AT THE FOREFRONT
UChicago Medicine

SECTION OF GASTROENTEROLOGY, HEPATOLOGY & NUTRITION

4TH ANNUAL **WOMEN IN DIGESTIVE DISEASES: AT THE FOREFRONT**

A HYBRID CONFERENCE — IN PERSON AND STREAMING

COURSE DIRECTORS
Sonali Paul, MD, MS
Vijaya Rao, MD

UNIVERSITY OF CHICAGO
Rubenstein Forum
1201 E. 60th Street
Chicago, IL 60637

Syllabus/Slides: https://cme.uchicago.edu/WomeninDDSyllabus2022

SCAN ME

AT THE FOREFRONT
UChicago Medicine
Digestive Diseases Center

March 26, 2022

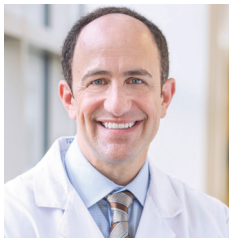
Dear Colleagues:

Welcome to the Annual Women in Digestive Diseases: At the Forefront conference!

We are delighted to welcome you to the fourth year of this unique CME conference highlighting women's gastrointestinal and liver health issues. The Digestive Diseases Center at the University of Chicago Medicine is proud of our outstanding women physicians and scientists, and delighted that you have chosen to learn from and with them today.

The University of Chicago Medicine is committed to identifying the needs of different populations of patients and providing the unique multidisciplinary care that they both need and deserve. Thank you for your interest and ongoing support.

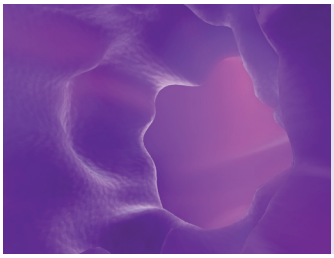
Sincerely,



Vivek Prachand, MD
Professor of Surgery
Co-Director, Digestive Diseases Center
University of Chicago Medicine

David T. Rubin, MD
The Joseph B. Kirsner Professor of Medicine
Chief, Section of Gastroenterology, Hepatology and Nutrition
Co-Director, Digestive Diseases Center
University of Chicago Medicine

5841 S. Maryland Avenue, MC 4076 | Chicago, IL 60637-1470 | Phone 773-702-2950 | Fax 773-702-2182



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DESCRIPTION

Women face unique challenges in the field of digestive diseases, both as patients and practitioners. This activity will address these challenges in an exciting and interactive forum. Topics include the symptoms, diagnosis, and treatment of common gastrointestinal and liver diseases that afflict women more commonly and/or differently than men as well as strategic solutions to barriers women gastroenterologists and other women providers in gastroenterology face in their career development.

TARGET AUDIENCE

This activity is designed for physicians, nurses, and other healthcare professionals interested in the treatment of women with gastrointestinal illnesses and the career development of women providers in the field of gastroenterology.

LEARNING OBJECTIVES

At the conclusion of this education activity, participants will be able to:

- *Discuss the appropriate use of emerging therapies in the management of celiac disease, a disease more common in women;*
- *Describe the role of specific GI radiology studies that can aid in the diagnosis and management of gastroenterological diseases in women;*
- *Explain the interpretation of anorectal manometry and how to use these results to manage dyssynergic defecation in patients;*
- *Determine strategies that help women healthcare providers overcome barriers in the advancement of their careers and promote success in their chosen paths.*

ACCREDITATION AND CREDIT DESIGNATION

PHYSICIAN CREDIT

The University of Chicago Pritzker School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The University of Chicago Pritzker School of Medicine designates this live activity for a maximum of 5.25 A*MA PRA Category 1 Credits*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

NURSING CREDIT

University of Chicago Medicine is approved as a provider of nursing continuing professional development by the Ohio Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. (OBN-001-91)

This live activity is designated for a maximum of 5.25 continuing nursing education units.

AMERICAN BOARD OF INTERNAL MEDICINE MOC PART II CREDIT

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to earn up to 5.25 MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is the CME activity provider's responsibility to submit

OTHER HEALTHCARE PROFESSIONAL CREDIT

Other healthcare professionals will receive a Certificate of Participation. For information on the applicability and acceptance of Certificates of Participation for educational activities certified for *AMA PRA Category 1 Credit*™ from organizations accredited by the ACCME, please consult your professional licensing board.

EDUCATIONAL GRANTS/COMMERCIAL SUPPORT

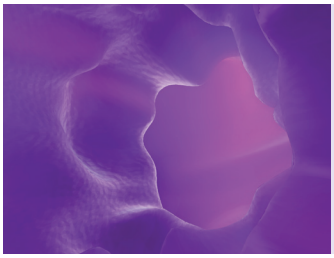
Educational grant funding has been generously provided by:

Boston Scientific Corporation
Medtronic Inc.
Olympus Corporation of the Americas
Pfizer Inc.
Salix Pharmaceuticals, Inc.

This activity has been supported in part by an educational grant from **Ferring Pharmaceuticals, Inc**.

Supported by an educational grant from **Janssen Biotech, Inc**., administered by **Janssen Scientific Affairs, LLC**.

Supported by an educational grant from **Takeda Pharmaceuticals U.S.A, Inc**.



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DISCLOSURE DECLARATIONS

As a provider accredited by the ACCME, The University of Chicago Pritzker School of Medicine asks everyone in a position to control the content of an education activity to disclose all financial relationships with any ineligible companies. This includes any entity whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients. Financial relationships are relevant if a financial relationship, in any amount, exists between the person in control of content and an ineligible company during the past 24 months, and the content of the education is related to the products of an ineligible company with whom the person has a financial relationship. Mechanisms are in place to identify and mitigate any relevant financial relationships prior to the start of the activity.

Additionally, The University of Chicago Pritzker School of Medicine requires Authors to identify investigational products or off-label uses of products regulated by the US Food and Drug Administration at first mention and where appropriate in the content.

COURSE FACULTY

The following individuals have no relevant financial relationships with ineligible companies to disclose:

Vineet Arora, MD, MAPP
Alyse Bedell, PhD
Isabel Casimiro, MD, PhD
Nina Gupta, MD
Carla Harmath, MD
M. Ruth Mangonon-Barnes, MSN, APN, ACNS-BC, CPHQ
Vijaya Rao, MD
Carol E. Semrad, MD
Kinga Skowron Olortegui, MD

Lin Chang, MD has served as a scientific advisory board member/consultant for Ardelyx, Cosmo, Ironwood, Immunic, and Mauna Kea Technologies and as a speaker for AbbVie. Dr. Chang has received research funding from AnX Robotica, Ironwood, and Vanda. Dr. Chang will discuss neuromodulators for IBS treatment.

Sushila Dalal, MD has served on the speaker's bureau for AbbVie and as a consultant for Pfizer.

Sonali Paul, MD, MS has received grant funding from Target Pharmasolutions, Intercept, and Genfit.

Mary Rinella, MD has served as a consultant for Alnylam, Amgen, AMRA, BMS, Boehringer Ingelheim, Coherus, Enanta, Intercept Pharmaceuticals, Novo Nordisk, Pfizer, Gelesis, Siemens, and Novartis. Dr. Rinella will be discuss off label use of the following drugs: pioglitazone, empagliflozin, liraglutide, semaglutide, pentoxifylline, and vitamin E.

Namrata Setia, MD has served as a conference moderator and presenter and as a consultant for Astellas.

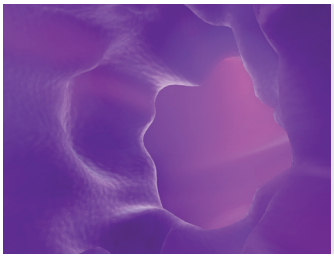
The staff of the Center for Continuing Medical Education have no relevant financial relationships with ineligible companies to disclose.

All of the relevant financial relationships listed for these individuals have been mitigated.

DISCLAIMER

The views expressed in this activity are those of the individual speaker. It should not be inferred or assumed that they are expressing the views of any pharmaceutical or product/device manufacturer, provider of commercial services, or The University of Chicago. The drug selection and dosage information presented in this activity are believed to be accurate. However, participants are urged to consult the full prescribing information on any agent(s) presented in this activity for recommended dosage, indications, contraindications, warnings, precautions, and adverse effects before prescribing any medication. This is particularly important when a drug is new or infrequently prescribed.

Please Note: Requests to claim *AMA PRA Category 1 Credit*™ after three months will be subject to additional fees.



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CONFERENCE SPEAKERS AND MODERATORS

GUEST SPEAKERS

Lin Chang, MD

Vice-Chief, Vatche and Tamar Manoukian Division of Digestive Diseases
Program Director, UCLA GI Fellowship Program
Co-Director, G. Oppenheimer Center for Neurobiology of Stress and Resilience
David Geffen School of Medicine at UCLA, Los Angeles, CA

Lin Chang, MD is a Professor of Medicine and Vice-Chief of the Vatche and Tamar Manoukian Division of Digestive Diseases, Department of Medicine at the David Geffen School of Medicine at UCLA. She serves as the Co-Director of the G. Oppenheimer Center for Neurobiology of Stress and Resilience at UCLA. She is also Program Director of the UCLA Gastroenterology Fellowship Program. Dr. Chang's clinical expertise is in disorders of gut-brain interaction (also known as functional gastrointestinal disorders). Her research focuses on brain-gut interactions underlying irritable bowel syndrome (IBS), specifically, the pathophysiology of IBS related to stress, early life adversity, sex differences, genetic and epigenetic factors, and gut microbiome and the treatment of IBS. She has recently served as the Clinical Research Councilor of the AGA Governing Board. She previously served as President of the American Neurogastroenterology and Motility Society (ANMS) and is a member of the Rome Foundation Board of Directors.

COURSE DIRECTORS

Sonali Paul, MD

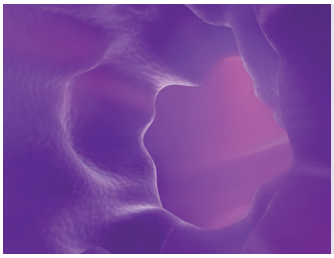
Assistant Professor of Medicine

Dr. Sonali Paul began her career in hepatology within the Section of Gastroenterology, Hepatology and Nutrition at the University of Chicago Medicine. Her clinical practice is focused on the largest epidemic in the history of hepatology — nonalcoholic fatty liver disease — and she also has an interest in immune-mediated diseases. She is board-certified in obesity medicine, and works closely with a multidisciplinary team that includes a nutritionist and an endocrinologist to provide a comprehensive approach of dietary, lifestyle and drug therapy interventions to manage fatty liver. She has a master's degree in Clinical and Translational Science, which has given her the skills to add patient outcomes research and large database research to her portfolio. Dr. Paul's home life is dedicated to raising her 6 year-old son, Raj, with her wife, Cathy, and enjoying her puggle, Milo.

Vijaya Rao, MD

Assistant Professor of Medicine
Director, Student and Resident Rotations

Dr. Vijaya Rao transitioned seamlessly from gastroenterology fellowship into the faculty at the University of Chicago Medicine in 2017. Her clinical practice includes patients with a variety of digestive diseases, with a particular interest in celiac disease. She completed an ethics fellowship at the MacLean Center for Clinical Medical Ethics and remains part of the center's faculty. As Associate Program Director for the gastroenterology fellowship program, she has implemented an ethics curriculum for the fellows. Since 2019, she has been Editor-in-Chief of The New Gastroenterologist, a publication of the American Gastroenterological Association. Outside of work, Dr. Rao is a wife and mother to an active toddler and loves cooking, yoga, traveling and tennis when she finds the time.



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UNIVERSITY OF CHICAGO FACULTY

Vineet Arora, MD, MAPP (NAM)

Herbert T. Abelson Professor of Medicine

Dean for Medical Education

Dr. Vineet Arora, MD, MAPP (NAM) is a Herbert T. Abelson Professor of Medicine and Dean for Medical Education at The University of Chicago Medicine, Pritzker School of Medicine. As Dean, she oversees undergraduate medical education, graduate medical education, continuing medical education and provides key leadership for the simulation-based training programs at University of Chicago. Dr. Arora is also an elected member of the National Academy of Medicine whose work improving care and learning in teaching hospitals has been funded by NIH, AHRQ and the Macy Foundation, has been cited over 10,000 times. Her work on improving sleep, fatigue and handoffs was influential in improving working conditions for residents. As an advocate for improving equity and opportunity in academic medicine, she has been an influential voice for women in medicine and leads NIH-funded programs to improve mentoring for women and minority future physician scientists. She is a founding member of the 501c3 Women of Impact and is on the leadership group for the National Academy's Action Collaborative to Prevent Sexual Harassment in Higher Education.

Alyse Bedell, PhD

GI Health Psychologist

Assistant Professor of Psychiatry & Behavioral Neuroscience

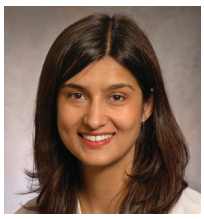
Dr. Alyse Bedell is a gastrointestinal (GI) health psychologist and Assistant Professor of Psychiatry & Behavioral Neuroscience at the University of Chicago. Dr. Bedell earned her doctorate in clinical psychology from Northwestern University Feinberg School of Medicine, where she also completed her postdoctoral fellowship in psychogastroenterology. Dr. Bedell established the psycho-gastroenterology service at the University of Chicago, where she provides evidence-based brain-gut therapies to patients with gastrointestinal disorders and provides psychogastroenterology training and supervision to clinical psychology interns and externs.

Isabel Casimiro, MD, PhD

Clinical Instructor of Medicine

Dr. Isabel Casimiro is an Instructor of Medicine in the Section of Endocrinology, Diabetes, and Metabolism. She is originally from Los Angeles, California and received her PhD from the Albert Einstein College of Medicine in New York, and her MD from the University of Washington in Seattle. She underwent internal medicine residency and Endocrinology fellowship training at the University of Chicago through the Physician Scientist Development Program.

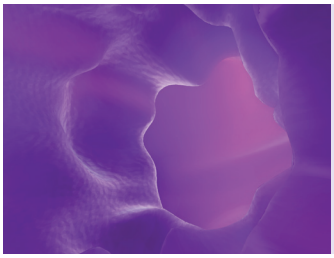
Dr. Casimiro performs basic research in the area of macrophage metabolic activity in the setting of diabetes and obesity. She also has expertise in the area of gender affirming hormone therapy and established the Gender Clinic in the Section of Endocrinology, which provides gender affirming hormone therapy to patients from the University of Chicago community.



Sushila Dalal, MD

Assistant Professor of Medicine

Dr. Sushila Dalal joined the faculty at the University of Chicago in 2013 after completing GI fellowship, residency, and medical school at the University of Chicago. She specializes in inflammatory bowel diseases, and has a particular interest in preconception counseling, sexual dysfunction, and and pouchitis management in IBD. She also participates in translational research investigating the development of inflammation in the J pouch. At home, Dr. Dalal is a mom to 10 and 7 year old girls, and a 7 month old baby boy.



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Carla Harmath, MD

Associate Professor of Radiology

Dr. Harmath received her medical degree from the Pontifica Universidade Catolica do Parana in Brazil in 1996. She was a research fellow at the Massachusetts General Hospital from 1997 to 1998, and completed a transitional year internship at the Hospital of Saint Raphael/Yale University in 1999. She completed her diagnostic radiology residency at Loyola University Medical Center in 2003, where she served as chief resident form 2002 to 2003, and received the 2002 RSNA Resident Research award. She has a fellowship in body imaging/MRI from Northwestern Feinberg School of Medicine, completed in 2004. From 2004 to 2007, Dr. Harmath served as a staff radiologist at the West Palm Beach VA Medical Center, and has served as an assistant professor in the Department of Radiology at Northwestern University for the past 10 years. She has been appointed to the rank of Assistant Professor of Radiology at the University of Chicago in August 2017, with clinical responsibilities in the Section of Abdominal Imaging. Her clinical and research interests include oncologic imaging, CT and MRI imaging of the digestive system and transplant imaging, as well as multidisciplinary contribution to patient care. Educational interests include learning facilitation and improvement in medical communication, mentoring and goal achievement. She received The Marc Ronald Tetalman Memorial Award for Outstanding Teaching in 2018 and the Senior Class Teaching Award in 2019. She has been recently appointed as Section Chief of Abdominal Imaging.

Sonia Kupfer, MD

Associate Professor of Medicine

Director, Gastrointestinal Cancer Risk and Prevention Clinic

Dr. Sonia Kupfer has been a faculty member in the Section of Gastroenterology, Hepatology and Nutrition for 8 years. Her clinical interests include hereditary gastrointestinal cancer syndromes and celiac disease. She launched the Gastrointestinal Cancer Risk and Prevention clinic where she works with a multi-disciplinary team to provide assessment and management for individuals at high risk for gastrointestinal cancers, such as those with Lynch syndrome, polyposis syndromes, familial pancreatic cancers and hereditary diffuse gastric cancer. In 2017, Dr. Kupfer served as the President of the Collaborative Group of the Americas on Inherited Gastrointestinal Cancer. Dr. Kupfer also leads a translational research program and is funded by the National Cancer Institute to study colonic host-environmental interactions pertaining to carcinogenesis. She has a particular interest in understanding how these interactions differ between individuals and populations in order to address cancer disparities. She is dedicated to education along the continuum of training and has been appointed as the Associate Section Chief for Education and, more recently, as Associate Director of the Physician Scientist Development Program of the Department of Medicine. Her ability to juggle all her roles is enabled by a supportive husband, an art dealer, who partners with her in raising their two children, ages 13 and 15. In the spare time that she rarely has, Dr. Kupfer practices Pilates, spins and plays the oboe.

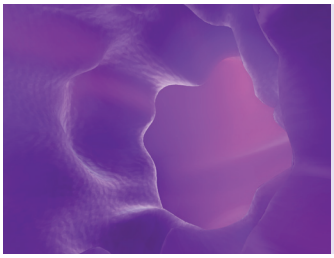
Kinga Skowron Olortegui, MD

Clinical Associate of Surgery

Kinga Skowron Olórtegui's research focuses on prospective gathering of outcomes in colon and rectal surgery, with the goal of obtaining the most accurate and current information regarding best practices for the most common surgical procedures. She is an expert in treating inflammatory bowel disease, as well as colon, rectal, and anal cancer, and such benign diseases as diverticulitis, hemorrhoids, fissures, abscesses, and fistulas.

Her research has been published in the *Journal of Gastrointestinal Surgery, Diseases of the Colon & Rectum, Molecular Therapy, World Journal of Surgery, Scientific Reports, Oncotarget,* and *Inflammatory Bowel Diseases*.

Dr. Olórtegui received a MS in public health sciences for clinical professionals from the University of Chicago and her MD from the Pritzker School of Medicine at the University of Chicago, where she also completed a residency in general surgery and fellowships in the MacLean Center for Clinical Medical Ethics and the Department of Surgery Section of Colon and Rectal Surgery.



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Mary E. Rinella, MD

Professor of Medicine

Dr. Rinella is a Professor of Medicine at the University of Chicago Pritzker School of Medicine and is the Director of the Metabolic and Fatty Liver Program. Currently her focus is in clinical research in the area of non-alcoholic fatty liver disease(NAFLD)/ Nonalcoholic steatohepatitis (NASH) both before and after liver transplantation. Dr. Rinella is actively involved in the American Association for the Study of Liver Diseases (AASLD) where she currently serves as Councilor-at-large on the Governing Board. She was an author on the 2018 AASLD Practice Guidance for NAFLD and the chair of the upcoming AASLD NAFLD Practice Guidance. She has held several national leadership roles in the field of NAFLD including Chair of the AASLD NAFLD Special Interest Group (SIG) and currently as Chair of the AASLD NASH Task Force. As Chair of the NASH Task Force, she is charged with fostering research collaboration and advancing best practice through collaboration with other medical societies, federal agencies and patient advocacy organizations to improve outcomes in patients with NASH.

Namrata Setia, MD

Associate Professor of Pathology

Dr. Namrata Setia is an Associate Professor in the Department of Pathology at the University of Chicago. She is actively involved in educational activities and committees of the United States and Canadian Academy of Pathologists and College of American Pathologists. Her clinical practice is focused on the diseases of the gastrointestinal tract and pancreas. Her clinical interests include translational applications of molecular methods to the non-neoplastic and neoplastic diseases of the gastrointestinal tract, especially gastric diseases. She has avidly published in her areas of interest and has been invited to lectures both nationally and internationally. Besides her work, she loves spending time with her 10-year old son and her supportive husband.

Nina Gupta,MD

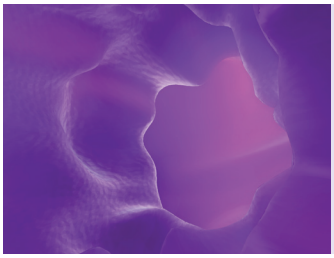
Clinical Associate of Medicine

Dr. Nina Gupta completed her medical school, residency, and fellowship at the University of Chicago, after which she stayed on to join the Gastroenterology faculty in 2020. Dr. Gupta practices across the entire spectrum of general gastroenterology, and cares for patients with a wide range of digestive conditions. She has a particular interest in GI cancer risk and prevention. Dr. Gupta has completed supplemental training through the City of Hope Intensive Course in Genomic Cancer Assessment, and is able to offer her patients comprehensive GI cancer risk counseling, testing, and screening. When she is away from the hospital and clinics, Dr. Gupta loves to travel, watch live music, and learn how to cook as well as her fiancé (she's not there, yet...).

Anjana A. Pillai, MD

Associate Professor of Medicine
Medical Director, Liver Tumor Program
Medical Director, Living Donor Liver Transplantation

Dr. Anjana Pillai is an Associate Professor of Medicine and came to the Section of Gastroenterology, Hepatology and Nutrition of the University of Chicago Medicine in 2016. She has a strong clinical and research interests in clinical outcomes and novel therapeutic options for hepatocellular carcinoma and cholangiocarcinoma. She is the Medical Director of the Liver Tumor Program, which brings the disciplines of hepatology, hepatobiliary surgery, oncology, diagnostic and interventional radiology together to offer patients a multidisciplinary and highly innovative approach to the management of liver tumors, whether malignant or benign. She is also the Medical Director of the Living Donor Liver Transplant program, which was recently reinvigorated at the University of Chicago Medicine. She is the Program Director of the Transplant Hepatology Fellowship. To maintain her sanity, she often runs and tries to "compete" in 1-2 races every year. At home, she is fortunate enough to have a supportive husband and is the mother to two young energetic children.



