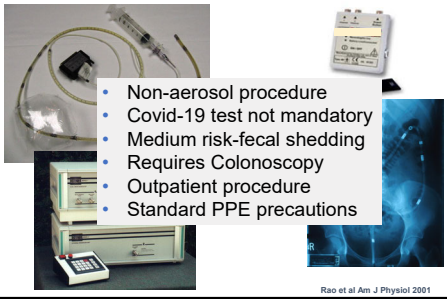
Ambulatory Colonic Manometry



- Non-aerosol procedure
- Covid-19 test not mandatory
- Medium risk-fecal shedding
- Requires Colonoscopy
- Outpatient procedure
- Standard PPE precautions

Rao et al Am J Physiol 2001

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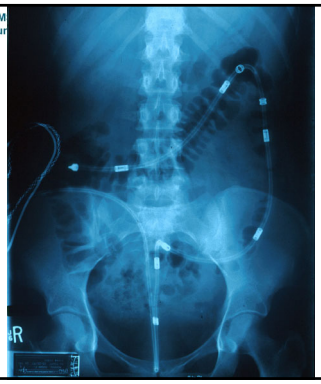

Rao et al Am J Physiol 2001

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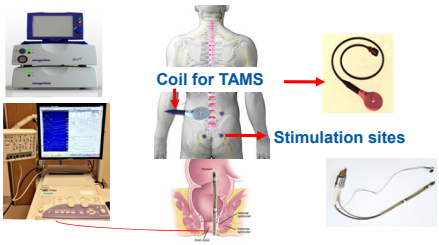
Translumbosacral Anorectal Magnetic Stimulation (TAMS) Test



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Triage for Anorectal Procedures

Urgency for Anorectal Tests	Clinical Qualifiers & Indication(s)	Type of Procedure	Alternative
Urgent (<2 weeks)	There are No urgent indications for anorectal procedures	None	None
Semi-Urgent (2-4 weeks)	Plan for urgent surgery		Defecography
	Fecal impaction Severe constipation and inability to pass stool	Anorectal Manometry and Balloon Expulsion T Endoanal Ultrasound	Large volume enema, Hypaque enema, Endoscopic Disimpaction
	Anorectal pain Significant pelvic/rectal pain, Negative impact QOL	Anorectal Manometry	Medical management

Baker J, Neshatian L, Rao SSC et al. ANMS Recommend. 2020

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Triage for Anorectal Procedures

Urgency of Tests	Clinical Qualifiers	Type of Procedure	Alternative
Elective (> 4weeks)	Chronic constipation failed medical treatment Negative QOL	Anorectal Manometry & Balloon Expulsion Biofeedback T	Life style modifications Laxatives/Secretagogue Squatting Stool Diaphragmatic Breathing
	Fecal Incontinence unresponsive to medical treatment Negative QOL	Anorectal Manometry Anal ultrasound TAMS Biofeedback Therapy	Life style modifications Antidiarrheals Kegel exercises Home Biofeedback
	Anorectal pain Significant pelvic/rectal pain	Anorectal Manometry TAMS Biofeedback Therapy	Medical management
	Pouch/ Reanastomosis Ileorectal anastomos. Ileostomy	Anorectal Manometry & Balloon Expulsion Biofeedback Therapy	Medical management

Baker J, Neshatian L, Rao SSC et al. ANMS Recommend. 2020

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Home vs Office Biofeedback Therapy: RCT

- A prescriptive biofeedback device for male and female urinary and fecal incontinence that combines muscle & electrical stimulation with voice-guided exercises for patient use at home

Sharma A, Xiang X, Rao SS. ACG 2018

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Wearing & Taking Off PPE

Important Steps 3, 4, 9 & 10

Courtesy of Dr GS Raju, MD Anderson Medical Center

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Take Home Points

- Clinical assessment of colorectal issues
  - Telehealth challenging
  - DRE not possible
  - Stool APPS/Diaries can be useful
- Anorectal Manometry, Balloon expulsion Test, Anal ultrasound & TAMS test are medium risk and Non-aerosol procedures & can be safely performed
  - Covid-19 Test is preferred but not mandatory
  - Adequate PPE for staff is a MUST
  - Patient should wear Mask
- Biofeedback Therapy is medium risk and can be safely performed
  - Covid-19 Test is preferred but not mandatory
  - Adequate PPE for staff is a MUST
  - Home biofeedback (incontinence) option
  - Patient should wear Mask