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WOMEN FACULTY DIRECTORY

UNIVERSITY OF CHICAGO SECTION OF GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

Valerie Abadie, PhD

Research Assistant Professor

Research interests:
gastrointestinal immunology

Office location:
Knapp Center for Biomedical Discovery
900 E. 57th St. | Suite 9124 Chicago, IL 60637

Office 773-834-5791 **Fax** 773-773-702-2281
vabadie@medicine.bsd.uchicago.edu

Noa Krugliak Cleveland, MD

Instructor of Medicine

Clinical interests:
inflammatory bowel diseases

Clinic locations:
River East 355 E. Grand Ave., Chicago, IL 60611
Hinsdale 12 Salt Creek Lane, Hinsdale, IL 60521

Cell 773-407-2176 **Office** 773-795-5828 **Fax** 773-702-7782
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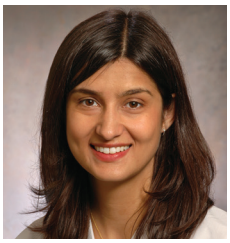

Sushila Dalal, MD

Assistant Professor of Medicine

Clinical interests:
inflammatory bowel diseases, pregnancy and inflammatory bowel diseases

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
River East 355 E. Grand Ave., Chicago, IL 60611
Orland Park 14290 S. La Grange Rd., Orland Park, IL 60462

Cell 847-606-6394 **Office** 773-702-4703 **Fax** 773-834-4037
Sushila.Dalal@uchospitals.edu

Nina Gupta, MD

Clinical Associate of Medicine

Clinical interests: GI cancer risk and prevention, general gastroenterology

Office location:
Orland Park 14290 S. La Grange Rd., Orland Park, IL 60462

Cell: 630-605-5860 **Office:** 884-755-8267 **Fax:** 773-834-7077
ngupta9@medicine.bsd.uchicago.edu

Bana Jabri, MD, PhD

Professor of Medicine
Sara and Harold Lincoln Thompson Professor
Vice Chair for Research (Basic Science), Department of Medicine

Research interests: gastrointestinal immunology

Office location:
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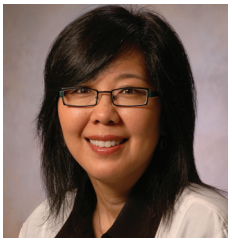
900 E. 57th St. | Suite 9124 Chicago, IL 60637
Office: 773-834-8632 **Fax:** 773-702-2281
bjabri@bsd.uchicago.edu



Karen E. Kim, MD

Professor of Medicine

Vice Provost for Research, University of Chicago

Director, Center for Asian Health Equity

Associate Director, Comprehensive Cancer Care Center

Clinical interests: colon cancer, health disparities, women's health

Clinic location:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637

Cell: 773-590-5522 **Office:** 773-702-3149 **Fax:** 773-702-5970
kekim@medicine.bsd.uchicago.edu

Sonia Kupfer, MD

Associate Professor of Medicine

Vice-Chief, Education, Section of Gastroenterology, Hepatology, and Nutrition

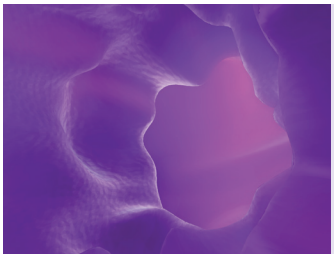
Associate Director, Physician Scientist Development Program, Department of Medicine

Director, Gastrointestinal Cancer Risk and Prevention Clinic

Clinical interests: cancer genetics, colon cancer, hereditary syndromes, celiac disease

Clinic location:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637

Cell: 312-752-8510 **Office:** 773-702-8076 **Fax:** 773-702-2281
skupfer@medicine.bsd.uchicago.edu



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Sonali Paul, MD, MS

Assistant Professor of Medicine

Clinical interests: fatty liver disease, obesity, primary sclerosing cholangitis, autoimmune liver disease, liver transplant

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637

Merrillville 99 E. 86th St. | Suite C, Merrillville, IN 46410

Cell: 857-383-9504 **Office:** 773-702-2395 **Fax:** 773-834-1288
spaul@medicine.bsd.uchicago.edu

Anjana A. Pillai, MD

Associate Professor of Medicine

Medical Director, Liver Tumor Program

Medical Director, Living Donor Liver Transplantation

Program Director, Transplant Hepatology Fellowship

Clinical interests: liver cancer, liver transplantation, liver diseasess

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
Orland Park 14290 S. La Grange Rd., Orland Park, IL 60462

Cell: 786-218-0107 **Office:** 773-834-2302 **Fax:** 773-834-1288
apillai1@medicine.bsd.uchicago.edu

Vijaya Rao, MD

Assistant Professor of Medicine

Associate Program Director, Gastroenterology Fellowship

Director, Student and Resident Rotations

Clinical interests: general gastroenterology, women's health, medical ethics

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
River East 355 E. Grand Ave., Chicago, IL 60611
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vijayarao@medicine.bsd.uchicago.edu

Mary E. Rinella, MD

Professor of Medicine

Clinical interests: Nonalcoholic Fatty Liver Disease (NAFLD), Autoimmune Liver Diseases, Transplant Hepatology & Gastroenterology

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
River East 355 E. Grand Ave., Chicago, IL 60611

Cell: 312-246-6176 **Office:** 773-834-9654 **Fax:** 773-834-1288
mrinella@bsd.uchicago.edu

Carol E. Semrad, MD

Professor of Medicine

Director, Small Bowel Disease and Nutrition Program

Clinical interests: celiac disease, malabsorption syndromes, nutrition, small bowel enteroscopy

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
River East 355 E. Grand Ave., Chicago, IL 60611

Cell: 773-860-6561 **Office:** 733-702-6921 **Fax:** 773-834-5872
csemrad@medicine.bsd.uchicago.edu

Uzma D. Siddiqui, MD

Professor of Medicine
Director, Center for Endoscopic Research and Therapeutics

Director, Endoscopic Ultrasound and Advanced Endoscopy Training Program

Clinical interests: EUS, ERCP, pancreas cancer, cholangiocarcinoma, endoscopic resection

Clinic location: **Hyde Park Campus** 5758 S. Maryland Ave., Chicago, IL 60637
Office: 773-702-3329 **Fax:** 773-834-8891
usiddiqui@medicine.bsd.uchicago.edu

Helen S. Te, MD

Professor of Medicine
Medical Director, Adult Liver Transplantation

Clinical interests: liver transplantation, liver diseases, liver cancer

Clinic locations:
Hyde Park Campus 5758 S. Maryland Ave., Chicago, IL 60637
Schererville 222 Indianapolis Blvd, Schererville, IN 46375
Merrillville 99 E. 86th St. | Suite C, Merrillville, IN 46410

Cell: 773-316-4996 **Office:** 773-702-2395 **Fax:** 773-834-1288
hte@medicine.bsd.uchicago.edu

CONFERENCE AGENDA

SATURDAY, MARCH 26, 2022

7:30 a.m.	**REGISTRATION & BREAKFAST**
8:00	**Welcome Remarks** Course Directors
	SESSION 1
8:10	**The Role of GI Psychology in Digestive Disease Health** Alyse Bedell, PhD
8:30	**Anorectal Manometry: Use and Interpretation** Kinga Skowron Olortegui, MD
8:50	**Helpful Pearls in GI Radiology** Carla Harmath, MD
9:20	**Celiac Disease: Therapies on the Horizon** Sonia Kupfer, MD
9:40	**Panel Discussion** Session 1 Faculty
9:50	**BREAK**
	SESSION 2
10:00	**Management of IBS** Lin Chang, MD
10:20	**Novel Therapeutics in the Treatment of Nonalcoholic Fatty Liver Disease** Mary E. Rinella, MD
10:40	**Inflammatory Bowel Disease: Updates and New Therapies** Sushila Dalal, MD
11:00	**Transgender Health for the GI Physician** Isabel Casimiro, MD, PhD
11:20	**A Review of GI Pathology** Namrata Setia, MD
11:40	**Panel Discussion** Session 2 Faculty
12:00 p.m.	**LUNCH BREAK**
	SESSION 3
12:30 p.m.	**KEYNOTE: Career Paths for Women in GI** Lin Chang, MD
1:20	**Promoting Equity in Women Post-Pandemic** Vineet Arora, MD, MAPP
1:40	**Panel Discussion** Session 3 Faculty
1:55	**Closing Remarks** Course Directors
	ADJOURN

Program agenda and speaker selection subject to change.

Welcome Remarks
Course Directors

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Women in Digestive Diseases: Updates in 2022

March 26th, 2022

Women in Medicine & Gastroenterology

- Recent years have seen increased numbers of women in medicine, particularly in medical school matriculation
- Active women gastroenterologists remain a minority (18%)—UCM GI faculty comprised of 47% women
- Percentage of GI fellows has remained stable in last decade (~30%, peak of 39% in 2019, 30% in 2020)
- The COVID-19 pandemic has highlighted systemic assumptions about women that lend to further professional disadvantage

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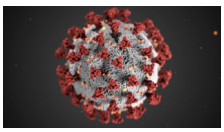
https://www.abim.org/about/statistics-data/resident-fellow-workforce-data/first-year-fellows-by-gender-type-of-medical-school-attended.aspx Accessed on 3/15/22

AAMC 2019 Physician Data and Specialty Report. https://www.aamc.org/data/workforce/reports/492560/1-3-chart.html. Accessed on 3/15/22

How the COVID-19 pandemic exacerbates existing inequities

- Increasing demands at home
- Compensation
- Exaggerating leadership gap
- Physical and mental health



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Journal of Hospital Medicine® Vol 15 | No 8 | August 2020

COVID-19 Pandemic – What Can We Learn?

- Are there institutional changes adopted during COVID-19 that have the potential to reduce systemic barriers historically faced by women?
- What specific aspects of different leadership models lead to effective strategies to advance women?
- How might insights gained about work-life boundaries and mental health inform preparedness for the future and how institutions can support reductions in workload?

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https://www.insidehighered.com/news/2021/03/10/covid-19-moment-women-stem Accessed 3/10/21

Rabinowitz, LG; Rabinowitz, DG,. Women on the Frontline, Academic Medicine: February 16, 2021

Reinvigorated focus on gender parity

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Reinvigorated focus on gender parity

- Females comprised:
  - 14% of chairs of internal medicine
  - 18% of division chiefs of gastroenterology
  - 24% of program directors
  - 37% of associate program directors
- 43% of programs did not have female representation at any level
- Female GI fellows perform less procedures than male counterparts
- Increased awareness on challenges of pregnancy unique to gastroenterologists including advanced maternal age, need for ART, radiation exposure, impact on training, suboptimal maternity leave

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Clinical Gastroenterology and Hepatology 2021 https://doi.org/10.1016/j.cgh.2021.10.004

Digestive Diseases and Sciences (2022) 67:357–363 https://doi.org/10.1007/s10620-020-06686-5

Reinvigorated focus on gender parity

- Barriers include lack of mentorship, overall low numbers of women in the field, work/life balance
- Lack of female visibility can have an impact on attracting future female trainees, perpetuating female underrepresentation
- Increasing the amount of women fellowship leaders is associated with an increase in female trainees
- Shifting ACGME/ABIM guidelines towards competency based training rather that time based models may prevent delays in graduation for pregnant fellows

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Digestive Diseases and Sciences (2022) 67:357–363 https://doi.org/10.1007/s10620-020-06686-5

Conference Co-Directors


Sonia Kupfer


Sonali Paul


Anjana Pillai


Sushila Dalal


Vijaya Rao


Kinga Skowron-Orlotegui


Nina Gupta

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UCM Women GI Faculty

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Educational Grant Support

- Bausch Health
- Ferring Pharmaceuticals
- Janssen Biotech, Inc
- Boston Scientific
- Medtronic
- Olympus
- Pfizer
- Salix (Bausch Health)
- Takeda

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2:00 p.m.	**ADJOURN**

Program agenda and speaker selection subject to change.

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Education Credits

- Physicians: maximum of 5.25 *AMA PRA Category 1 Credits* ™
- Nurses: CNE credits via the Ohio Nurses Association
- Other healthcare professionals: Certification of participation

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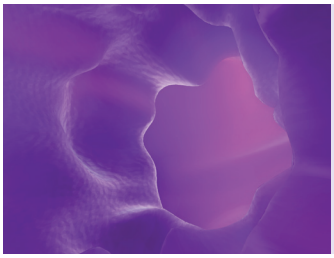

The Role of GI Psychology in Digestive Disease Health

Alyse Bedell, PhD

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The Role of GI Psychology in Digestive Disease Health

Alyse Bedell, PhD

Women in Digestive Diseases: At the Forefront

March 26th 2022

Disclosure Information

- I have no financial relationships to disclose
- I will not discuss off label use or investigational use in my presentation

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Objectives

1. Introduce the field of psychogastroenterology
2. Review brain-gut and GI-focused psychotherapies
3. Discuss practice integration
4. Considerations in Women

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The Field of Psychogastroenterology

Subspecialty of Clinical Psychology

- Clinical Psychology
- Health Psychology
- Psychogastroenterology

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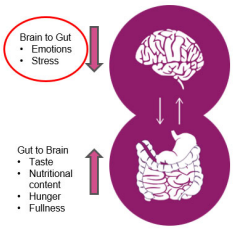
The Gut-Brain Axis



Strong, bi-directional neural and hormonal pathway between the central nervous system and the GI tract

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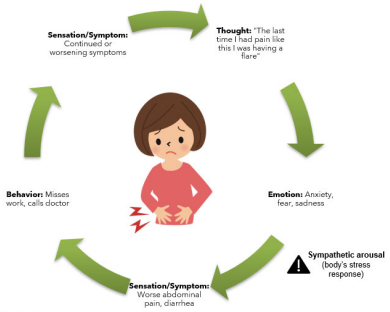
The Role of Stress in GI Disorders



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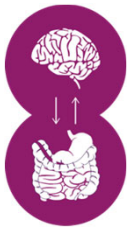
GI-focused Psychotherapies

Brain-gut Psychotherapies

- Psychological treatments in which GI symptoms are conceptualized using the brain-gut axis
  - **Cognitive behavioral therapy**
  - **Gut-directed hypnotherapy**
  - Acceptance-based therapies
  - Mindfulness-based therapies
  - Psychodynamic interpersonal therapies



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The Evidence

Positive	Limitations
Psychological therapies... • **Reduce** bowel symptoms in IBS with a medium effect size that lasts at least 1 year after treatment • **Effective** for IBS treatment with a collective NNT= 4 • **Recommended** for IBS symptom improvement by ACG Task Force	• Majority of research in IBS • **Recommendation:** Weak; **Quality of evidence:** Very low • Unique challenges in psychology research

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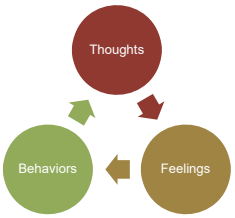
Laird et al., 2016; Ford et al., 2018

Cognitive Behavioral Therapy (CBT)

Widely used treatment for mood and anxiety disorders

Focuses on the relationship between thoughts, feelings, and behaviors



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CBT for GI Disorders

Most empirically-supported brain-gut psychotherapy
- > 30 RCTs
- NNT=4 (IBS)

Thought:"I'm going to have diarrhea if I go to that dinner"

Emotion: Anxiety

Physical symptom: Has diarrhea while out to dinner

Behavior: Turns down next dinner offer

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Ford et al., 2014; Laird et al., 2016

Therapeutic Pathways of CBT

Ingredients
- Psychoeducation
- Diaphragmatic breathing
- Cognitive restructuring
- Behavioral exposures

Mechanisms of action
- Autonomic arousal
- GI-specific anxiety
- Catastrophizing

Targets
- GI symptoms
- Coping
- Quality of life

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Hypnosis and Hypnotherapy

- **Hypnosis:** A process by which a person enters a heightened state of relaxation and focused attention (i.e., trance), making them more open to therapeutic imagery and suggestions
- **Hypnotherapy**
  - Recognized by the American Psychological Association
  - Used in a variety of medical settings including chronic and acute pain, rheumatology, and oncology

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Adachi, 2014; Kendrick, 2016; Horton, 2000

Gut-directed Hypnotherapy (GDH)

Adapted for GI symptoms/disorders
- 17 RCTs
- NNT= 4 (IBS)

"You'll gradually notice that your bowels are functioning with a quiet, natural rhythm that is hardly noticeable at all... just like the gentle sounds of small waves in the background of a calm, sunny day at the beach."

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Ford et al., 2014; Keefer, Palsson & Pandolfino, 2018; Palsson, 2015

Therapeutic Pathways of GDH

Ingredients
- Relaxation
- Ego strengthening
- Therapeutic suggestions

Mechanisms of Action
- Motility
- Visceral hypersensitivity
- Symptom hypervigilance

Targets
- GI Symptoms
- Coping
- Quality of life

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GI Practice Integration

When to Refer

- GI symptoms are not responding to standard treatment approaches
  - But not as a last resort
- Changes related to diagnosis or treatment
- Specific challenges
  - Emerging adulthood
  - Sexual concerns
  - Treatment adherence

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To Refer or Not to Refer

- Connection between stress and GI symptoms
- Interest in mind-body approaches
- Presence of cognitive-affective factors influencing GI symptoms (e.g., catastrophizing, hypervigilance)
- Engagement in maladaptive coping behaviors (e.g., avoidance, rigid behaviors)

- Severe, untreated psychological issues
- Psychological comorbidity is the primary issue and is not related to GI condition
- Patient is not open to the mind-body connection or the referral or motivated to make changes

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Making the Referral

Provide a rationale for the referral	Gut-brain relationship
Referral to a "GI Psychologist"	Or "Behavioral Medicine Specialist" Member of the treatment team
Referral for evaluation, not necessarily treatment	Patients will receive individualized psychosocial recommendations

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Other Helpful Information

Typically brief (3-10 sessions)	Longer in some cases
Maintain communication with the GI psychologist and the patient	Embodies integrated care and decreases experience of patient feeling "dumped"
Optimize medical management prior to referral	Consider dietary recommendations, fiber, etc

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Considerations in Women

Considerations in Women

- **Role of body image**
  - Weight/shape expectations
  - "Act like a lady"
- **Disordered eating**
- **Increased psychiatric comorbidities**
- **Increased openness to psychological treatment**

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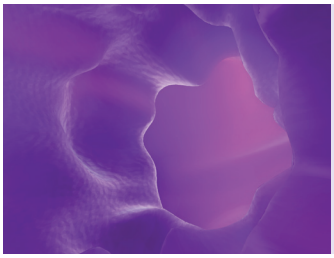


Anorectal Manometry: Use and Interpretation

Kinga Skowron Olortegui, MD

Anorectal Manometry and Interpretation

Kinga Skowron Olortegui, MD
Assistant Professor, Section of Colon and Rectal Surgery

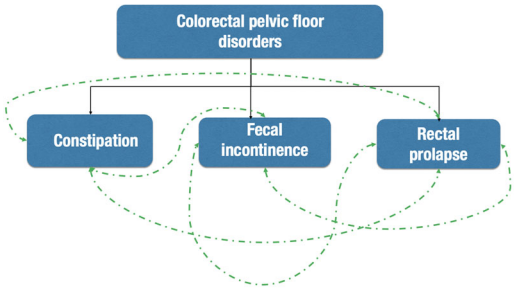
Women in Digestive Diseases: At the Forefront
March 26, 2022

Disclosure

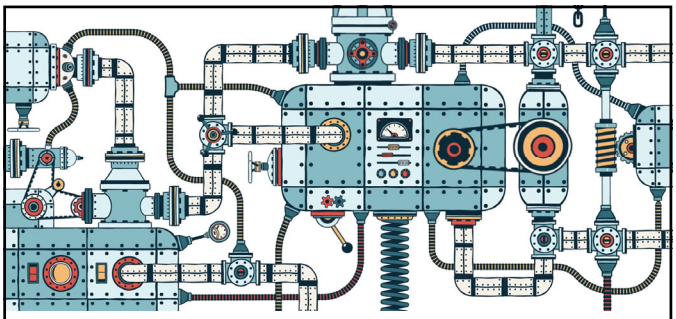
- I have financial relationships to disclose.

Outline

- Review of pelvic floor issues and anatomy
- Common testing and when to get it
- Anorectal manometry
  - Common diagnoses and interpretation of the output

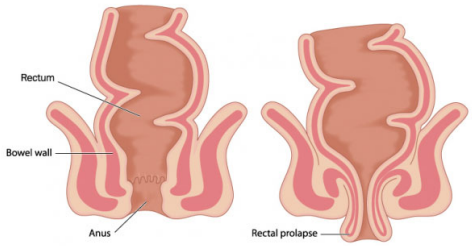


Credit: Konstantin Umanskiy, MD



Credit: Konstantin Umanskiy, MD

Ask questions and listen…



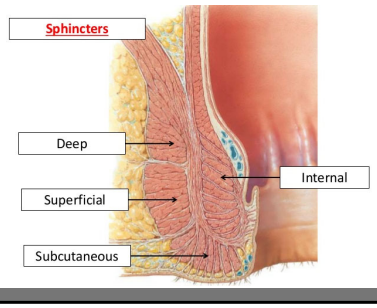
Ask questions and listen…

- Symptom onset, duration, evolution
- Associated disorders (GU)
- Bowel habit history
- Obstetric history
- Prior operations
- Psychosocial factors
- Questionnaires – objective severity scores
  - Patient Assessment of Constipation Symptoms
  - Patient Assessment of Constipation Quality of Life
  - Fecal Incontinence Quality of Life

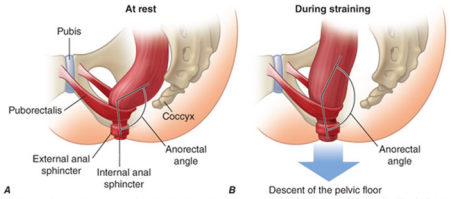
Examination

- General appearance and fitness
- Abdomen – surgical scars?
- External perianal exam – Scars? Contour? Reflexes?
  - Squeeze and push
- Digital exam
  - Squeeze and push
- Anoscopy, +/- vaginal exam
- Exam in different positions
  - Standing
  - Commode

Anatomy

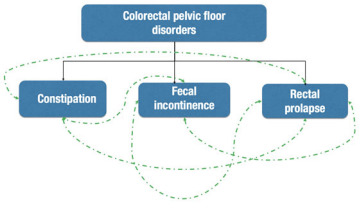


Defecation



Testing

- Colonoscopy
- Sitz marker transit study
- Defecography (x-ray)
- MRI defecography
- Anal ultrasound
- Anorectal manometry



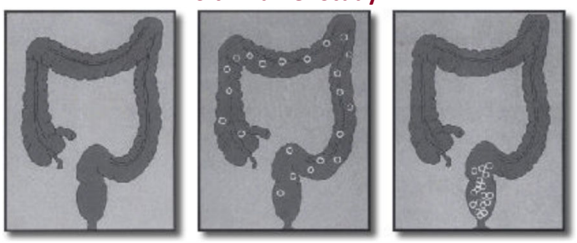
Testing

- Colonoscopy – *rule out luminal pathology*
- Sitz marker transit study - *distinguish colonic versus pelvic floor issue*
- Defecography (x-ray) – *distinguish between anatomic pelvic floor issues*
- MRI defecography – *best for multi-compartment issues*
- Anal ultrasound – *assess sphincter anatomy*
- Anorectal manometry – *distinguish between functional pelvic floor issues*

Testing:
Sitz Marker Study

- Ingestion of radiopaque markers to assess transit time
- Key steps:
  - cessation of all laxatives 48 hours prior to testing
  - ingest capsule
  - AXR on day 1, 3, 5
- Passage of > 80% or markers by day 5 is normal

Testing:
Sitz Marker Study

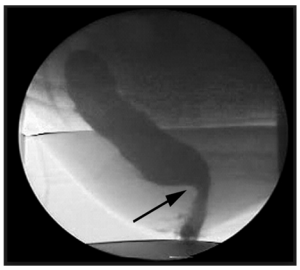


Colonic Inertia | Obstructive Defecation Syndrome

Testing:
Defecography

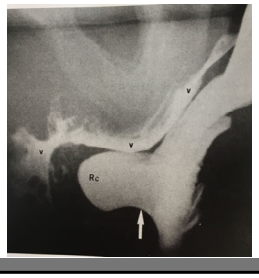
- Dynamic testing
  - assesses change in pelvic floor, rectal, and anal canal during defecation
  - thickened barium placed into rectum +/- vaginal contrast

Testing:
Defecography

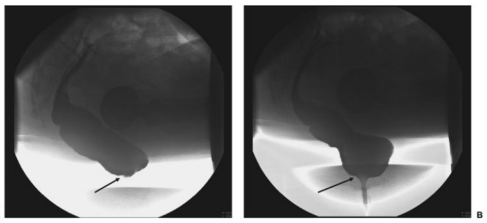


Clin Colon Rectal Surg 2008;21:11

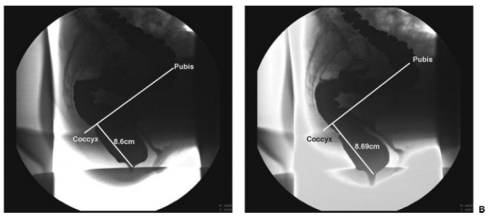
Testing:
Defecography
RECTOCELE



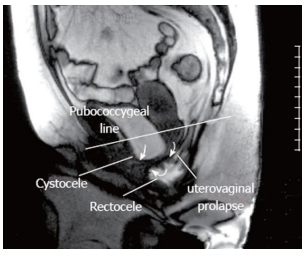
Testing:
Defecography
DYSSYNERGIC DEFECATION (non-relaxing puborectalis)



Testing:
Defecography
PELVIC ORGAN DESCENT

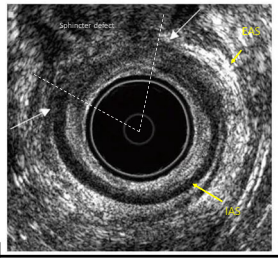


Testing:
MRI Defecography



Testing:
Anal Ultrasound

- Helps to identify patients that may benefit from surgical sphincter repair
- IAS - hypoechoic
- EAS – hyperechoic
- Puborectalis - hyperechoic (> EAS)



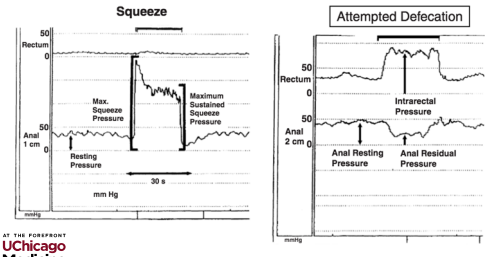
Testing:
Anorectal Manometry

- What is it?
  - Catheter
    - Water-charged, air-charged, or solid-state

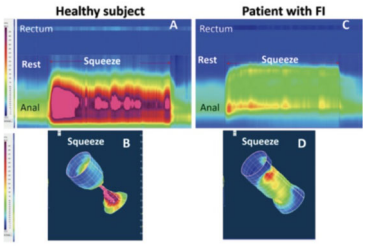
Testing:
Anorectal Manometry

- What does it tell us?
  - Sphincter pressure at rest, with squeeze, and during push
  - Recto-anal inhibitory reflex
  - Rectal sensitivity
  - Balloon explusion
  - +/- EMG
  - testing integrity of the pelvic floor as a "motor unit"
  - Pudendal nerve terminal motor latency

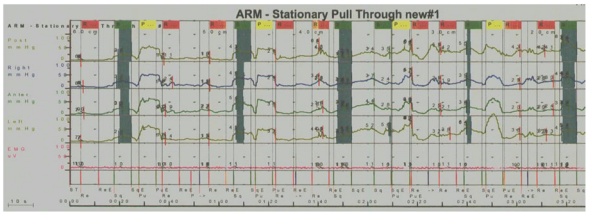
Testing:
Anorectal Manometry



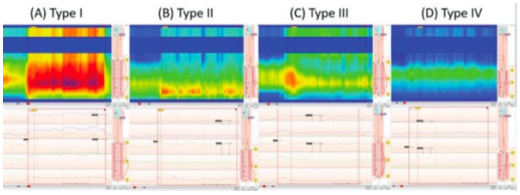
Testing:
Anorectal Manometry
FECAL INCONTINENCE



Testing:
Anorectal Manometry
OBSTRUCTED DEFECATION



Testing:
Anorectal Manometry
OBSTRUCTED DEFECATION



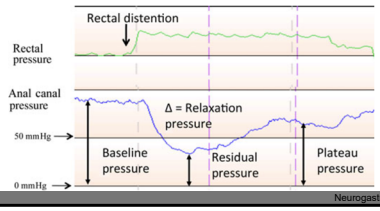
Testing:
Anorectal Manometry

Table 5 Table of suggested normal values for use in clinical practice

	All females		Parous females		Nulliparous females		Males	
Suggested normal values	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper[†]
Functional anal canal length [cm]	2.3	5	2.3	4.9	2.3	5.3	2.4	5.1
Average anal resting pressure [mmHg]	33	101	31	100	47	110	38	114
Maximum absolute anal squeeze pressure [mmHg]	90	397	86	387	89	447	94	590
Maximum incremental anal squeeze pressure [mmHg]	43	313	43	313	52	352	61	525
Average absolute anal squeeze pressure [mmHg]	73	314	71	310	74	348	86	430
Average incremental anal squeeze pressure [mmHg]	29	235	24	232	32	247	40	366
Endurance squeeze duration [secs]	2	30	3	30	2	30	3	30
Residual push pressure [mmHg]	16	88	15	99	16	79	20	93
Push relaxation percentage [mmHg]	0*	66	0*	64	0*	81	0*	51
Peak rectal push pressure [mmHg]	21	122	22	129	19	144	20	132
Maximum absolute anal cough pressure [mmHg]	82	298	70	276	82	315	109	498
Maximum incremental anal cough pressure [mmHg]	34	224	35	221	34	230	29	413

Testing: Anorectal Manometry

- Recto-anal Inhibitory Reflex (RAIR)
  - Distention of the rectum leads to contraction of EAS followed by relaxation of IAS
  - Normal can be elicited at 15mL



Neurogastroenterolol Motil 2012;24(3):147-

Testing: Anorectal Manometry

- Rectal Sensitivity
  - Sensitive to distention via mucosal receptors and nerves via S2-4
  - ARM detects:
    - First sensation
    - Urge to defecate
    - Maximum tolerable volume
  - *Rectal hypersensitivity / hypocompliance*
    - *Proctitis, IBS, urge incontinence, pelvic radiation*
  - *Rectal hyposensitivity / hypercompliance*
    - *Megarectum, chronic constipation*

Testing: Anorectal Manometry

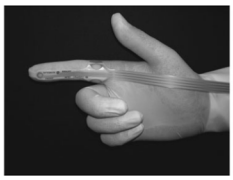
- Balloon Expulsion
  - Fill balloon with 50mL
  - Most patients can defecate by 2 minutes
  - Classically checking for obstructive defecation
    - Not sensitive nor specific
    - 75% of patients with chronic constipation can expel vs. 84% or more of healthy volunteers

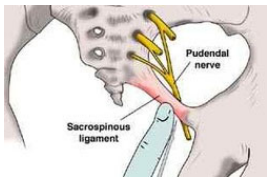
Testing: Anorectal Manometry

- EMG
  - Functional evaluation of the anal canal and pelvic floor muscles
  - Two techniques:
    - Surface EMG – global assessment of anal sphincter function
    - Quadrant-by-quadrant – requires needle EMG

Testing:
Anorectal Manometry

- Pudendal Nerve Terminal Motor Latency
  - time from intrarectal pudendal nerve stem to response from sphincter
  - normal = 2.0 milliseconds

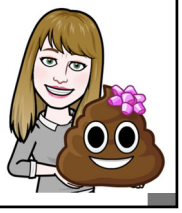


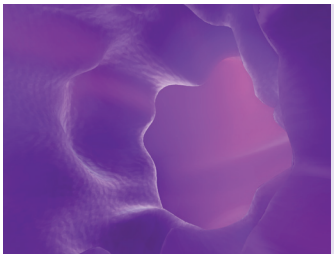


Conclusions

- Pelvic floor disorders are complicated, and there may be several related types of pathology causing the symptoms.
- Thorough history and exam can help guide which tests to order.
- When in doubt, send the patient to your surgery colleagues!

THANK YOU!





Helpful Pearls in GI Radiology

Carla Harmath, MD

Women in GI

Radiology

Overview

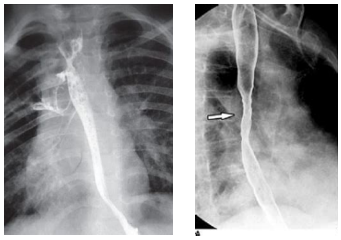
- Esophagus
- Stomach and duodenum
- Small bowel
- Large bowel and rectum
- Liver and biliary tree
- Pamcreas

Esophagus

- Motility and patency with esophagram
- Anatomy
- Leaks

Normal esophagram

- https://www.bing.com/videos/search?q=esophagram+movie&&view=detail&mid=C6279501B2303ADAFD55C6279501B2303ADAFD55&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Desophagram%2520movie%26FORM%3DVDVVXX



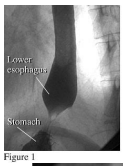


Figure 1

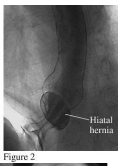
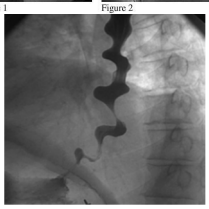


Figure 2

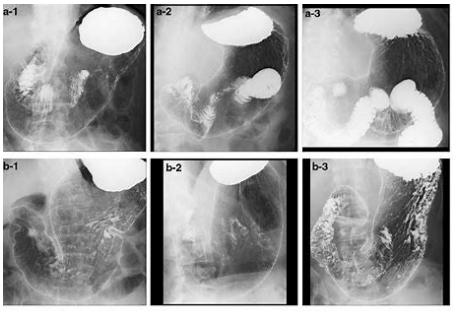


Stomach and Duodenum

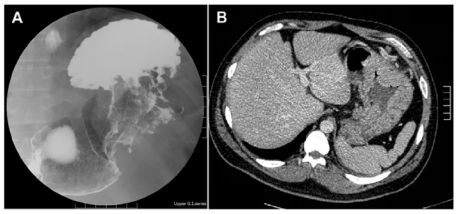
- UGI evaluates patency, motility, anatomy.
- Good for leaks

- CT for cancer staging (not detection) and extrinsic compressions

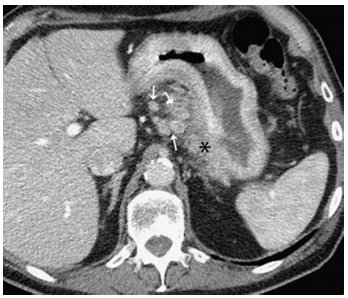
UGI



UGI x CT

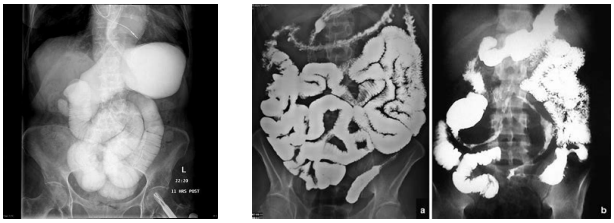


CT

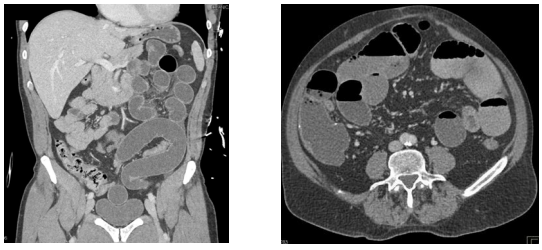


Small bowel

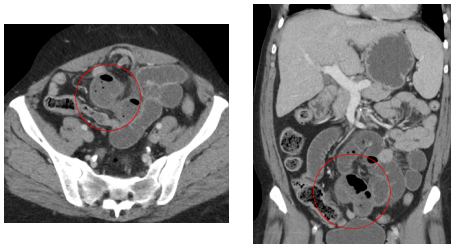
- Small bowel follow through (SBFT): good to evaluate real time peristalsis and transit time
- CT: obstruction, enteritis, perforation
- CT Enterography: infection/enteritis. Ok for masses (if large enough very good!)
- MR enterography: very good for inflammatory bowel changes. Good for the evaluation of strictures



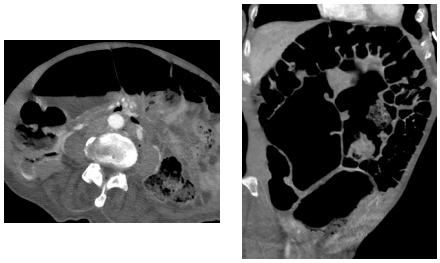
Small bowel obstruction



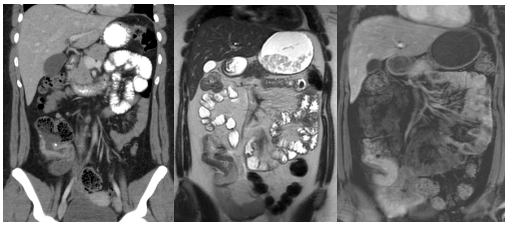
Closed loop obstruction



Pseudoobstruction

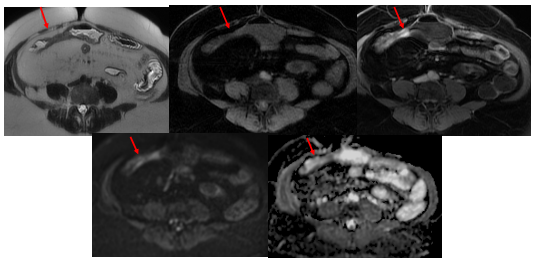


Inflammatory bowel: CT x MRI

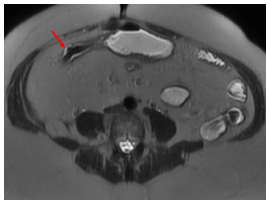


CT MRI T2WI MRI T1FS post contrast

Fibrostenotic Crohn

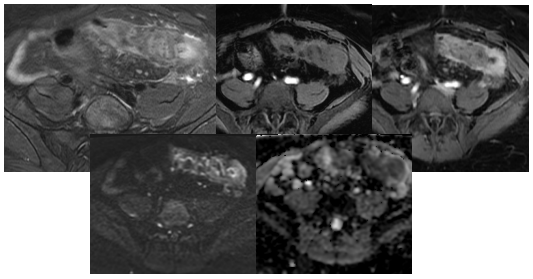


Acute X Chronic? Wall edema, early enhancement and restricted diffusion suggest acute component

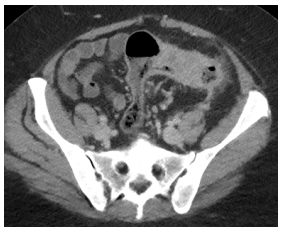


Bowel wall edema

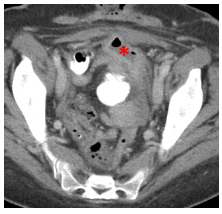
Lack of early enhancement, low restriction, suggest chronic changes



Same patient, CT with contrast

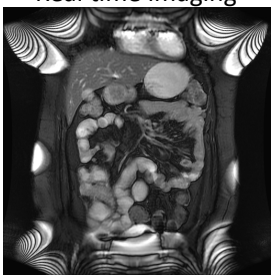


Abscess versus bowel: Can be difficult in the setting of inflammatory bowel

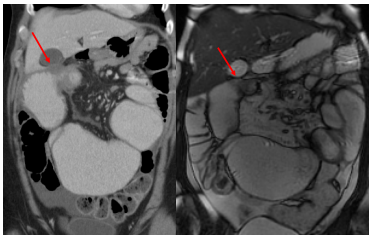


Small abscess, looks very similar to an abnormal bowel loop

Real time imaging

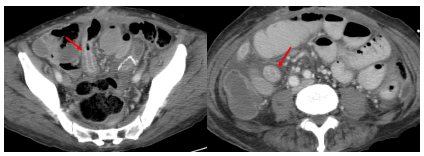


CT versus MRI: Stricture



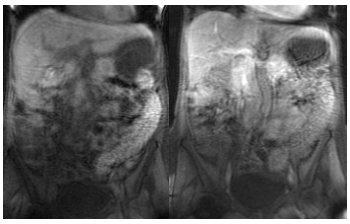
CT MRI

Wall edema and mucosal enhancement CT



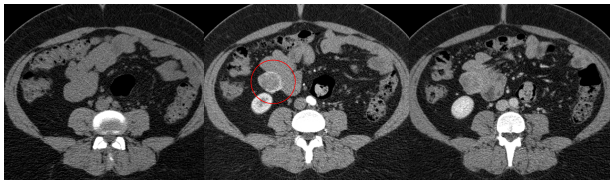
Good CT, bad MR

Post contrast CT



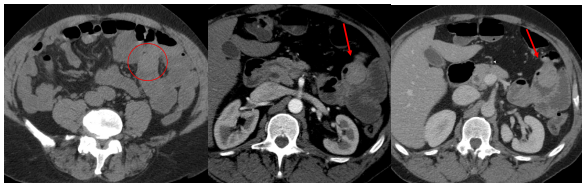
Pre and post contrast MRI

Small bowel GIST



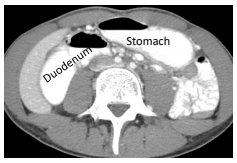
Non-contrast Arterial phase Venous phase

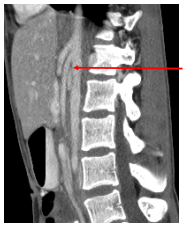
Polyps



Non contrast | Arterial phase | Venous phase

SMA syndrome

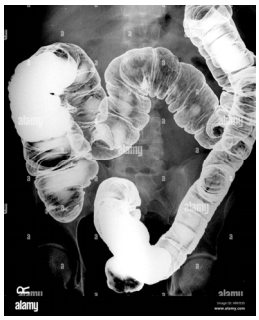


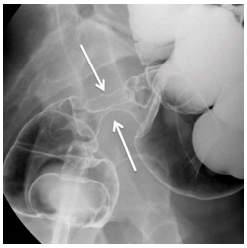


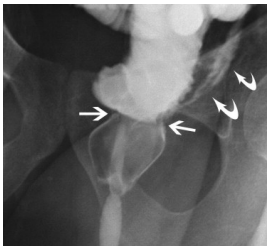
Narrow SMA/aorta angle (14 degrees)

Large bowel and rectum:

- Barium Enema: mostly for leaks, can identify strictures
- CT: Excellent for colitis, obstruction, volvulus
- MR: Good for inflammatory bowel



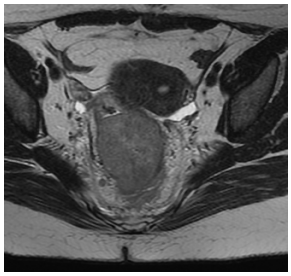


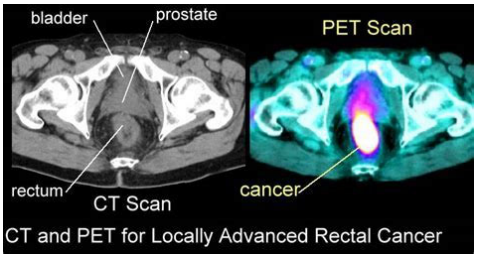


Rectal cancer

- MRI for local and regional staging
- CT for full staging

T3d: Tumor extends beyond the muscularis propria greater than 15mm



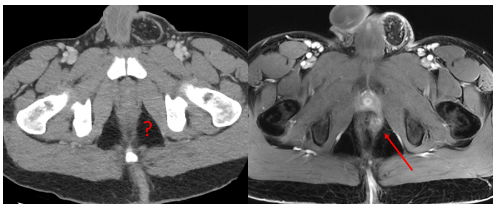


CT and PET for Locally Advanced Rectal Cancer

Perirectal and perianal fistulas

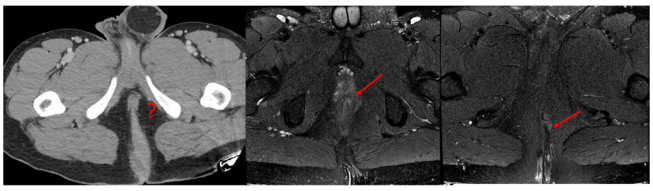
- MRI is excellent
- CT only for the detection of a drainable fluid collection

Perianal fistulas



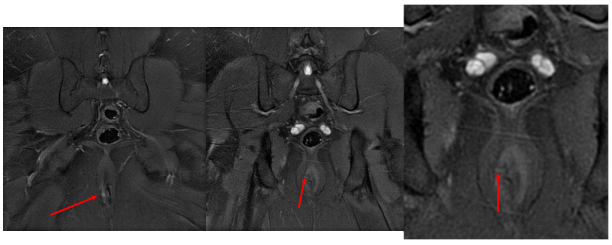
CT MRI

Perianal fistula

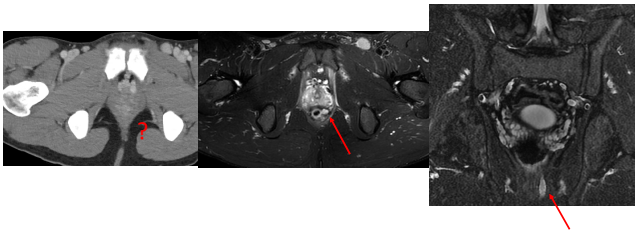


CT Fat Saturated T2WI MRI

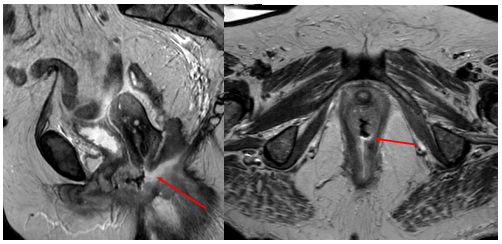
Perianal fistula coronal plane



Perianal fistula



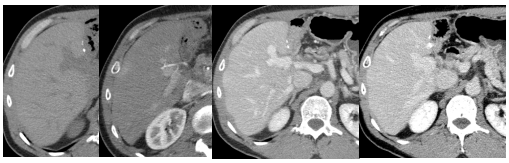
Large rectovaginal fistula can be seen well on both modalities!