FI Stool Diary APP

Baker J, Neshatian L, Rao SSC et al. ANMS Recommend. 2020

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Financial and Billing Considerations

Abraham R. Khan, MD, FACG
Medical Director, Center for Esophageal Health
NYU Langone Health

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Context and Topics

- GI function and motility laboratories face financial challenges
  - Appropriate and safe procedures are the priority
  - Less testing expected in many instances
- Laboratory leaders → opportunities
  - Learn to optimize reimbursement during this time period
  - Understand evolving telehealth expansion
    - Consider the potential for improved quality for patient encounters

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Billing and Coding

- Significant advancements in GI function and motility testing in past two decades
  - Coding and reimbursement have not always kept up
  - Experienced billers and coders for gastroenterologists may not be very familiar with the nuances of this area
- Few reference materials in literature to guide the individual practitioner in last 15 years
  - Reimbursement review on wireless pH testing in 2005[1] as well as esophageal manometry and impedance-pH testing in 2012[2]
  - 2018 ANMS commissioned billing and coding update on current esophageal function testing[3]
  - Recent 2020 review on establishing a motility laboratory[4]
    - Suggested overall economic framework necessary for a productive laboratory
    - Provided current relevant codes and associated reimbursement information

[1]Chotiprashidi P et al. Gastrointest Endosc 2005 [3]Khan A et al. Neurogastroenterol Motil 2018
[2]Wang A et al. Gastrointest Endosc 2012 [4]Yadlapati R et al. Gastroenterology 2020

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Esophageal Testing

CPT Code	Definition
91010	Esophageal motility (manometric study of the esophagus and/or gastroesophageal junction) study with interpretation and report
+91013	With stimulation or perfusion (e.g., stimulant, acid or alkali perfusion) (List separately in addition to code for primary procedure) (Use 91013 with 91010)
91034	Esophagus, gastroesophageal reflux test; with nasal catheter pH electrode(s) placement, recording, analysis and interpretation
91035	Esophagus, gastroesophageal reflux test; with mucosal attached telemetry pH electrode placement, recording, analysis and interpretation
91037	Esophageal function test, gastroesophageal reflux test with nasal catheter intraluminal impedance electrode(s) placement, recording, analysis and interpretation
91038	Esophageal function test, gastroesophageal reflux test with nasal catheter intraluminal impedance electrode(s) placement, recording, analysis and interpretation; prolonged (greater than 1 hour, up to 24 hours)
91040	Esophageal balloon distension study, diagnostic, with provocation when performed

Yadlapati R et al. Gastroenterology 2020

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Colorectal Evaluations

CPT Code	Definition
90901	Biofeedback training by any modality
90912 (new for 2020)	Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed; initial 15 minutes of one-on-one physician or other qualified health care professional contact with the patient
90913 (new for 2020)	Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed; each additional 15 minutes of one-on-one physician or other qualified health care professional contact with the patient (list separately)
91117	Colon motility (manometric) study, minimum 6 hours continuous recording (including provocation tests, e.g., meal, intracolonic balloon distension, pharmacologic agents, if performed), with interpretation and report
91120	Rectal sensation, tone, and compliance test (i.e., response to graded balloon distention)
91122	Anorectal manometry
95907-95913 (seven separate)	Nerve conduction studies*
76872	Ultrasound, transrectal

**Depends on how many done (range 1-2 to ≥13)*

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Other GI Function and Motility Testing

CPT Code	Definition
91022	Duodenal motility (manometric) study
91065	Breath hydrogen or methane test (e.g., for detection of lactase deficiency, fructose intolerance, bacterial overgrowth, or oro-cecal gastrointestinal transit)
91112	Gastrointestinal transit and pressure measurement, stomach through colon, wireless capsule, with interpretation and report
91132	Electrogastrography, diagnostic, transcutaneous
91133	Electrogastrography, diagnostic, transcutaneous; with provocative testing
97032	Application of a modality to 1 or more areas; electrical stimulation (manual), each 15 minutes*
43263	Endoscopic retrograde cholangiopancreatography (ERCP); with pressure measurement of sphincter of Oddi
76376	3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality with image post-processing under concurrent supervision; not requiring image post-processing on an independent workstation**