Liver

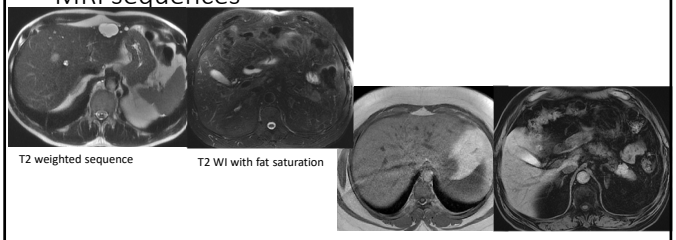
- US: basic survey, great for gallbladder evaluation. Great for vascular flow and direction
- CT: excellent modality for the detection of lesions and vascular patency. Also great for biliary pathology
- Triphasic CT liver: Superior for lesion characterization
- MRI: Best modality for liver lesion characterization and evaluation of infiltrative processes.

CT-different phases



Non contrast | Arterial phase | Porto venous phase | Delayed phase

MRI sequences



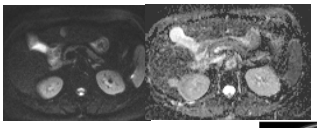
T2 weighted sequence

T2 WI with fat saturation

T1 weighted sequence

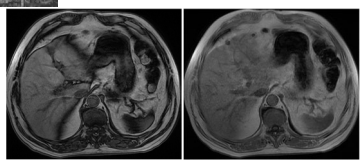
T1 WI with fat saturation

MRI sequences



DWI

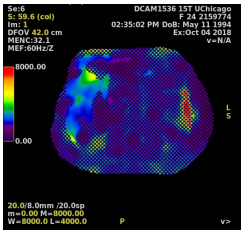
ADC map

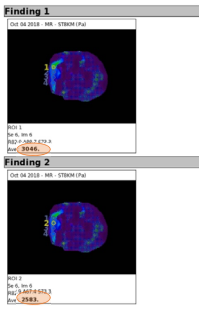


Out of phase

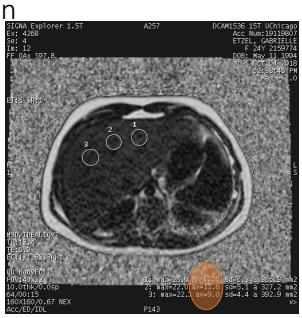
In phase

MRE





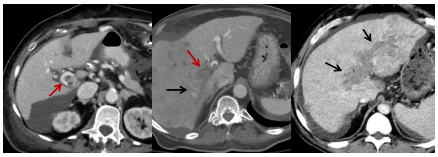
Fat fraction



Lesion characterization

- CT:
  - Usually 3 or 4 phases: pre-contrast, arterial phase, venous phase, delayed phase
  - Shorter breath holds
  - EXCELLENT spatial resolution, can resolve small structures well. Meaning we can see small vessels and small lesions separate from the adjacent organs
  - FAST

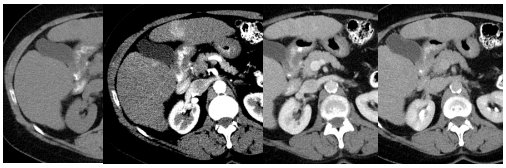
CT PV thrombus



Bland thrombus | Mixed tumor and bland thrombus | Tumor thrombus

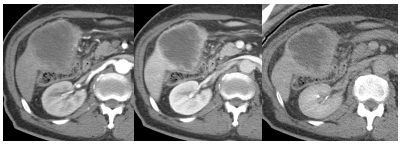
CT lesion characterization

Hepatocellular carcinoma



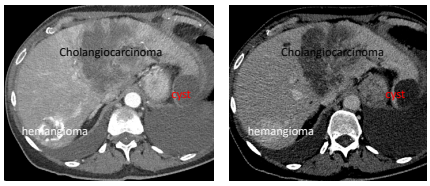
CT lesion characterization

Cholangiocarcinoma

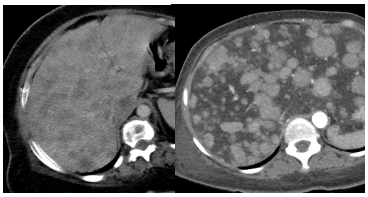


CT lesion characterization

3 different lesions



CT Metastasis

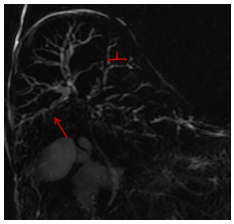


Colon cancer

Neuroendocrine tumor
(background of hepatic steatosis)

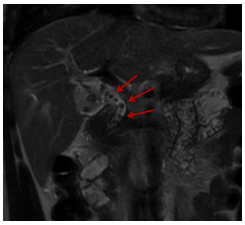
MRCP

Primary Sclerosing Cholangitis (PSC)



MRCP

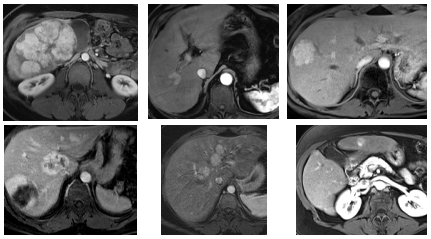
Choledocholithiasis



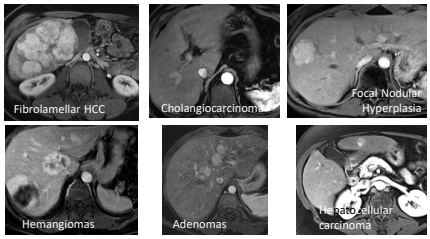
Lesion characterization

- MRI:
  - Usually longer exam, no less than 10 sequences which are mostly obtained separately and each can last 20 seconds to over a minute. So exam lasts 30 min +
  - Patient needs to stay still and do longer breath-holds
  - EXCELLENT contrast resolution, meaning that two structures that are different in composition are well seen
  - Not so good spatial resolution, meaning that sometimes small adjacent structures are not well seen independently
  - More susceptible to motion artifact

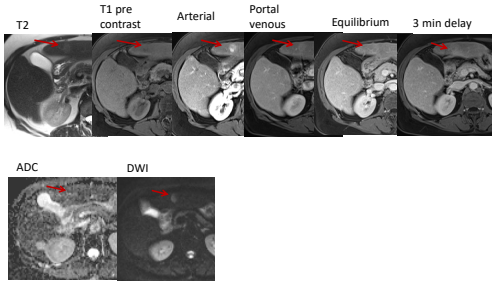
Why so many sequences?



Why so many sequences?



MRI HCC



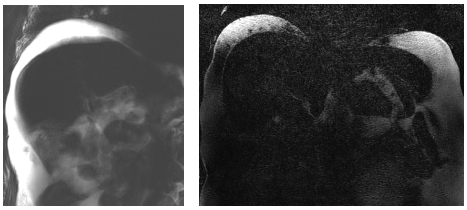
Liver and biliary MRI

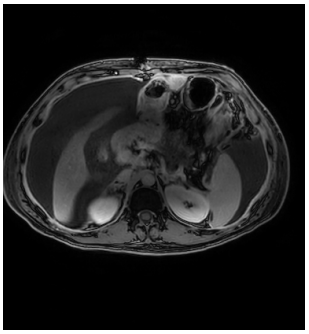
- MRI liver: surveys the liver and upper abdominal organs for pathology, characterize lesions, gross evaluation of the biliary tree
- MRI/MRCP: adds dedicated MRCP sequences, for full evaluation of the biliary tree and pancreatic duct details
- MR elastography (MRE): Performed to evaluate liver stiffness, and also hepatic fat fraction
- MRI for iron deposition: Specific sequences to quantify iron in the hepatic parenchyma

Liver MRI

- Contrast agents:
  - Vascular
  - Hepatocyte specific

Bilio-enteric anastomosis

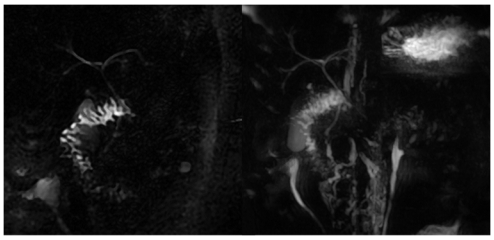




Pancreas

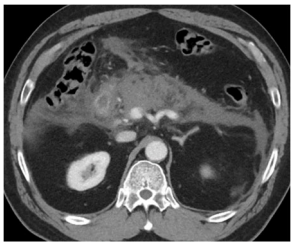
- US: Very limited
- CT: excellent for general evaluation, including pancreatitis, atrophy, lesion detection
- Triphasic pancreatic CT: Best modality for pancreatic adenocarcinoma staging
- MRI pancreas/MRCP: Excellent for evaluation of pancreatic lesions, especially small cystic neoplasms, troubleshooting, pancreatic duct evaluation
- MRI /MRCP with secretin: ordered by the specialist to evaluate pancreatic exocrine function

2D thick slab X 3D

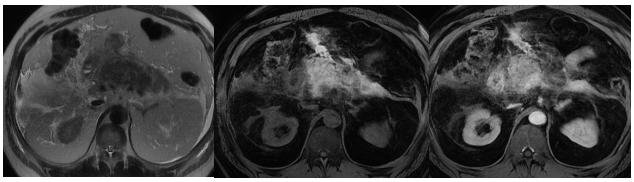


Pancreatitis

Acute pancreatitis



Acute hemorrhagic pancreatitis

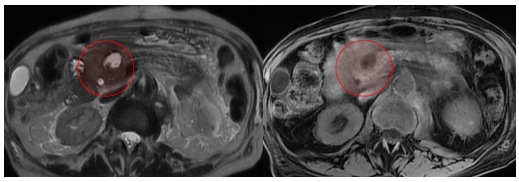


Mild acute pancreatitis

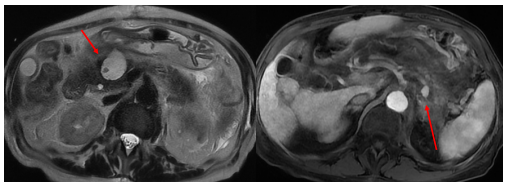
Peripancreatic fluid and edema

Ill defined mass in pancreatic head. Neoplasm?

MRI to the rescue!



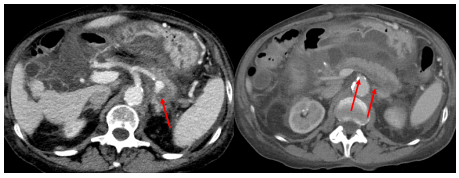
Evolution of necrotizing pancreatitis MRI



Walled-off necrosis

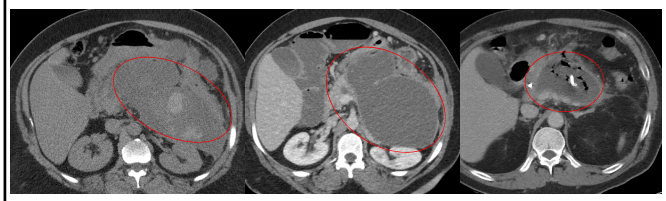
Splenic artery pseudoaneurysm

Same patient, CT 10 days later



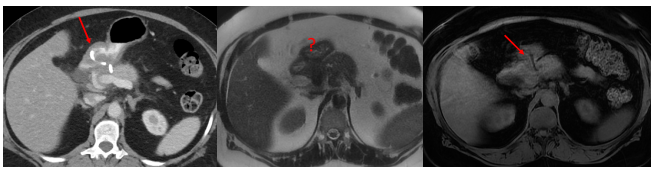
Splenic artery pseudoaneurysm Splenic vein thrombosis

Pancreatitis complications

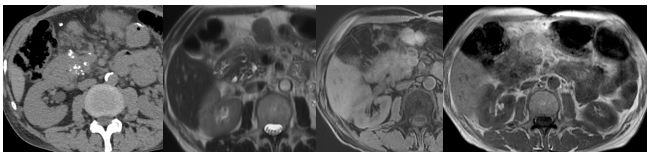


Acute necrotizing pancreatitis Walled-off necrosis Gastrocystostomy in place

Tubes can be difficult to see on MRI!

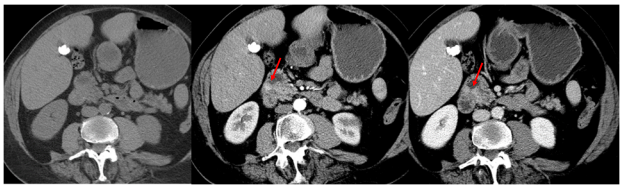


Chronic pancreatitis and calcifications

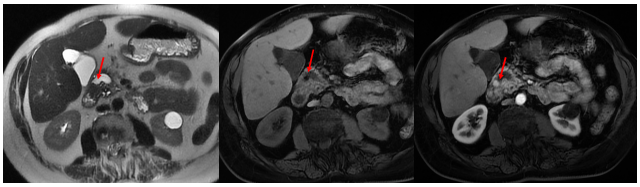


CT MRI T2WI MRI T1FS MRI T1 in-phase

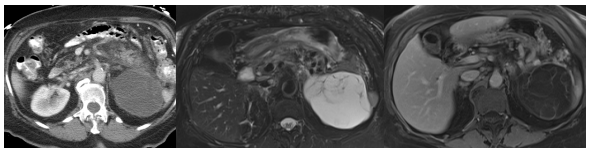
Pancreatic lesions: Small neuroendocrine tumor CT



Pancreatic lesions: Small neuroendocrine tumor MRI

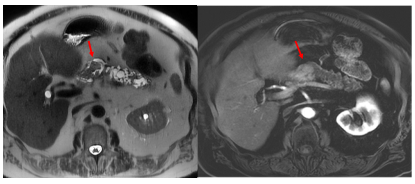


Mucinous neoplasm

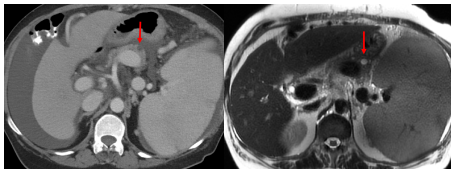


CT MRI T2WI MRI T1FS post-contrast

Intraductal Mucinous Papillary Neoplasm (IPMN) main duct type

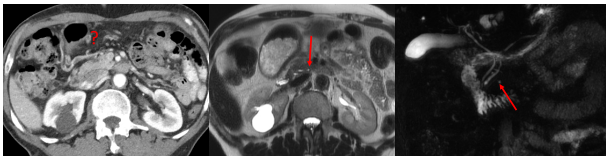


Subcentimeter pancreatic cystic lesion



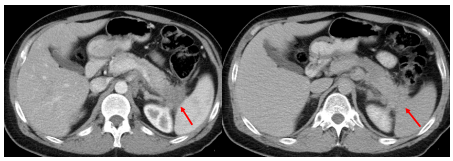
CT MRI T2WI

It gets better! (or not…)



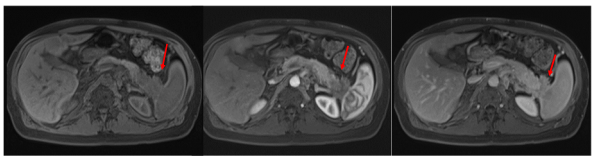
CT MRI T2WI MRCP MIP

Pancreatic adenocarcinoma



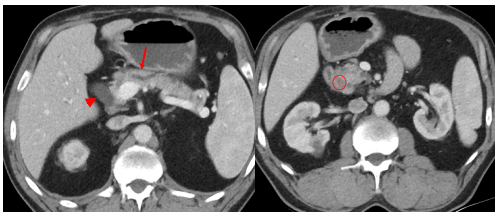
CT Pancreatic arterial phase CT venous phase

Pancreatic adenocarcinoma



MRI T1FS pre-contrast MRI T1FS arterial phase MRI T1FS venous phase

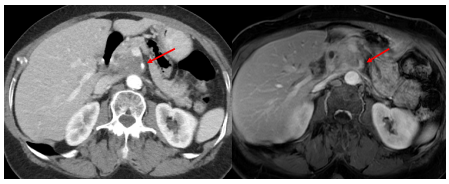
Pancreatic adenocarcinoma: Double duct sign



Adenocarcinoma evolution CT

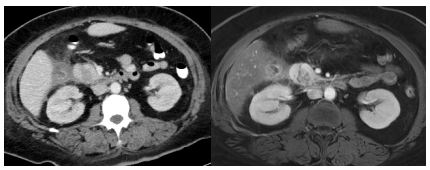
3/2016 11/2016 1/2018

Vascular involvement: CT x MRI



CT MRI

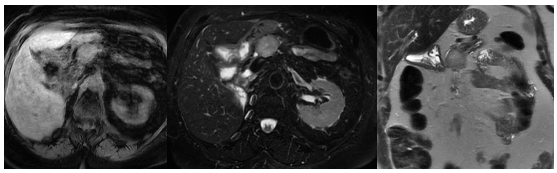
Annular pancreas



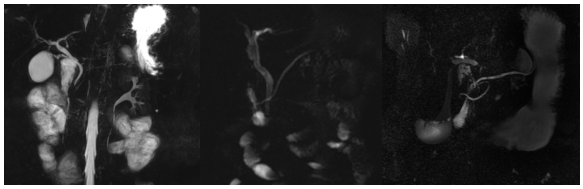
CT MRI

Renal cell carcinoma metastatic to pancreas: Non-contrast CT

Renal cell carcinoma metastatic to pancreas: Non-contrast MRI



Ductal anomaly: MRCP

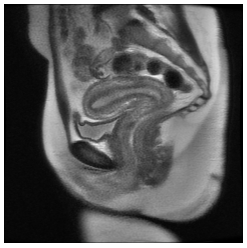


Secretin

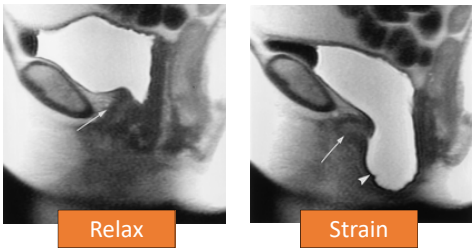
Dynamic pelvic floor MRI

- Specific for the evaluation of pelvic floor dysfunction
- NOT to be used in the inpatient setting

Straining real time T2 SSFSE

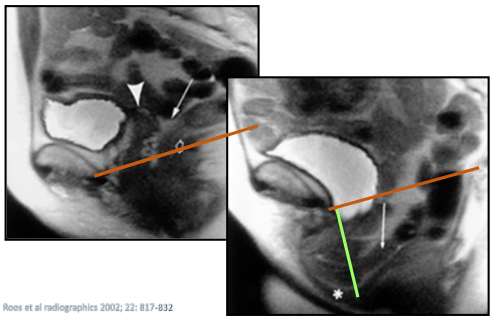


Cystocele



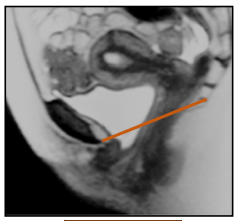
Pannu et all: Radiographics; 2000: 1567-1582

Enterocele

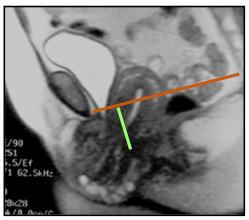


Roos et al radiographics 2002; 22: 817-832

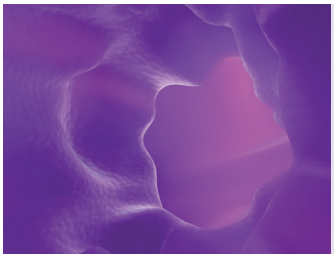
Uterine Prolapse



Relax



Strain



Celiac Disease: Therapies on the Horizon

Sonia Kupfer, MD

AT THE FOREFRONT UChicago Medicine

Celiac Disease: Therapies on the Horizon

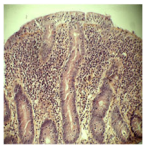
Sonia S. Kupfer, MD

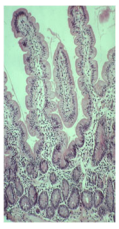
Associate Professor of Medicine
Section of Gastroenterology, Hepatology, and Nutrition

AT THE FOREFRONT UChicago Medicine

Celiac Disease

- Prevalence 1% worldwide
- High association with HLA DQ 2,8 genes
- Trigger known
  - Gluten peptides
  - Wheat, rye, barley
- T-cell mediated small bowel inflammation
- Ideal disease for therapy, cure





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Why is there a need for therapy other than the GFD in Celiac Disease?

- Variable sensitivity to gluten
- Gluten contaminations
  - Ubiquitous in processed food
- Incomplete response to a gluten free diet (GFD)
  - Persistent symptoms up to 30%
  - Persistent bowel inflammation 4-60%
  - Refractory celiac disease rare (0.3%)
- Quality of Life
- Cost

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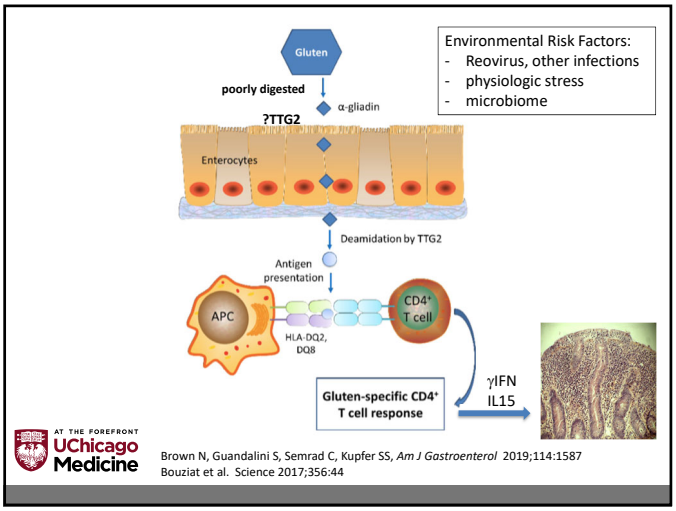

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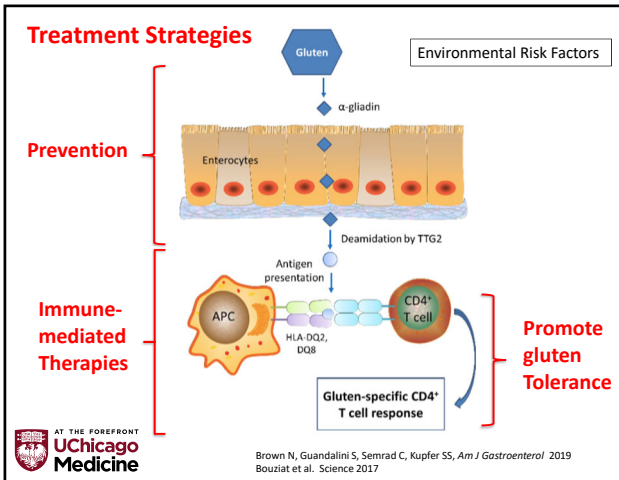
Brown N, Guandalini S, Semrad C, Kupfer SS, *Am J Gastroenterol* 2019;114:1587
Bouziat et al. Science 2017;356:44



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Brown N, Guandalini S, Semrad C, Kupfer SS, *Am J Gastroenterol* 2019
Bouziat et al. Science 2017

Strategies to Prevent Celiac Disease

- **First identify those at highest risk**
  - First degree relatives
  - Homozygous for HLA DQ2
  - Girls
  - Serum phospholipid profile
  - Potential celiac disease (elevated TTG antibody with normal biopsy)

Auricchio R, Troncone R. Frontiers in Immunology 2021;12
Strategies based on data from European (PREVENT-CD, CELIPREV), U.S.A. (TEDDY, DAISY) and Norwegian mother-child studies

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Then Identify Risk factors and Intervene on at Risk Infants

- Early Feeding
  - how early, amount gluten?
  - Mediterranean diet (anti-inflammatory)
- Vaccination against infections that switch on autoimmunity
  - Reovirus strong evidence in celiac mouse model study/human correlate[1]
  - Rotavirus vaccination (decreased incidence of celiac disease)
- Alter microbiome
  - Microbiota in celiac children different than control
  - Controversial whether probiotics are beneficial
- Halt progression in those with positive antibody, normal biopsy
  - Induce tolerance to gluten

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[1]Bouziat, Jabri et al. Science 2017;356:44.

Therapies Under Investigation for Celiac Disease

- Pre-digest gluten or sequester gluten
  - Oral enzyme therapy (prolyl endopeptidases from bacteria, fungi)
  - Oral polymer to bind gluten and decrease absorption
- Block entry of gluten peptides
  - Tight junction inhibitors
- Block immune reaction
  - Anti-tissue transglutaminase antibody
  - Anti-IL 15 antibody

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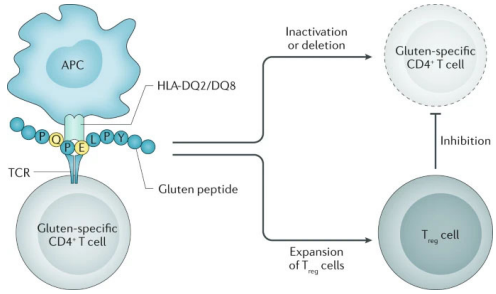
Therapies to Restore Oral Tolerance to Gluten (vaccines, nanoparticles)



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Kivela et al. Nature Reviews Gastroenterology & Hepatology 2021;18:181

Summary: Clinical Drug Trials for Celiac Disease

- Larazotide
  - Tight junction modulator, decreases intestinal permeability
  - Low dose decreased symptoms and TTG levels, unknown effect on bowel injury
  - In phase 3 clinical trial
- ALV003 (latiglutenase)
  - gluten-degrading oral enzyme
  - no histologic or symptom improvement, subset of seropositive improved
  - Further phase 2 trial
- NexVax2 vaccine
  - 3 immunodominant gluten peptides for HLA DQ2
  - Decreased T cell response to vaccine but no protection with gluten challenge
- AMG714
  - anti-IL15 human monoclonal antibody
  - Did not decrease aberrant T cells in RCD II
  - Trial starting in non-responsive celiac disease

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Promising New Therapies

- TG2 inhibitors to block inflammation
  - ZED 1277
  - Oral administration
  - Decreased gluten-induced intestinal damage
  - At high dose may improve symptoms and quality of life scores
- TAK-101 nanoparticle to promote oral tolerance
  - Gliadin encapsulated by poly glycoic acid nanoparticles
  - Intravenous administration
  - Safe
  - Blunts T cell reaction to gluten and promotes regulatory T cells
  - Blocked gluten induced inflammation, ? prevented villus injury with gluten challenge

Schuppan et al. N Engl J Med 2021;385:1
Kelly et al. Gastroenterology 2021;161:66

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Celiac Clinical Trials - University of Chicago

Study	IRB approved	Mechanism	Criteria/Protocol
PRV-015-002b	yes	IL-15 antibody block immune response	Adults with non-responsive disease as adjunct to a GFD Phase 2b for efficacy and safety
KAN-101	Yes	Gluten peptide bound to polymer Promotes tolerance	Adults Phase 1 study, new drug
IMGX003-NIAID-1821 (latiglutenase)	Pending	Oral enzyme pre-digests gluten	Symptomatic adults on a GFD with gluten exposures Multicenter, cross-over study for efficacy and safety
TAK-062-2001 CeD	Pending	Oral enzyme pre-digests gluten	Symptomatic adults and adolescents on a GFD Phase 2 for safety and efficacy

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Conclusions

- The Gluten-free diet is effective and the only treatment currently available for celiac disease
- Preventing Celiac Disease or restoring oral tolerance to gluten is the holy grail
- Oral enzymes, tight junction and immune modulators may be of benefit as adjuncts to a GFD
- New therapies will not be cheaper than the GFD

AT THE FOREFRONT UChicago Medicine

Management of IBS

Lin Chang, MD

Management of IBS

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Vatche and Tamar Manoukian Division of Digestive Diseases
David Geffen School of Medicine at UCLA

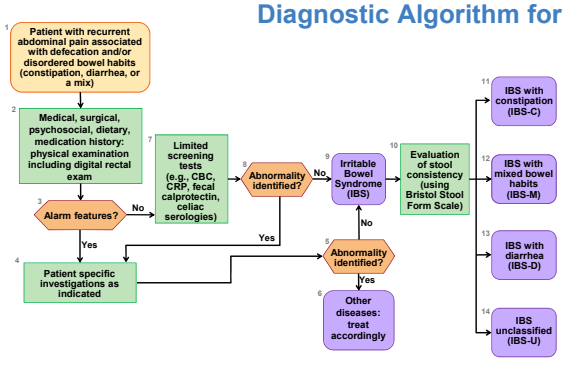
Disclosures

- Scientific advisory boards or consulting
  - Ardelyx, Ironwood, Immunic, Mauna Kea Technologies, Trellus
- Speaker
  - Abbvie
- Research grants
  - AnX Robotica, Ironwood, Vanda
- Stock options
  - ModifyHealth, Trellus

Objectives

- To review the diagnostic approach to patients with irritable bowel syndrome (IBS) symptoms
- To discuss evidence-based and practical treatment algorithms for IBS with diarrhea (IBS-D) and IBS with constipation (IBS-C)

Diagnostic Algorithm for IBS



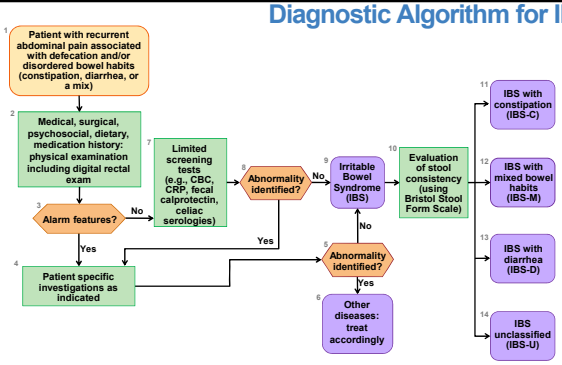
Alarm Features for Organic Disorders

- Symptom onset after age 50 yrs
- Unintended weight loss (> 10% in 3 months)
- Rectal bleeding not caused (confirmed) by hemorrhoids or anal fissures or melena
- Nocturnal diarrhea
- Fever
- Family history of CRC (polyposis), IBD or celiac disease
- Unexplained iron deficiency anemia

If alarm features are present, investigate and treat appropriately

Chey WD et al. *JAMA*. 2015;313(9):949-958

Diagnostic Algorithm for IBS



Society Guidelines on Diagnostic Testing in IBS

Recommended

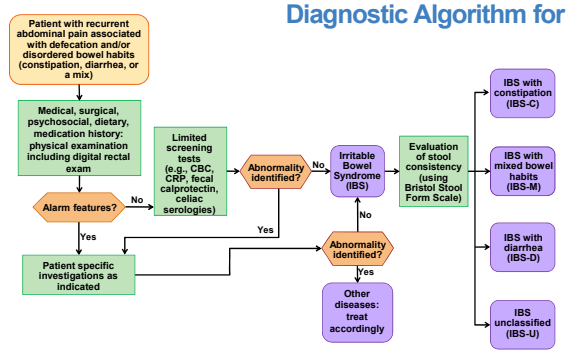
Test	IBS Population
Positive diagnostic strategy vs diagnosis of exclusion	All IBS
Celiac serologies	IBS-D
Fecal calprotectin/lactoferrin	IBS-D
C-reactive protein	IBS-D
Bile acid diarrhea testing	IBS-D where bile acid diarrhea is suspected
Giardia stool antigen	IBS-D if Giardia is endemic
Anorectal physiology testing	IBS with suspected pelvic floor dysfunction and/or refractory constipation

Not recommended

- Routine stool testing
- Routine colonoscopy <45 years
- Food allergy or insensitivities testing
- Lactulose or glucose hydrogen breath testing

1. Smalley W et al. *Gastroenterology*. 2019; 157: 851–854; 2. Lacy BE et al. *Am J Gastroenterology*. 2021;116:17–44;
3. Moayyedi P et al. *J Can Assoc Gastroenterol*. 2019;2:6–29; 4.Vasant DH et al. *Gut*. 2021; 70: 1214–1240;
5. Chang L. *Gastroenterology*. 2021;161(4):1092–1098.

Diagnostic Algorithm for IBS



Rome IV Criteria*
Irritable Bowel Syndrome

Recurrent abdominal pain at least 1 day/week
In the last 3 months associated with 2 or more :

- **Related to defecation**
- **and**
- **Onset associated with a change in frequency of stool**
- **and**
- **Onset associated with a change in form (appearance) of stool**

* Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis.

Lacy, Mearin, et al. Gastroenterology 2016

ROME FOUNDATION

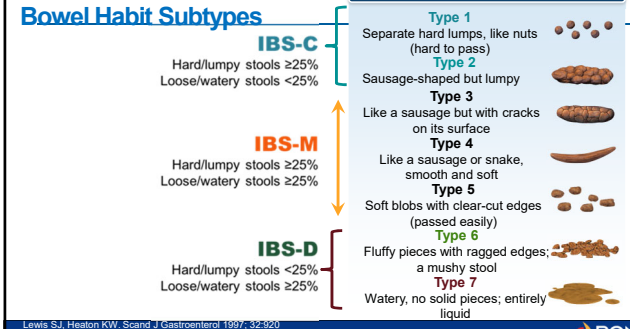
Rome IV Criteria for IBS
Bowel Habit Subtypes

IBS-C
Hard/lumpy stools ≥25%
Loose/watery stools <25%

IBS-M
Hard/lumpy stools ≥25%
Loose/watery stools ≥25%

IBS-D
Hard/lumpy stools <25%
Loose/watery stools ≥25%

Bristol Stool Form Scale[1,2]



Lewis SJ, Heaton KW. Scand J Gastroenterol 1997; 32:920
Heaton KW, O'Donnell LJ. J Clin Gastroenterol 1994; 19:28

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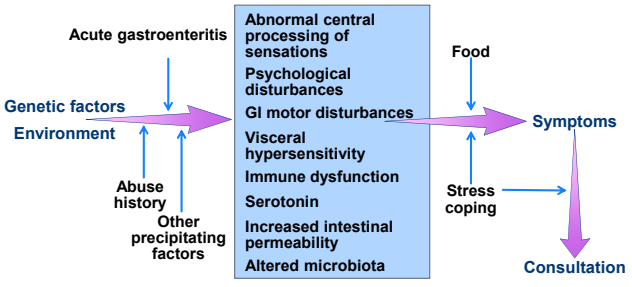
Functional GI Disorders:
Disorders of Brain-Gut Interaction (DGBI)

A group of disorders classified by GI symptoms related to any combination of:

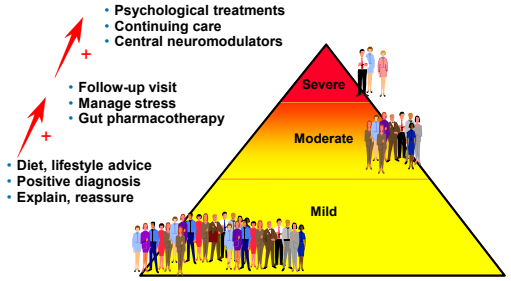
- Motility disturbance
- Visceral hypersensitivity
- Altered mucosal and immune function
- Altered gut microbiota
- Altered CNS processing

Drossman DA. Gastro 2016

Proposed Pathophysiology of IBS



Graded Treatment Response



Communicating Effectively is Therapeutic

- listen actively
- identify agenda(s)
- empathize
- validate feelings
- set realistic goals
- educate
- reassure
- negotiate
- "be there"

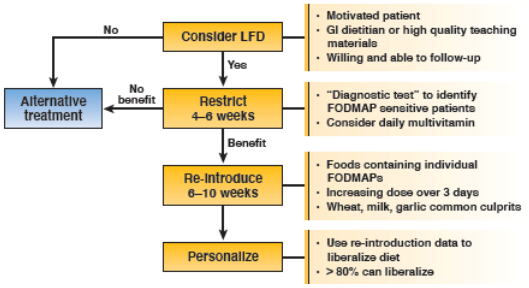
Identify patient's worries, concerns

Acknowledge (validate) them

Respond to the specific concerns

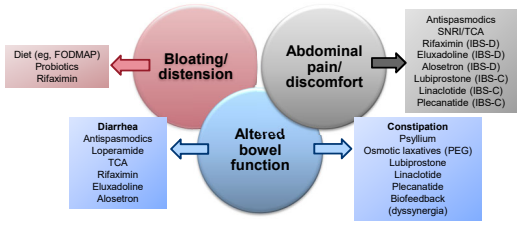
Avoid "false" reassurances

3 Phases of the Low-FODMAP Diet: Elimination is the Beginning and Not the End



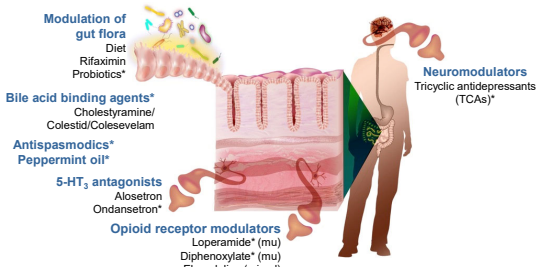
Chey, Al Hashash, Manning, Chang. Gastroenterology 2022 (accepted)

Available Treatments for IBS Based on Predominant Symptom*



*Based on evidence shown throughout this presentation and faculty consensus
PEG, polyethylene glycol; SNRI, serotonin and norepinephrine reuptake inhibitor; TCA, tricyclic antidepressant

Overview of IBS-D Therapies



Modulation of gut flora
Diet
Rifaximin
Probiotics*

Bile acid binding agents*
Cholestyramine/
Colestid/Colesevelam

Antispasmodics*
Peppermint oil*

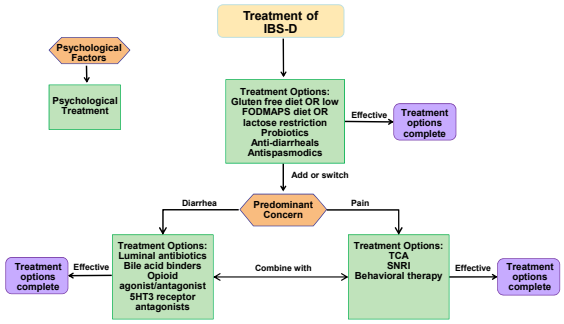
5-HT$_3$ antagonists
Alosetron
Ondansetron*

Opioid receptor modulators
Loperamide* (mu)
Diphenoxylate* (mu)
Eluxadoline (mixed)

Neuromodulators
Tricyclic antidepressants (TCAs)*

*Not FDA-approved for management of IBS-D

IBS-D



Guidelines for IBS-D Treatment

Medication	Society	Recommendation	Quality of Evidence	Comments
Loperamide	AGA[1,2]	Conditional	Very low	Low cost, wide availability, minimal adverse effects
	ACG[3,4]	Strong *against*	Very low	May improve diarrhea but not improve global IBS symptoms
Rifaximin	AGA[1,2]	Conditional	Moderate	Minimal side effects; Expensive
	ACG[4]	Strong	Moderate	Reduces global sx and bloating and is safe
Alosetron	AGA[1,2]	Conditional	Moderate	Quality of evidence is greater for abdominal pain; Only approved for women; Ischemic colitis
	ACG[4]	Conditional	Low	Indicated in women with severe symptoms who have failed conventional therapy.
Eluxadoline	AGA[2]	Conditional	Moderate	Should not use if gallbladder has been removed or h/o sphincter of Oddi, pancreatitis, alcohol abuse (e.g., >3 drinks/day), or severe liver problems
	ACG[4]	Conditional	Moderate	Has been shown to be efficacious in patients who failed trial of loperamide

[1]Weinberg, Smalley, Heidelbaugh, Sultan. Gastroenterology 2014;147:1146-1148
[2]Lembo, Sultan et al Submitted to Gastroenterology 2022
[3]Ford et al. Am J Gastroenterol 2018;113(Suppl 2):1-18
[4]Lacy et al. Am J Gastroenterol 2021;116(1):17-44

Guidelines for IBS-D Treatment

Medication	Society	Recommendation	Quality of Evidence	Comments
Antispasmodics	AGA[1,2]	Conditional	Low	Low cost, wide availability, can reduce global sx, pain
	ACG[4]	Conditional *against*	Low	Older studies, poor quality; common side effects
Peppermint oil	ACG[4]	Conditional	Low	Offers benefit for overall sx and pain; well tolerated
Tricyclic agents (TCA)	AGA[1,2]	Conditional	Low	Modest improvement in global relief, abdominal pain
	ACG[4]	Strong	Moderate	Start low and gradually increase; IBS-D may respond better due to anticholinergic effects
Bile acid sequestrant	ACG[4]	Conditional *against*	Very low	Need rigorous RCTs; testing for bile acid diarrhea is limited; can use if bile acid diarrhea is suspected

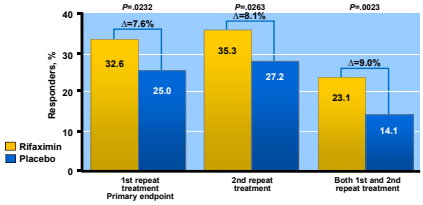
Glutamine	Reduced IBS-D symptoms in PI-IBS; normalizes intestinal permeability
Serum bovine immunoglobulin	Limited data showing efficacy in IBS-D

[1]Weinberg, Smalley, Heidelbaugh, Sultan. Gastroenterology 2014;147:1146-1148
[2]Lembo, Sultan et al Submitted to Gastroenterology 2022
[3]Ford et al. Am J Gastroenterol 2018;113(Suppl 2):1-18
[4]Lacy et al. Am J Gastroenterol 2021;116(1):17-44
[5]Zhou et al Gut. 2019;68(6):996-1002.
[6]Wilson et al. Clin Med Insights Gastroenterol. 2013;6:49-60

Rifaximin: Patients Can Be Retreated Up to 2 Times*

IBS-Related Abdominal Pain and Stool Consistency (Worst-Case Analysis)

First and Second Repeat Treatment Phases



*Phase 3 study of 636 patients with relapsing symptoms of IBS-D, randomized to repeat treatment with rifaximin (n=328) or placebo (n=308). Responder: Patient with ≥30% improvement in abdominal pain and ≥50% decrease in # BMs with BSFS type 6 or 7) for at least 2 out of 4 wk

Lembo A et al. *Gastroenterology*. 2016;151(6):1113-1121.

ACG[1] and AGA[2] IBS Guidelines:
Recommend use of Rifaximin to treat IBS-D symptoms. Strong[1] and Conditional[2] recommendation; moderate[1,2] certainty of evidence

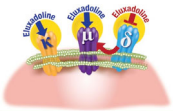
[1]Lacy BE et al Am J Gastroenterol. 2021;116(1):17-44
[2]Verne GN et al. Gastroenterology 2021 (submitted)

Eluxadoline Improves Global Symptoms of IBS-D

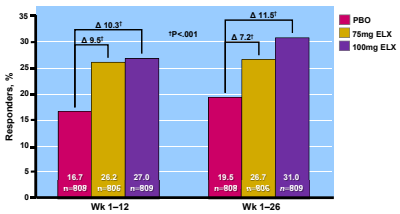
Two phase 3, placebo-controlled studies of 2427 IBS-D patients randomized to Eluxadoline (75 mg or 100 mg) or placebo BID for 26 wk or 52 wk

Responder: ≥30% improvement of WAP and stool consistency score of BSS type <5 for ≥50% of days

Inhibition of δ receptor
restores G-protein signaling; reduces μ agonist-related desensitization



ACG[1] and AGA[2] IBS Guidelines:
Recommend use of Eluxadoline to treat IBS-D symptoms. Conditional recommendation; moderate certainty of evidence



BSS, Bristol Stool Scale; ELX, eluxadoline; PBO, placebo; WAP, Worst Abdominal Pain

[1]Lacy BE et al Am J Gastroenterol. 2021;116(1):17-44
[2]Verne GN et al. Gastroenterology 2021 (submitted)

Lembo A et al. N Engl J Med. 2016;374(3):242-253

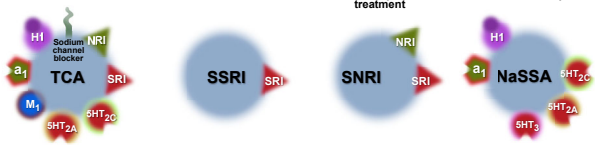
Pharmacological Properties of the Four Major Classes of Central Neuromodulators

TCAs
(amitriptyline, nortriptyline, imipramine, desipramine)
First-line treatment when pain is dominant in DGBI

SSRIs
(paroxetine, fluoxetine, sertraline, citalopram, escitalopram)
When anxiety, depression, and phobic features are prominent with DGBI

SNRIs
(duloxetine, venlafaxine, desvenlafaxine, milnacipran)
Treatment when pain is dominant in DGBI or when side effects from TCAs preclude treatment

Tetracyclic antidepressant
(mirtazapine, mianserin, trazodone)
Treatment of early satiety nausea/vomiting, weight loss and disturbed sleep



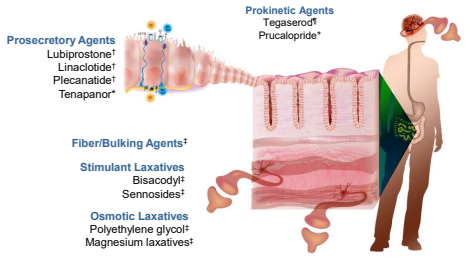
DGBI: Disorders of Gut-Brain Interaction

Drossman DA et al. Gastroenterology 2018;154:1140–1171

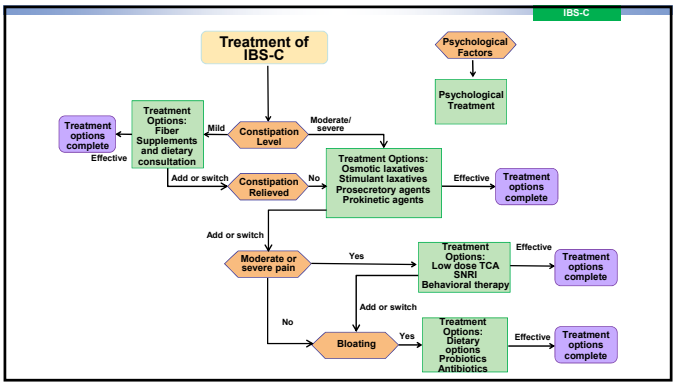
Practical Tips

- Use low dose TCAs in IBS patients with predominant pain
- Use amitryptaline in IBS-D (especially if poor sleep) but use desipramine or nortriptyline if IBS-M or IBS-C
- Start at 10 or 25 mg qhs
- Increase to lowest most effective dose that is tolerated; usual dose is 20-50 mg but can increase up to 75 mg
- Increase not more than 10 mg per week; maintain dose for ≥ 2 weeks if side effects occur
- Takes 6-8 weeks on appropriate dose to see significant reduction in pain
- Consider SNRI in patients with pain and IBS-C
- Consider Mirtazapine in patients with abdominal pain, anxiety or depression, poor sleep but can cause weight gain
- Consider SSRI if predominant anxiety and/or depression driving IBS symptoms

Overview of IBS-C/CIC Therapies: Mechanisms of Action



*FDA-approved for CIC in adults; †FDA-approved for CIC and IBS-C; ‡FDA-approved for occasional constipation; §FDA-approved for IBS-C.