**Translumbar repetitive magnetic stimulation*
***Can be added to manometry studies if using 3D technology*

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Importance of Practice Location

- Procedures reimburse differently depending on laboratory coding environment
  - Can significantly alter time delineated
    - Procedure interpretation
    - The ability of the practitioner who ordered test to participate in it
  - In 'Physician Office' location the codes can be submitted without modifiers
  - In 'Hospital Outpatient' or in some cases 'Ambulatory Surgical Center' (ASC)
    - Code with technical component (TC) modifier represents the equipment and other practice expenses for the procedure
    - Hospital actually typically bills the TC component and is reimbursed the allowable Ambulatory Payment Classification (APC) reimbursement mapped to that CPT code
    - Code with professional component modifier (26) is billed by the practitioner interpreting the study, regardless of who performs it

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Reimbursement Variation

- Physician (practice) reimbursement can vary by over a factor of seven in some scenarios depending on location

CPT Code	Fee	Modifier	Work RVU	2020 Medicare National Average or APC Payment
91010	Global		1.28	$205.71
	Professional	26	1.28	$68.21
	Technical	TC	0	$137.50
	APC			$485.55
91038	Global		1.1	$449.32
	Professional	26	1.1	$58.47
	Technical	TC	0	$390.85
	APC			$485.55
91122	Global		1.77	$257.32
	Professional	26	1.77	$92.03
	Technical	TC	0	$165.29
	APC			$234.87

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Example Esophageal Coding Concepts

- Esophageal high-resolution manometry with impedance (HRIM) testing is routine in motility laboratories
  - 91010 and 91037 do not need modifiers
    - 91037 denials common → some payers consider impedance (this includes 91038) experimental and investigational
- When combining esophageal HRIM studies with impedance-pH catheter studies on same day
  - By definition impedance-pH test can bill for 91034 or 91038
    - Will not get both reimbursed → likely only 91034 if together
    - Reimbursement varies significantly by carrier
  - Suggested to bill 91010 on day of HRIM and 91034 or 91038 after the recorder is returned on the day the impedance-pH data is interpreted *with a separate encounter*
    - Consider still billing 91037 with 91010 on day of HRIM despite National Correct Coding Initiative (NCCI) edits with some codes on same encounter
      - Impedance-pH test can be considered as a separate procedure encounter
      - Success among different insurance vendors varies

CPT Code	Definition
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Khan A et al. Neurogastroenterol Motil 2018
Yadlapati R et al. Gastroenterology 2020

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Telehealth Expansion

- Center for Medicare and Medicaid Services (CMS) have greatly expanded telehealth coverage during the public health emergency
  - Including 99201-99215 (office/outpatient visits new and established)
- Audio-only telephone calls
  - When used for a replacement of care for in-person or telehealth visits
  - Paid the equivalent of 99212-99214 (levels 2-4 established office/outpatient) retroactive from March 1st 2020
- Continually evolving across insurers and payers
  - Private payers have different rules

Code	Definition	Work RVU	Revised Work RVU
99441	Telephone E/M service provided by a physician to an established patient, parent, or guardian not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment, 5-10 minutes of medical discussion	0.25	0.48
99442	...11-20 minutes of medical discussion	0.5	0.97
99443	...21-30 minutes of medical discussion	0.75	1.50

https://www.ama-assn.org/practice-management/medicare/cms-payment-policies-regulatory-flexibilities-during-covid-19

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Expanded Visit Opportunities

- Telehealth and audio-only encounters in GI function and motility laboratories
  - Laboratories → reach wide referral base easily
    - Be cognizant of out of state rules
  - Improve quality
    - Direct referral procedures can be explained in terms of expectations and medication alterations before testing
    - Recorder-based results can be provided without patient having multiple in-office visits as well as visit to drop off recorder
  - Utilize as alternative
    - Example: at-home breath testing → telehealth or audio-only encounter to explain how to do test accurately and appropriately

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Conclusion

- As GI function and motility laboratories reopen, there are expected financial challenges for the duration of this pandemic.
- Leaders of these laboratories should become familiar with billing and coding of the relevant procedures as well as telehealth opportunities.
- This will help optimize reimbursement and also can provide quality to the patient experience.

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Questions?
Dr. Pochapin
Dr. Baker
Dr. Gyawali
Dr. Moshiree
Dr. Chey
Dr. Rao
Dr. Khan
Dr. Pandolfino

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