Guidelines for IBS-C Treatment

Medication	Society	Recommendation	Quality of Evidence	Comments
Soluble Fiber	ACG[3]	Strong	Moderate	Not insoluble; treats global IBS symptoms
Polyethylene glycol	AGA[1,2]	Conditional	Low	Low cost, wide availability, minimal adverse effects
	ACG[3]	Conditional	Low	No evidence for the relief of abdominal pain
Lubiprostone	AGA[1,2]	Conditional	Moderate	Minimal side effects; Constipation > pain effects
	ACG[4]	Strong	Moderate	Treats global IBS-C symptoms
Linaclotide	AGA[1,2]	Strong	High	Relieves abdominal pain, bloating and constipation
	ACG[4]	Strong	High	Treats global IBS-C symptoms
Plecanatide	AGA[2]	Conditional	Moderate	Relieves abdominal pain, bloating and constipation
	ACG[4]	Conditional	Moderate	Treats global IBS-C symptoms
Tegaserod	AGA[1,2]	Conditional	Moderate	Indicated in women with IBS-C <65 without h/o ischemic cardio-vascular events (e.g. MI, stroke, TIA, angina)
	ACG[3]	Conditional	Low	
Tenapanor	AGA[1,2]	Conditional	Moderate	Treats global symptoms, pain and constipation

[1]Weinberg, Smalley, Heidelbaugh, Sultan. Gastroenterology 2014;147:1146-1148
[2]Chang, Sultan et al Submitted to Gastroenterology 2022
[3]Lacy et al. Am J Gastroenterol 2021;116(1):17-44

FDA-Approved Medications for IBS-C and Chronic Idiopathic Constipation (CIC)

Lubiprostone*
- **Indications**
  - IBS-C in women ≥18 yrs
  - CIC in adults
  - OIC in adults with chronic, noncancer pain
- **Dosage**
  - 8 mcg & 24 mcg BID
  - IBS-C: up to 8 mcg BID
  - CIC: up to 24 mcg BID

Linaclotide**
- **Indications**
  - IBS-C in adults
  - CIC in adults
- **Dosage**
  - 145 mcg & 290 mcg QD
  - IBS-C: up to 290 mcg QD
  - CIC: 72 and 145 mcg QD

Plecanatide**
- **Indications**
  - IBS-C in adults
  - CIC in adults
- **Dosage**
  - 3 mg QD

ACG[1] and AGA[2] IBS Guidelines Recommendation:
Recommend the use of chloride channel activators and GC-C agonists to treat IBS-C symptoms.
Conditional* to Strong** recommendations; moderate* to high quality** of evidence

IBS-C: irritable bowel syndrome with constipation
CIC: chronic idiopathic constipation
OIC: Opioid-induced constipation

[1]Lacy BE et al Am J Gastroenterol. 2021;116(1):17-44
[2]Weinberg D et al Gastroenterology 2014;147:1146-1148

Adjust Constipation Treatment Based on Stool Form

Bristol Stool Form Scale[1,2]

Type 1
Separate hard lumps, like nuts (hard to pass)
Type 2
Sausage-shaped but lumpy

→ Increase constipation treatment

Type 3
Like a sausage but with cracks on its surface
Type 4
Like a sausage or snake, smooth and soft
Type 5
Soft blobs with clear-cut edges (passed easily)

→ **Maintain constipation treatment**

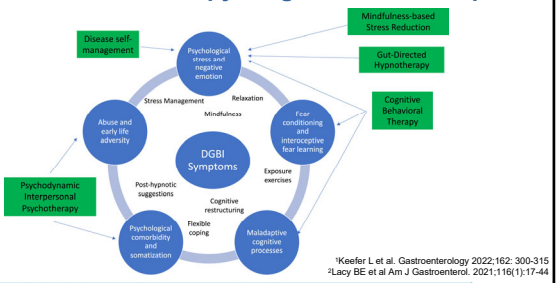
Type 6
Fluffy pieces with ragged edges; a mushy stool
Type 7
Watery, no solid pieces; entirely liquid

→ Decrease constipation treatment

Practical Tips: Constipation Treatment

- If patient does not eat high fiber diet, start psyllium at 1-2 tsp per day and gradually increase
- PEG is first line treatment for IBS-C and reduces constipation but not pain
- PEG dose can be increased to 2-4 capfuls if needed
- Use linaclotide or plecanatide if patient has predominant or bothersome abdominal pain; Lubiprostone seems to have less efficacy for pain
- Linaclotide can be dissolved and adjust dose to symptoms
- Link correct dose with indication (IBS-C or CIC) to get approved coverage
- Tegaserod is safe and efficacious in indicated population, i.e. women with IBS-C <65 and without cardiovascular disease (MI. TIA, angina)
- Consider gradual switch and transition period if switching treatments
- Use stool form as guide for increasing and decreasing treatment dose

Brain-Gut Behavior Therapy Targets and Techniques[1]



[1]Keefer L et al. Gastroenterology 2022;162: 300-315
[2]Lacy BE et al Am J Gastroenterol. 2021;116(1):17-44

ACG[2] IBS Guidelines Recommendation:
Suggest that gut-directed psychotherapies be used to treat global IBS symptoms
Conditional recommendations; very low quality of evidence

MENTORING, EDUCATION, AND TRAINING CORNER

Prateek Sharma, Section Editor

How to Approach a Patient with Difficult-to-Treat IBS

Lin Chang

Vatche and Tamar Manoukian Division of Digestive Diseases, Department of Medicine, David Geffen School of Medicine at UCLA, Los Angeles, California

Irritable bowel syndrome (IBS) is a common gastrointestinal (GI) disorder characterized by recurrent or chronic abdominal pain associated with diarrhea and/or constipation.[1] IBS has been redefined as a disorder of gut-brain interaction, which is classified by GI symptoms related to any combination of the following: motility disturbance, visceral hypersensitivity, altered mucosal and immune function, altered gut microbiota, and altered central nervous system processing.[2] The severity of IBS is determined by the individual's symptom experience and behaviors rather than condition, such as inflammatory bowel disease, celiac disease, colorectal cancer, that explains the IBS symptoms, especially in patients with refractory symptoms. The Rome diagnostic algorithm (Figure 1)[1] guides a positive diagnostic strategy for IBS, which consists of a medical history and physical examination, evaluation of GI symptoms and alarm signs or symptoms, limited diagnostic testing, and the use of the symptom-based Rome IV criteria[1] (Figure 1), which are sufficient to make the diagnosis of IBS. The presence of alarm features or red flags, which include new symptom onset after age 50, rectal bleeding not owing to hemorrhoids or anal fissures, unintentional weight loss, iron deficiency anemia, nocturnal diarrhea, and a family history of colon cancer, inflammatory bowel disease, or celiac disease, require more patient-specific investigations. However, the evaluation in most of these patients will ultimately be negative and not yield findings that explain their symptoms.[3] GI society guidelines mostly agreed on the recommended limited diagnostic testing in patients with

Chang L. *Gastroenterology*. 2021;161(4):1092–1098

Novel Therapeutics in the Treatment of Nonalcoholic Fatty Liver Disease

Mary E. Rinella, MD

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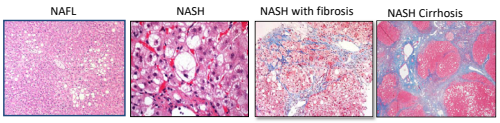

Current and future management of NAFLD

Mary E. Rinella, MD
March 26, 2022
Professor of Medicine, Division of Gastroenterology & Hepatology
University of Chicago Pritzker School of Medicine

1

Disclosures

- **Consulting past 24 months:** Alnylam, Amgen, AMRA, BMS, Boehringer Ingelheim, Centara, Coherus, Enanta, Galecto, Intercept Pharmaceuticals, Madrigal, NGM Biopharmaceuticals, Novo Nordisk, Pfizer, Fractyl, Gelesis, Siemens, Thetis, Terns, Rivus, 3vBio (Sagimet), 89Bio and Novartis
- **All consulting contracts cancelled as of 1/2021**
- ***Off label use of the following drugs will be discussed: Pioglitazone, empagliflozin, liraglutide, semaglutide, pentoxifylline, vitamin E***

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Outline

- **Identifying patients at risk for advanced liver disease**
- **Impact of lifestyle intervention and weight loss**
- **Use of available medications with concomitant benefit in NASH**
- **Future therapies**

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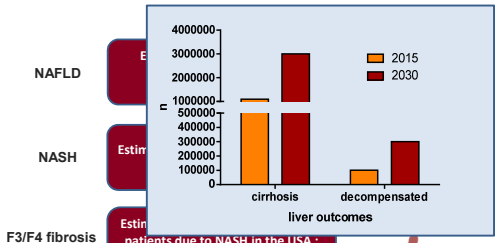
The scale of the problem - US



2030 estimates[2]:

100 million

↑ **168%** decompensation
↑ **178%** liver related death
↑ **137%** increase in HCC

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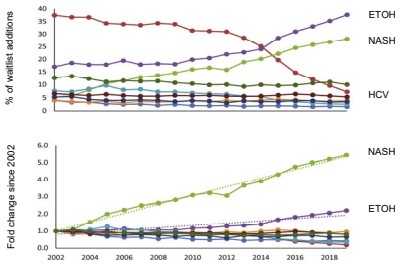
1. Younossi et al. Hepatology 2016;64:73-84 2. Estes C, et al. Hepatology 2018;67:123–33 ; 3. Razavi H, et al. Disease Burden Report for Europe 2017 (http://www.elpa.eu/sites/default/files/documents/NAFLD%20Disease%20Burden%20by%20Dr.%20H.%20Razavi_NASH%20NAFLD%20Summit.pdf (Accessed January 2018)

Indication for liver transplant listing



Younossi et al., *Clinical Gastroenterology and Hepatology* 2021;19:580–589

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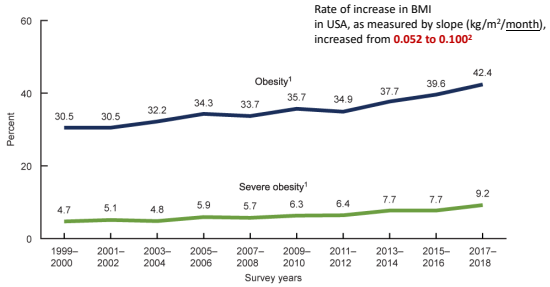
Rate of BMI increase has doubled in US during COVID



SOURCE: ¹NCHS, National Health and Nutrition Examination Survey, 1999–2018.
²Ahmad FB, Kompaniyets L, Freedman DS, et al. MMWR Morb Mortal Wkly Rep 2021;70:1278–1283.

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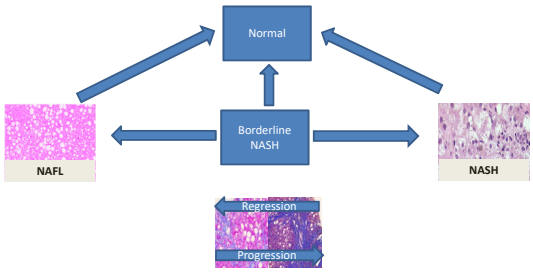
Natural history of NAFLD



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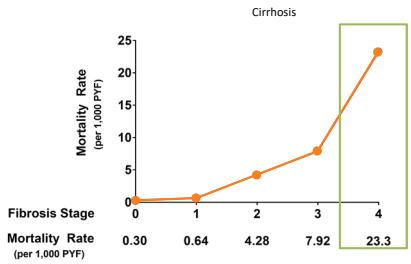
Kleiner et al JAMA Network Open 2019;
McPherson et al. J Hepatol. 2015
Singh S, et al. Clin Gastroenterol Hepatol. 2015

Liver-Related Mortality

Non-cirrhotic NAFLD:
CVD and malignancy dominant causes of death



Dulai, et al. *Hepatology.* 2017.

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Clinical prediction rules identify/exclude fibrosis

NAFLD Fibrosis Score

Parameter
Age, yrs
AST
ALT
Platelet count, cells x 10^9
BMI
Albumin, g/L
Impaired fasting glucose/diabetes?

FIB-4 score

NPV:[6] <1.24-1.45: 92.7% (88-98)

PPV:[6] >3.25: 72.5% (37-100) >2.67: 66% (51-80) 5.31-10.62: 90% (80-100)

Low Probability of F3/4 | **Indeterminate** | High Probability of F3/4

FIB4: <1.3 — **FIB4:** > 2.67

Advanced fibrosis: AUC 0.84
F≥2: AUC 0.73

>65 requires adjustment (<2) to improve NPV[4]

Limitations:
*Performance characteristics vary with age, 25-30% 'intermediate' range, less accurate in diabetic patients[5], may underestimate disease in leaner patients

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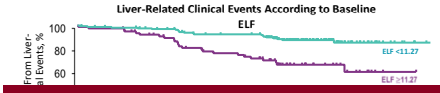
Angulo P, et al. *Hepatology*. 2007;45:846-854; Sterling RK, et al. *Hepatology*. 2006;43:1317-1325; Angulo et al. *Gastroenterology* 2013; [4]McPherson et al. Age as a Confounding Factor for the Accurate Non-Invasive Diagnosis of Advanced NAFLD Fibrosis, *Am J Gastro* 2017; [5]Bril et al. Diagnosis of NASH in T2DM, *Diabetes Care* 2020; [6]Xiao et al Comparison of Laboratory Tests, Ultrasound, or Magnetic Resonance Elastography to Detect Fibrosis in Patients With Nonalcoholic Fatty Liver Disease: A Meta-Analysis, Hepatology 2017

ELF for prognostication in NASH



"…..as an aid in assessing progression of liver related disease. This device is not intended for diagnosis of any disease, for monitoring the effect of any therapeutic product….." FDA

Parameter	Adjusted HR (95% CI)	*P*-value
Baseline ELF	2.40 (1.70, 3.38)	<0.001
Change in ELF	1.53 (1.09, 2.14)	0.01
Ishak stage 6 vs 5	0.89 (0.47, 1.68)	0.71

Higher baseline ELF and greater change in ELF were associated with liver-related clinical events

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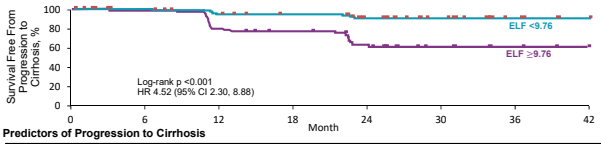
Sanyal, et al. *Hepatology.* 2019

Baseline ELF Predicts *Histological Progression* More Accurately than Biopsy in patients with F3-4

Patients with NASH and bridging fibrosis (n=219) or compensated cirrhosis (n=258) enrolled in two Phase 2b SIM studies

Progression to Cirrhosis According to Baseline ELF
TIMP-1, hyaluronic acid, PIIINP



Predictors of Progression to Cirrhosis

Parameter	Adjusted HR (95% CI)	*P*-value
Baseline ELF	3.20 (2.33, 4.39)	<0.001
Change in ELF	1.60 (1.19, 2.16)	<0.01
Ishak stage 4 vs 3	0.87 (0.47, 1.59)	0.64

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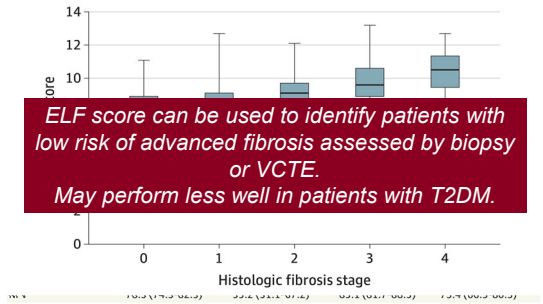
Sanyal, et al. *Hepatology.* 2019

ELF Predictivity for "Advanced" (FS2-4) Fibrosis



ELF score can be used to identify patients with low risk of advanced fibrosis assessed by biopsy or VCTE.
May perform less well in patients with T2DM.

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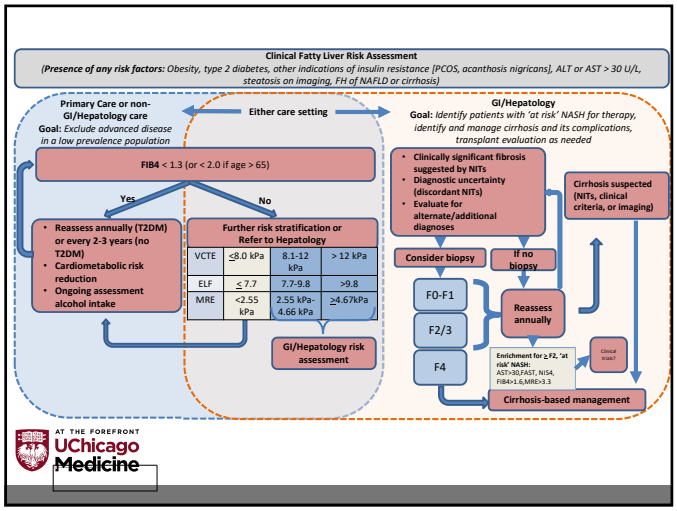
Younossi ZM, et al. *JAMA Netw Open.* 2021;4(9):e2123923.



Imaging to Assess NASH Fibrosis: Elastography

- **Vibration controlled transient elastography (*FibroScan*)**
  - Accurate in detecting advanced fibrosis
  - Predicts risk of decompensation and complications
  - Correlates fairly well with portal pressure
  - **Most reliable in ruling out advanced disease**
  - Most widely used
- **Shear wave elastography (SWE)**
  - Uses acoustic radiation force impulse (ARFI) technology
  - Point quantification SWE or 2-D supersonic shear imaging (SSI) SWE
- **MR elastography**
  - Most accurate of the imaging modalities
  - Costly, no point-of-care access

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Weight loss and lifestyle intervention

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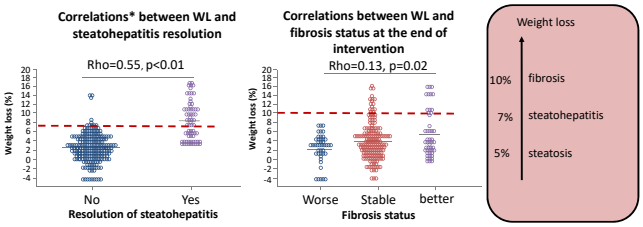
Weight loss (WL) can improve histology



- Weight loss does not guarantee NASH resolution
- Fibrosis improvement can occur with less than 10% weight loss

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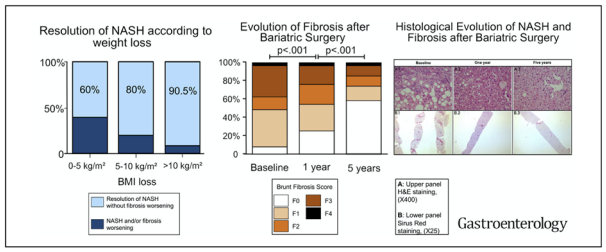
Vilar Gomez et al, Gastroenterology. 2015 Aug;149(2):367-78

Fibrosis improvement takes time



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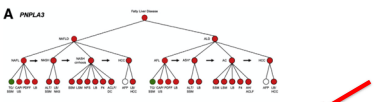
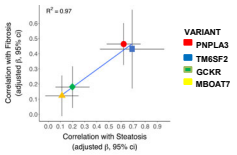
Lassailly et al. Bariatric Surgery Provides Long-term Resolution of Nonalcoholic Steatohepatitis and Regression of Fibrosis. *Gastroenterology* 2020

NAFLD risk genes and impact of hepatic fat



PNPLA3 GC and GG variants [3]		
Nutrient	OR of ≥ F2	P value
Carb (% of energy)	1.04 (1.01-1.07)	0.019
N-3 PUFA (g/d)	0.16 (0.05-0.53)	0.003
Total isoflavones (mg/d)	0.65 (0.44-0.95)	0.025
Methionine (mg/d)	0.30 (0.13-0.70)	0.005
Total Choline (mg/d)	0.29 (0.11-0.73)	0.009



Standardized coefficients are adjusted for age, sex, BMI, enrolment criteria or ethnicity

[1] Krawczyk et al. Toward Genetic Prediction of Nonalcoholic Fatty Liver Disease Trajectories: PNPLA3 and Beyond Gastroenterology 2020; [2] ***Dongiovanni, Mancina, Stender J Int Med 2017;*** [3] ***Vilar-Gomez et al AJG 2020***

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Use of currently available medications

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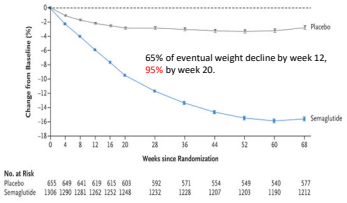
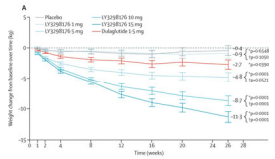
Impact of GLP-1 agonists on weight loss





GLP-1/GIP agonist (terzepatide)

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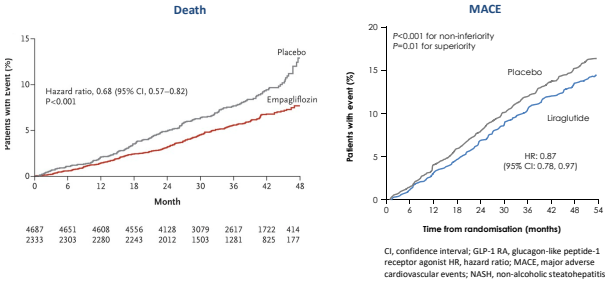
Wilding et al., N Engl J Med 2021 Mar 18;384(11):989; Frias et al, Lancet. 2018 Nov 17;392(10160):2180-2193

SGLT2 inhibitors and GLP-1 agonists associated with reduced CV risk



CI, confidence interval; GLP-1 RA, glucagon-like peptide-1 receptor agonist HR, hazard ratio; MACE, major adverse cardiovascular events; NASH, non-alcoholic steatohepatitis

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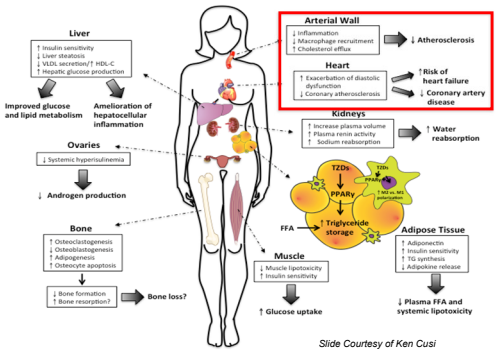
Zinman et al, N Engl J Med. 2015 Nov 26;373(22):2117-28
Marso SP, et al. *N Engl J Med* 2016;375:311–322

TZDs: Benefits and Risks



Slide Courtesy of Ken Cusi

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Yau, Rivera, Lomonaco, Cusi. Curr Diab Rep.13:329-341, 2013

Randomized, Placebo-Controlled Trial of Pioglitazone in Nondiabetic Subjects With Nonalcoholic Steatohepatitis

GURUPRASAD P. ATHYAL,* JAMES A. THOMAS,† PHILIP V. KAYE,* ADAM LAWSON,* STEPHEN D. RYDER,‡ IAN SPENDLOVE,§ ANDREW S. AUSTIN,¶ JAN G. FREEMAN,‖ LINDA MORGAN,‖ and JONATHAN WEBBER‖

*University Hospitals NHS Trust, Nottingham, United Kingdom; †University of Nottingham, Nottingham, United Kingdom; ‡Derby City General Hospital, Derby, United Kingdom; and the §University Hospital Birmingham NHS Foundation Trust, Birmingham, United Kingdom

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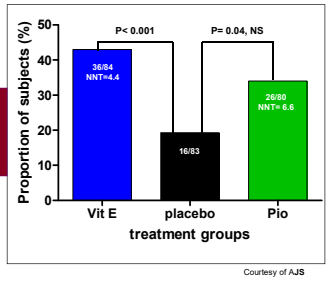
PIVENS: Histologic Improvement at Wk 96 With Vitamin E vs Pioglitazone

- **Improved histology**
  - => 1 drop in ballooning
  - No increase in fibrosis

  AND
- Reduction in NAS ≤ 3 or
- NAS decrease of ≥ 2



Courtesy of AJS

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Sanyal et al., *NEJM* 2010

Vitamin E improves NASH, not fibrosis

Authors	N	Dose	Comparators	Outcomes
Arendt	80	1000 IU/d	Placebo	Improved steatosis (assessed by CT scan) vs placebo
Sanyal	247	800 IU/d	Pioglitazone, placebo	Improved steatosis, inflammation, and ballooning vs placebo
Lavine	173	800 IU/d	Metformin, placebo	Improved steatohepatitis and ballooning vs placebo
Harrison	45	1000 IU/d	Placebo	Improved fibrosis vs baseline
Sanyal	20	400 IU/d	Vitamin E + pioglitazone	Improved steatosis vs baseline
Dufour	48	800 IU/d	UDCA + placebo, placebo	Improved steatosis, inflammation, and ballooning vs baseline

Abbreviations: CT, computed tomography; UDCA, ursodeoxycholic acid.
Arendt BM, Allard JP. *Am J Gastroenterol*. 2011;106:78-80; Sanyal AJ, et al. *N Engl J Med*. 2010;362:1675-1685;
Lavine JE, et al. *JAMA*. 2011;305:1659-1668; Harrison SA, et al. *Am J Gastroenterol*. 2003;98:2485-2490;
Sanyal AJ, et al. *Clin Gastroenterol Hepatol*. 2004;2:1107-1115; Dufour J-F, et al. *Clin Gastroenterol Hepatol*. 2006;4:1537-1543.

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What can we expect from off label use of available therapy?

Drug	Clinical scenario		Histology			Outcomes	
	Diabetes	Cirrhosis	Steatosis	NASH activity	Fibrosis	Liver-related	CV or overall
Pioglitazone[1–4]	+++	-	++	+++	+	-	+
Vitamin E[1,4–6]	+?	+ ?	++	++	-	+	?
Pentoxifylline[7]	?	?	+	+	+/-	-	-
Liraglutide[8,9]	+++	-	++	+	+/?	-	+
Semaglutide[7]	+++	-	+/-	+	-	-	+

CV, cardiovascular; NASH, non-alcoholic steatohepatitis
1. Sanyal A, et al. *N Engl J Med* 2010;362:1675–1685; 2. Cusi K, et al. *Ann Intern Med* 2016;165:305–315; 3. Jong MD, et al. *Cardiovasc Diabetol* 2017;16:1–11; 4. Brunt EM, et al. *Hepatology* 2018 [Epub ahead of print];
5. Vilar-Gomez E, et al. *Hepatology* 2018 [Epub ahead of print]; 6. Banini BA, et al. *J Clin Gastroenterol* 2018 [Epub ahead of print]; 7. Data provided by Professor M Rinella; 8. Armstrong MJ, et al. *Lancet* 2016;387: 679–690; 9. Marso SP, et al. *N Engl J Med* 2016;375:311–322

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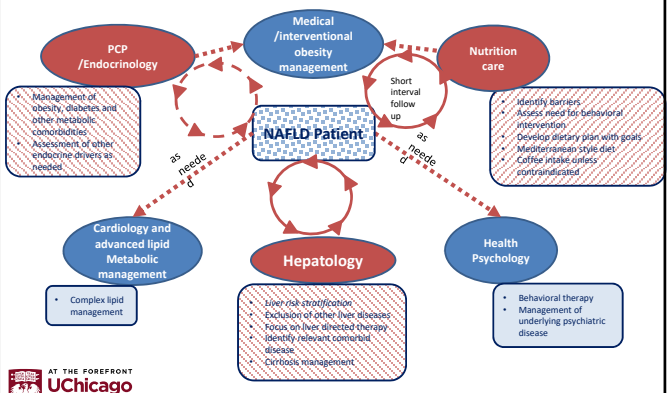

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Emerging therapy

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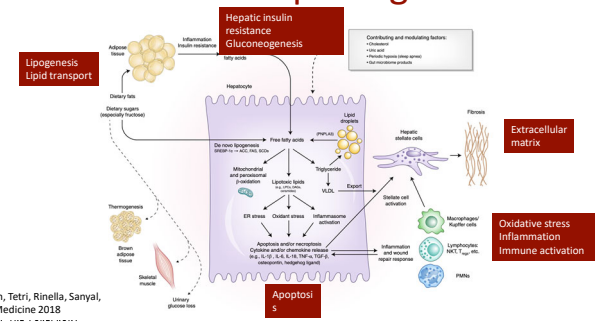
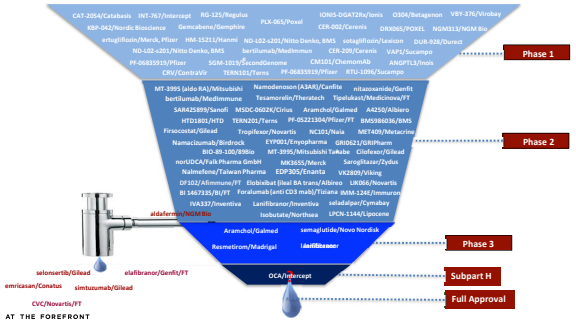
Overview of NASH pathogenesis



Friedman, Tetri, Rinella, Sanyal, Nature Medicine 2018

UChicago Medicine

Global Pipeline for NASH



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NASH: Agents in Phase 3 2020

METABOLIC AGENTS
ANTI-FIBROTIC AGENTS

AGENT	MoA (TARGET)	TRIAL, PATIENTS AND ENDPOINT(S)
Obeticholic Acid (Ocaliva)	Lipotoxicity/oxidative stress (FXR agonist)	REVERSE (n=540*, compensated cirrhosis) – Q3 2020[2] > Fibrosis improvement ≥1 stage without NASH worsening ESSENCE (n=2000*, fibrosis stage 1–3) – PRO: FEB 2019, final Completion: OCT 2022[1] > Fibrosis improvement ≥1 stage without NASH worsening > NASH resolution without fibrosis worsening / All-cause mortality and liver-related e-outc
Resmetirom (MGL-3196)	Lipotoxicity (THR-ß agonist)	MAESTRO-NASH (n=2000*, fibrosis stage 2–3) – PRO: JUN 2021, final Completion: MAR 2024[4] > NASH resolution without worsening of fibrosis
Aramchol	Fatty acid synthesis (SCD1 inhibitor)	ARMOR (NASH and fibrosis) – PRO: JUN 2022, final Completion: DEC 2024[5] > Histological endpoint at 52 weeks > Composite of progression to cirrhosis, liver-related clinical outcomes and all-cause mortality
[illegible]	Lipotoxicity/oxidative [illegible] (PPARα/δ agonist)	BESONIEFIT (n=2000*, fibrosis stage 1–3) > Histological endpoint at 72 weeks > Long-term composite of all-cause mortality, cirrhosis and liver-related events
[illegible]	Apoptosis/necrosis (ASK1 inhibitor)	STELLAR-3 (n=808, fibrosis stage 3) > [illegible] at 72 weeks BRIDGE to closing Event-free survival
Belapectin (GR-MD-02) (P2/3 adaptive)	Fibrosis (Galectin-3 inhibitor)	NASH-RX (n=500*, compensated NASH cirrhosis) – Q4 2022[3] > NASH resolution without worsening of fibrosis
[illegible]	Inflammation/fibrosis (ACC 1/2 antagonist)	AURORA (n=2000*, fibrosis stage 2–3) – PRO: OCT 2021, final Completion: 2028[6] > Part 1: Histological endpoint at 72 weeks, Part 2: Clinical events > Composite of progression to cirrhosis, liver-related clinical outcomes and all-cause mortality

2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

PRIMARY and FINAL READOUT

1. ClinicalTrials.gov. NCT02704403; 2. ClinicalTrials.gov. NCT03439254; 3. ClinicalTrials.gov. NCT02548351; 4. NCT03900429; 5. https://www.prnewswire.com/il/news-releases/galmed-pharmaceuticals-announces-successful-completion-of-end-of-phase-2-meeting-with-fda-and-plan-for-start-of-phase-3-300827912.html (accessed Sept 2019).

Adapted from S. Harrison

AT THE FOREFRONT UChicago Medicine

NASH: Agents in Phase 3 2021

METABOLIC AGENTS
ANTI-FIBROTIC AGENTS

AGENT	MoA (TARGET)	TRIAL, PATIENTS AND ENDPOINT(S)	
Obeticholic Acid (Ocaliva)	Lipotoxicity/oxidative stress (FXR agonist)	REVERSE (n=540*, compensated cirrhosis) – Q3 2020[2] > Fibrosis improvement ≥1 stage without NASH worsening	
Resmetirom (MGL-3196)	Lipotoxicity (THR-ß agonist)	MAESTRO-NASH (n=2000*, fibrosis stage 2–3) – PRO: JUN 2021, final Completion: MAR 2024[4] > NASH resolution without worsening of fibrosis	
Aramchol	Fatty acid synthesis (SCD1 inhibitor)	ARMOR (NASH and fibrosis) – PRO: JUN 2022, final Completion: DEC 2024[5] > Histological endpoint at 52 weeks > Composite of progression to cirrhosis, liver-related clinical outcomes and all-cause mortality	Hold
Semaglutide	GLP-1 RA	N=1200, SQ OW > Part 1: Histological endpoint at 72 weeks, Part 2: Clinical events > Part liver-related clinical outcomes and all-cause mortality	Enrolling
Lanifibranor	Pan-PPAR	N=1200, 800mg, 1200mg > Part 1: Histological endpoint at 72 weeks, Part 2: Clinical events > Part liver-related clinical outcomes and all-cause mortality	Enrolling
Belapectin (GR-MD-02) (P2/3 adaptive)	Fibrosis (Galectin-3 inhibitor)	NASH-RX (n=500*, compensated NASH cirrhosis) – Q4 2022[3] > NASH resolution without worsening of fibrosis	Enrolling

2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

PRIMARY and FINAL READOUT

1. ClinicalTrials.gov. NCT02704403; 2. ClinicalTrials.gov. NCT03439254; 3. ClinicalTrials.gov. NCT02548351; 4. NCT03900429; 5. https://www.prnewswire.com/il/news-releases/galmed-pharmaceuticals-announces-successful-completion-of-end-of-phase-2-meeting-with-fda-and-plan-for-start-of-phase-3-300827912.html (accessed Sept 2019).

Adapted from S. Harrison

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REGENERATE 18-month interim analysis: Fibrosis improvement by ≥1 Stage with no worsening of NASH (ITT, F2/3)

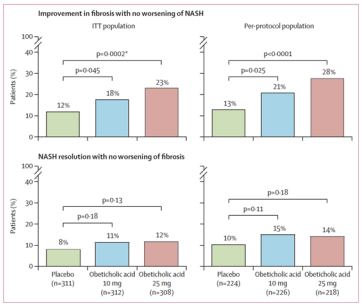
2480 patients
Randomization 1:1:1

Primary endpoint definition:
- Improvement in fibrosis by ≥1 stage (NASH CRN)

AND
- no worsening of lobular inflammation, hepatocellular ballooning **or steatosis**

OR
- Resolution of NASH

AND
- No worsening of fibrosis



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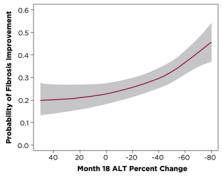
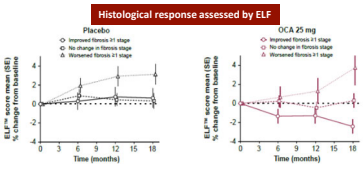
Younossi et al. *The Lancet*, 2019

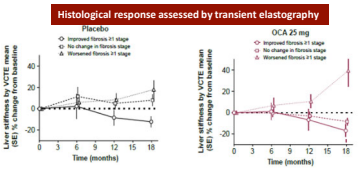
REGENERATE trial: Correlation of NITs with histological response



Histological response assessed by ELF



Histological response assessed by transient elastography



Rinella ME, et al. *submitted*

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Therapy to counter substrate overload in NASH

Nutritional therapies have lacked Sustainability and attainability (≤15% at one year)

GLP1 RAs

Decreased glucagon concentrations
Improved insulin sensitivity
Decreased A1C
Slowed gastric emptying
Increased satiety
Decreased free fatty acid concentrations
Decreased body weight

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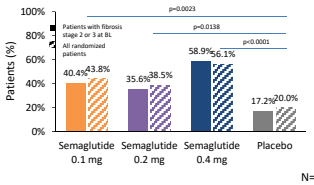
Efficacy and Safety of Semaglutide SC QD vs PBO in patients with NASH

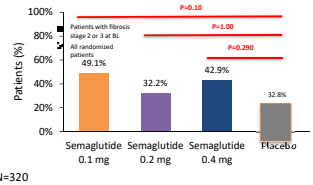
Resolution of steatohepatitis and no worsening in liver fibrosis

Patients with fibrosis Stage 2 or 3 at BL and all randomized patients



Improvement in liver fibrosis and no worsening in steatohepatitis

Patients with fibrosis Stage 2 or 3 at BL and all randomized patients



N=320

Newsome PN, et al. *NEJM* 2021 ;384(12):1113-1124.

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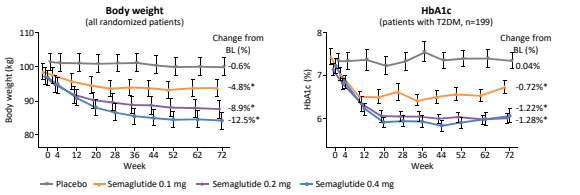
Impact of semaglutide versus placebo on body weight and HbA1c



- SEMA 0.4 mg resulted in increased HDL-C and decreased free fatty acids, triglycerides, and VLDL-C versus placebo

Data are observed means with standard error of the mean.
*p<0.05 for estimated treatment difference versus placebo.

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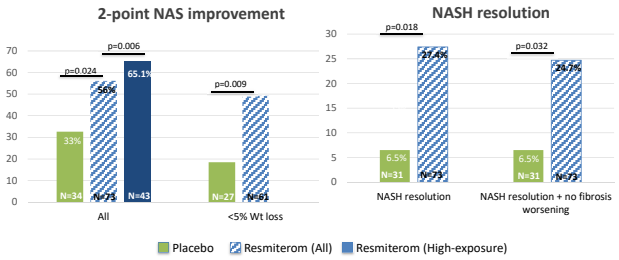
MGL-NASH Ph 2b Histological Endpoints



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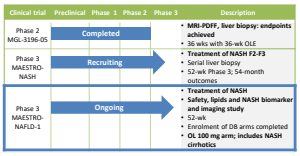
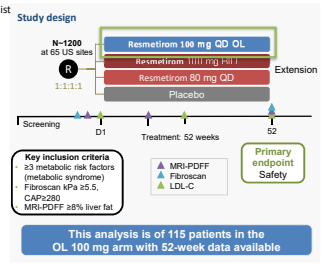
Harrison et al. Lancet 2019

MAESTRO-NAFLD-1: Reduction in fibrosis and steatohepatitis imaging and biomarkers in Phase 3, 52-week resmetirom NASH trial

- Resmetirom is a liver-directed, orally active, selective THR-β agonist



Primary and key secondary endpoints of MAESTRO-NAFLD-1 include: safety, relative percent reduction of MRI-PDFF (week 16), LDL cholesterol (LDL-C) (week 24), Apolipoprotein B and triglycerides, PRO-C3 (week 52), and safety.



This analysis is of 115 patients in the OL 100 mg arm with 52-week data available

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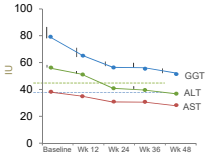
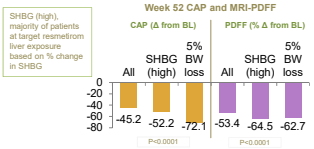
Harrison S, et al. EASL 2021. #GS-2563

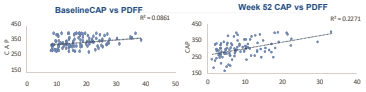
MAESTRO-NAFLD-1: Reduction in biomarkers in Phase 3, 52-week resmetirom NASH trial

Week 48	Δ from BL	% Δ from BL	P-value
ALT	−20.36	−33.04	<0.0001
AST	−10.19	−21.50	0.0003
GGT	−28.52	−19.83	0.015



SHBG (high), majority of patients at target resmetirom liver exposure based on % change in SHBG





Note: Poor correlation between CAP and PDFF

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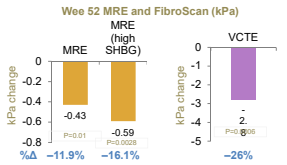
Harrison S, et al. EASL 2021. #GS-2563

MAESTRO-NAFLD-1: Reduction in fibrosis and steatohepatitis imaging and biomarkers in Phase 3, 52-week resmetirom NASH trial



- Approximately 50% of patients had a 15% reduction in MRE (kPa) and/or 25% reduction in FibroScan (VCTE) kPa

- Well tolerated
- NIT-selected NAFLD cases exhibited reductions from BL in PDFF, MRE, ELF, CK18 – with a beneficial lipid profile
- BUT relatively small cohort and no placebo group
- Disconnect between CAP and PDFF brings into question value of FAST, etc. as 'Pharmacodynamic/Response' biomarker

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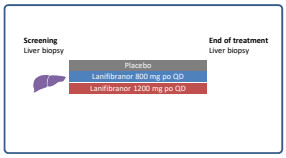
Lanifibranor in non-cirrhotic NASH: Results of the NATIVE Phase 2b trial



Primary endpoint:

- **Decrease of ≥2 points of inflammation and ballooning (as measured by SAF-Activity score) and no worsening of fibrosis**

Secondary endpoints:

- Resolution of NASH and no worsening of fibrosis
- Improvement of fibrosis by ≥1 stage and no worsening of NASH
- Decrease of ≥2 points of the NAS CRN score and no worsening of fibrosis
- Resolution of NASH and improvement of fibrosis by ≥1 stage
- Glycemic control (fasting glucose, insulin, HOMA index, HbA1c, …)
- Liver enzymes (ALT, AST, GGT, ALP, total bilirubin)
- Lipid parameters (TC, HDL-C, calculated LDL-C, TG, …)

Other outcome measures:

- Change in inflammatory markers (fibrinogen, hs-CRP, alpha2 macroglobulin, haptoglobin, …)
- Change in fibrosis markers (TIMP-1, TIMP-2, HA, PIIINP, NFS, FIB-4 score, ELF score, Pro-C3, …)

Data are mean ± SD or n (%).
By using SAF Activity ≥3 as inclusion criterion rather than NAS ≥4, NATIVE selected a higher percentage of patients with severely active steatohepatitis associated with advanced fibrosis (although no *a priori* minimum fibrosis criterion was set).

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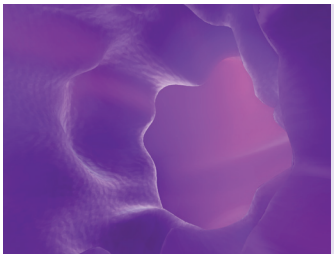

Inflammatory Bowel Disease: Updates and New Therapies

Sushila Dalal, MD

AT THE FOREFRONT UChicago Medicine

Inflammatory Bowel Disease: Updates and New Therapies

Sushila Dalal, M.D.

Disclosures

- Consultant and Speakers' Bureau for Abbvie
- Consultant for Pfizer

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Modern Goals of IBD Management

- **Early + Accurate Diagnosis**
  - Clarification of phenotype
  - Determination of prognosis
  - Assessment for EIMs
- **Induction of Remission**
  - Turning "off" the inflammation
  - Feeling well
  - Normalization of labs, growth, development and nutrition
- **Maintenance of Remission**
  - Stable disease control and optimization of therapy
  - Prevention of relapse over time (sustained and durable)
- **Disease Monitoring + Prevention**
  - Monitoring for early or subclinical relapse
  - Monitoring therapies
  - Prevention of infections
  - Cancer prevention
  - Consideration of long-term consequences of chronic inflammation

Disease Modification

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Prognosis and Assessing Disease Severity in Inflammatory Bowel Disease

Ulcerative Colitis

Low Risk for Colectomy
- Limited anatomic extent
- Mild endoscopic disease

High Risk for Colectomy
- Extensive colitis
- Deep ulcers
- Age <40
- High CRP and ESR
- Steroid-requiring disease
- History of hospitalization
- *C. difficile* infection
- CMV infection

Crohn's Disease

Low Risk
- Age at initial diagnosis > 30 years
- Limited anatomic involvement
- No perianal and/or severe rectal disease
- Superficial ulcers
- No prior surgical resection
- No stricturing and/or penetrating behavior

Moderate/High Risk
- Age at initial diagnosis < 30 years
- Extensive anatomic involvement
- Perianal and/or severe rectal disease
- Deep ulcers
- Prior surgical resection
- Stricturing and/or penetrating behavior

Other Considerations for Clinically At-Risk IBD

- Overlapping immune conditions (spondyloarthropathies, skin manifestations, PSC)
- Mental health disorders
- Disability
- Cumulative burden of inflammation

Implications for early treatment and aggressive monitoring

Lichtenstein GR, et al. Am J Gastroenterol. 2018;113(4):481-517.
Sandborn WJ. *Gastroenterology*. 2014;147(3):702-703.
Rubin DT, et al. *Am J Gastroenterol*. 2019;114(3):384-413.
Dassopoulos T, et al. *Gastroenterology*. 2015;149(1):238-45.
Szigethy E, et al. Clin Gastroenterol Hepatol. 2017 Jul;15(7):986-997.

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Treatment Options for IBD

Treatment	Induction	Maintenance	Other Indications
Dietary treatment	CD	CD	
5-ASA	UC	UC	
Steroids (budesonide and prednisone equivalents)	✓	X	
Antibiotics	?	?	Post-operatively, perianal disease
Thiopurines	X	✓	
Methotrexate	CD	CD	RA, PsO, PsA, neoplastic diseases
Anti-integrin (natalizumab, vedolizumab)	✓	✓	vedolizumab UC, natalizumab MS
Anti-p40 (ustekinumab)	✓	✓	PsO, PsA
Anti-TNF (adalimumab, certolizumab pegol, golimumab, infliximab)	✓	✓	PsA, SpA, RA, uveitis, etc.
JAKinibs (tofacitinib)	UC	UC	RA, PsA
S1P receptor mod (ozanimod)	UC	UC	MS

Clinical Scenarios to Consider New Small Molecules in Moderate-to-Severe UC

Clinical Scenario	Tofacitinib (IR: 10 mg BID, 5 mg BID) (ER: 11 mg QD)	Ozanimod (titration in week 1, then 1 mg daily)
New UC, failing 5-ASA	X	✓
Moderate to severe UC, failing anti-TNF	✓	✓
Low albumin	✓	probably
Concomitant MS and UC	X	✓
Peripheral arthropathy	✓	probably
Axial spondyloarthropathy	✓	unknown
Inpatient acute severe UC	maybe	unknown
History of heart disease	Not if atherosclerotic	Not if type 2 heart block
History of eye disease, specifically uveitis or DM-related	✓	Not recommended

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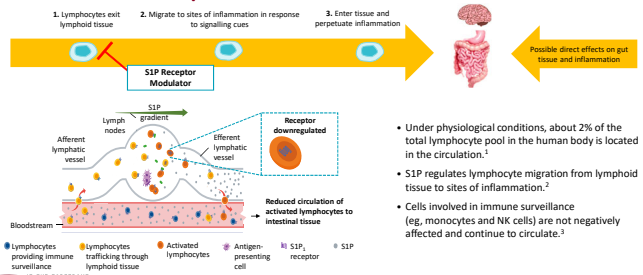
S1P Receptor Modulator Mechanism of Action



- Under physiological conditions, about 2% of the total lymphocyte pool in the human body is located in the circulation.[1]
- S1P regulates lymphocyte migration from lymphoid tissue to sites of inflammation.[2]
- Cells involved in immune surveillance (eg, monocytes and NK cells) are not negatively affected and continue to circulate.[3]

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NK = natural killer.

1. Scott FL, et al. *Br J Pharmacol*. 2016;173(11):1778-1792.
2. Danese S, et al. *J Crohns Colitis*. 2018;12(suppl_2):S678-S686.
3. Harris S et al. *Neurol Neuroimunol Neuroinflamm*. 2020;7(5):e839.

S1P Modulator Differentiation

	Expression[1]	Biologic Outcomes[1]	Clinical Relevance[1]
S1P1	Broad, including B, T, and dendritic cells, endothelium, cardiac tissue, and neurons	Lymphocyte migration, dendritic cell migration, vascular barrier function, bradycardia, nociception, proliferation	**Autoimmune modulation**, bradycardia, tumor maintenance
S1P2	Broad, including vascular smooth muscle, endothelium, cardiac tissue, lung fibroblasts, and tumor cells	Vasoconstriction, inflammation, fibrosis, inhibition of B-cell survival, proliferation	Renal injury, fibroblast contraction, tumor maintenance
S1P3	Broad, including vascular smooth muscle, endothelium, cardiac tissue, and lung fibroblasts	Vasoconstriction, fibrosis, proliferation	Hypertension, tumor maintenance
S1P4	Restricted; T cells, dendritic cells, breast cancer cells	Inhibition of effector cytokines, secretion of IL-10	Autoimmune modulation
S1P5	Restricted; natural killer cells, endothelial cells, oligodendrocytes	Natural killer cell migration, blood-brain barrier integrity, oligodendrocyte function	**Autoimmune modulation**, myelination

Fingolimod: Nonselective S1P1 to S1P5 receptor modulator[2,3]

Ozanimod: Selective S1P1 and S1P5 receptor modulator[4,5]

Etrasimod: Selective S1P1, S1P4, and S1P5 receptor modulator[2]

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1. Peyrin-Biroulet L, et al. *Autoimmun Rev*. 2017;16(5):495-503.
2. Sandborn WJ, et al. *Gastroenterology*. 2020;158(3):550-561.
3. Scott FL, et al. *Br J Pharmacol*. 2016;173(1):1778-1792.
4. Sabino J, et al. *Therap Adv Gastroenterol*. 2019;(12):1-14.
5. Tran JQ, et al. *J Clin Pharmacol*. 2017;57(8):988-996.

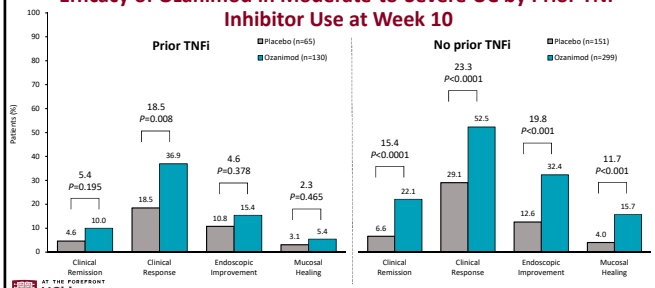
S1P Receptor Toxicity

- Cardiovascular
  - First-dose heart rate reduction
  - Cardiac conduction abnormalities
  - Hypertension
- Macular edema
  - Risk is greater with diabetes mellitus and uveitis
- Reduced FEV1, DLCO, and rarely pulmonary fibrosis
- Liver enzyme elevations, in MS these have normalized with follow-up
- Immunosuppression toxicity
  - Herpes zoster and herpes simplex
  - No increase in serious infections, opportunistic infections, tuberculosis, or malignancies

DLCO = diffusing capacity for carbon monoxide; FEV1 = Forced expiratory volume in 1 second.

Peyrin-Biroulet L, et al. Autoimmun Rev. 2017;16(5):495-503; Juif PE, et al. Expert Opin Drug Metab Toxicol. 2016;12(8):879-895.

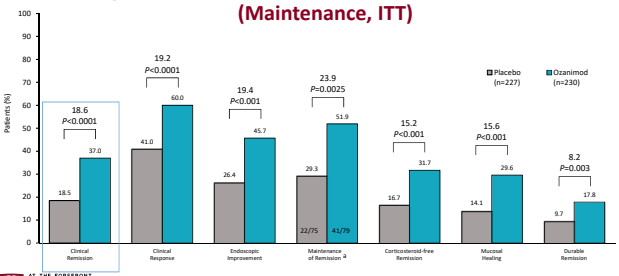
Efficacy of Ozanimod in Moderate-to-Severe UC by Prior TNF Inhibitor Use at Week 10



Data based on all randomized patients who received ≥1 dose of study treatment (intent-to-treat population). Missing data handled using non-responder imputation. P-values refer to odds ratios (not shown) based on 2-sided Cochran-Mantel-Haenszel test.

Sandborn WJ, et al. UEGW 2020. October 2020. Presentation LB02.

Efficacy of Ozanimod in Moderate-to-Severe UC at Week 52 (Maintenance, ITT)



[a]Clinical remission at 52 weeks in the subset of patients who were in remission at Week 10 (n/N).

Data based on all randomized patients who received ≥1 dose of study treatment (intent-to-treat population). Missing data handled using non-responder imputation. P-values based on odds ratios (not shown) using a 2-sided Cochran-Mantel-Haenszel test, stratified by corticosteroid use at screening and prior TNFi use (yes or no).

Danese S, et al. UEGW 2020. October 2020. Presentation LB10.

Safety of Ozanimod in Moderate-to-Severe UC Phase 3 True North Study

	Induction Period (Week 10)		Maintenance Period (Week 52)	
	Placebo (n=216)	Ozanimod (n=429)	Placebo (n=227)	Ozanimod (n=230)
Any treatment-emergent adverse event (TEAE)	82 (38.0)	172 (40.1)	83 (36.6)	113 (49.1)
Common TEAEs (≥3% in any group)				
Anemia	12 (5.6)	18 (4.2)	4 (1.8)	3 (1.3)
Nasopharyngitis	3 (1.4)	15 (3.5)	4 (1.8)	7 (3.0)
Headache	4 (1.9)	14 (3.3)	1 (0.4)	8 (3.5)
Alanine aminotransferase increased	0	11 (2.6)	1 (0.4)	11 (4.8)
Gamma glutamyl transferase increased	0	5 (1.2)	1 (0.4)	7 (3.0)
Arthralgia	3 (1.4)	10 (2.3)	6 (2.6)	7 (3.0)
Serious TEAEs	7 (3.2)	17 (4.0)	18 (7.9)	12 (5.2)
UC exacerbation[a]	4 (1.9)	6 (1.4)	9 (4.0)	1 (0.4)
Anemia[a]	0	4 (0.9)	0	1 (0.4)
Appendicitis/Complicated appendicitis[a]	0	1 (0.2)	3 (1.2)	0
Severe TEAEs	4 (1.9)	14 (3.3)	9 (4.0)	9 (3.9)
TEAEs leading to treatment discontinuation	7 (3.2)	14 (3.3)	6 (2.6)	3 (1.3)

[a]Occurring in ≥2 patients in any group.

Sandborn WJ, et al. UEGW 2020. October 2020. Presentation LB5.

Choosing Induction Therapies

- Based on disease activity and risk for bad outcomes
- Based on likelihood of rapid clearance or absorption issues (BMI, sex, CRP, albumin, prior immunogenicity)[2]
- Use organ-selective therapies before systemic therapies[3]
- Based on co-morbid illnesses (RA? Psoriasis? SpA? PsA? DM?)
- Surgery is an option (LIR!C)[1]

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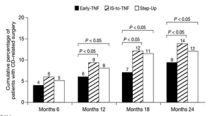
[1]Ponsioen CY, et al. *Lancet Gastroenterol Hepatol*. 2017;2(11):785-792.
[2]Ordas I, et al. *Clin Pharmacol Ther*. 2012;91:635.
[3]Rubin DT, et al. *Am J Gastroenterol*. 2019;114:384-413.

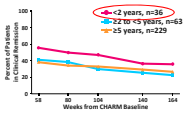
Optimizing Response to Biologics in Crohn's Disease

- CD patients with shorter disease duration treated with anti-TNF:
  - Respond better[1]
  - Lose response less often[2]
  - Have less surgery[3]

Early Use of anti-TNF is Associated with Reduced CD Surgery



Clinical remission with adalimumab in ADHERE



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[1]Schreiber S, et al. *J Crohns Colitis*. 2013;7(3):213-21.
[2]Schreiber S, et al. *Am J Gastroenterol*. 2010;105(7):1574-82.
[3]Rubin DT, et al. *Inflamm Bowel Dis*. 2012;18(12):2225-2231.

Head-to-Head Trial: Ustekinumab vs. Adalimumab for Moderate-to-Severe Crohn's Disease: The SEAVUE Study

- Multicenter, randomized, double-blinded, parallel-group, active-controlled study
- **Biologic-naïve patients** failing or intolerant to conventional therapy with an ulcer of any size on baseline ileocolonoscopy
- Randomized 1:1 to UST (approximately 6mg/kg IV at BL then 90mg SC every 8 weeks) or ADA (160/80mg SC at BL/W2, then 40mg SC every 2 Weeks)

N=386

Figure 1: Primary Endpoint
Clinical Remission (CDAI<150) at week 52

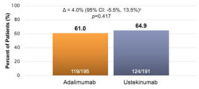
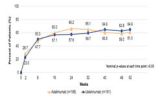


Figure 2: Clinical Remission (CDAI <150) Through Week 52



Sands B, et al. Presented at DDW. May 2021. Abstract 775d

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Ustekinumab or Vedolizumab in Crohn's Patients with Prior Anti-TNF Failure?

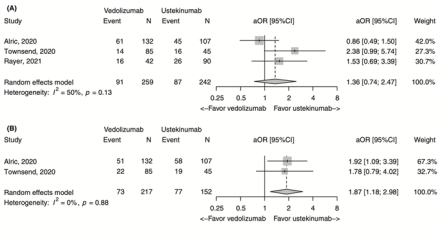


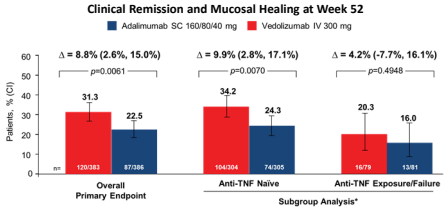
FIGURE 2 Clinical remission at week 14 (A) and week 52 (B). aOR [95%CI]: adjusted odds ratio [95% confidence interval]

AT THE FOREFRONT UChicago Medicine

Parrot L, et al. *Aliment Pharmacol Ther*. 2021;00:1–9

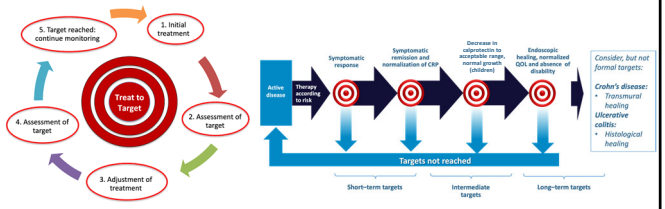
Head-to-Head Trial: Vedolizumab vs. Adalimumab in Patients for Moderate-to-Severe UC: VARSITY

N=769, VDZ (n=383) or ADA (n=386)



Schreiber S, et al. Presented at ECCO 2019. Abstract OP34.

Use Treat to Target in Inflammatory Bowel Disease



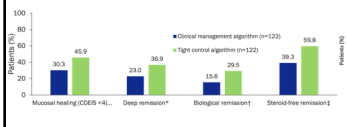
Christensen B, Rubin DT. In: Baumgart DC, ed. *Crohn's Disease and Ulcerative Colitis*. 2nd ed. Cham, Switzerland: Springer Nature; 2017:267-78.
Turner D, et al. *Gastroenterology*. 2021;160:1570-1583.

Treat to Target Studies in Crohn's Disease

CALM

- Adalimumab +/- azathioprine
- CDAI, prednisone
- CRP, Fecal calprotectin

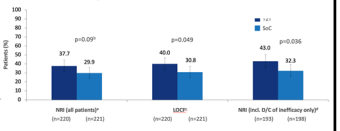
Study endpoints after 48 weeks of escalating adalimumab treatment on the basis of prespecified treatment failure criteria



STARDUST

- Ustekinumab
- Endoscopic response

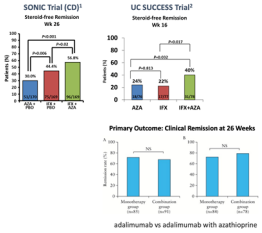
Endoscopic Response (SES-CD Improvement ≥50% [95% CI]) at Week 48 (RAS)



Colombel JF, et al. *Lancet*. 2018;390:2779-2789.
Danese S, et al. UEG Week Virtual 2020. 2020;LB11.

Combination Therapy is Not Needed for All Biologics

- For infliximab in CD and UC, probably[1,2]
- Prospective randomized study with adalimumab in Japan suggests not needed[3]
- Retrospective and subset analyses with vedolizumab and ustekinumab demonstrate no benefit[4]
- Vedolizumab and ustekinumab have very low immunogenicity
- Incorporation of HLA DQ1*05 to predict immunogenicity is uncertain at this time



[1]Colombel JF, et al. *N Engl J Med*. 2010;362(15):1383-95.
[2]Panaccione R, et al. *Gastroenterology*. 2014;146(2):392-400.
[3]Matsumoto T et al. *J Crohns Colitis*. 2016;10(11):1259-66.
[4]Yang E, et al. *Aliment Pharmacol Ther*. 2020;51(11):1031-38.

Early Assessment of Drug Levels Predict Clinical Outcomes

Disease and Drug	Early Assessment	Cutoff Level	Outcome
Ulcerative Colitis			
Infliximab	**Wk 8**	≥33 µg/mL	Clinical remission at weeks 30 and 54
Infliximab*	**Wk 6**	≥33 µg/mL	Clinical remission at week 8
Infliximab*	**Wk 6**	>22 µg/mL	Clinical response at week 8
Ustekinumab	**Wk 8**	6 mg/kg : ≥8.6 µg/mL 130 mg : ≥2.5 µg/mL	Clinical remission at week 44 (week 52 after induction)
Crohn's Disease			
Infliximab	**Wk 14**	>4 µg/mL	Clinical remission at week 54
Infliximab	**Wk 6**	>8.3 µg/mL	Clinical remission at week 14
Infliximab*	**Wk 6**	≥15.9 µg/mL	Clinical response at week 14
Infliximab	**Wk 2**	>6.8 µg/mL	Primary-nonresponse at week 14

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Sands BE, et al. *N Engl J Med*. 2019;381:1201-1214.
Reinisch W, et al. *Gastroenterol Hepatol*. 2015 Mar;13(3):539-547.e2.
Clarkston K, et al. *J Pediatr Gastroenterol Nutr*. 2019;69:68-74.
Adedokun OJ, et al. *Gastroenterol*. 2014;147:1296–307.e5.
Courbette O, et al. *J Pediatr Gastroenterol Nutr*. 2020 Mar;70(3):310-317.
Singh N, et al. *Inflamm Bowel Dis*. 2014;20(10):1708-1713.
Bar-Yoseph H, et al. *Aliment Pharmacol Ther*. 2017 Nov 9;47(2):212-218.
deBruyn JCC. *Front Pediatrics*. 2021 Jul;29(9):668978.

Summary: Update on Management of IBD 2022

- Assessment of disease includes **extra-intestinal manifestations and prognosis**, identification of biomarkers for monitoring
- Induction and Maintenance therapies are chosen based on multiple factors, **including co-morbid immune conditions or extra-intestinal manifestations**
- In the absence of therapeutic biomarkers, **treat-to-target** is established as a preferred strategy to treat through therapies and achieve improved outcomes
- Patients should have individualized **proactive disease monitoring** plans
- **Novel mechanisms, delivery systems, validated biomarkers and combination therapy approaches** are needed for improvements in the future

AT THE FOREFRONT UChicago Medicine

Transgender Health for the GI Physician

Isabel Caimiro, MD, PhD

AT THE FOREFRONT
UChicago Medicine
Section of Endocrinology, Diabetes, & Metabolism

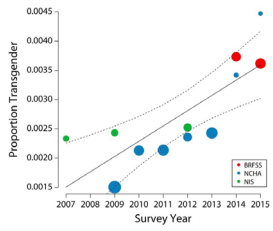
Transgender Health For the GI Physician

Isabel Casimiro, MD, PhD
Instructor of Medicine
Section of Endocrinology, Diabetes and Metabolism

Outline

- Terminology
- Criteria for Treatment
- Hormone Regimens
- GI Considerations

Meta Regression Showing the Proportion of Transgender Adults Against National Survey Year

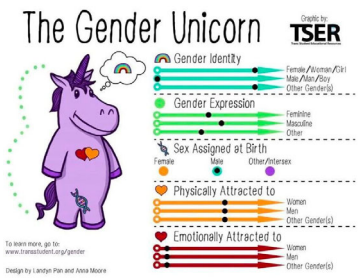


390 per 100,000 adults

~ 1 million Americans (1/250)

Gender Identity and Sexual Orientation are Often Conflated

- **Sex** refers to chromosomal, hormonal, anatomical, and physiological characteristics on whose basis one is labeled as either male or female at birth
  - ~1.7% of births deviate from the binary
- **Gender Identity**: A person's internal sense of their gender
  - Not necessarily a binary construct (male, female, transgender, non-binary/genderqueer)
- Focus of **sexual orientation** is attraction
  - to people of the same sex (homosexuality, LGQ)
  - attracted to people of the other sex (heterosexuality)
  - or attraction for people of either/any sex (bisexuality, pansexuality)
- Transgender persons can have any sexual orientation



Terminology

- **Cisgender:** A person's gender identity matches the sex assigned at birth
- **Transgender:** umbrella term to describe individuals whose gender identity differs from the assigned sex at birth
- **Gender Non Binary (GNB):** gender identity does not conform to binary understanding of gender (male or female)
- **Gender nonconforming/gender expansive:** describes individuals whose gender identity, role, or expression differs from what is normative for their assigned sex at birth
- **Transsexual:** Outdated term to classify TGNB individuals who obtained sex reassignment surgery
- **Transvestite:** Outdated term that was primarily used to describe people who dressed in clothing of the opposite sex
- **Gender dysphoria:** a profound distress or discomfort caused by the discrepancy between a person's assigned sex at birth and gender identity

Table 2. DSM-5 Criteria for Gender Dysphoria in Adolescents and Adults

A. A marked incongruence between one's experienced/expressed gender and natal gender of at least 6 mo in duration, as manifested by at least two of the following:
1. A marked incongruence between one's experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics)
2. A strong desire to be rid of one's primary and/or secondary sex characteristics because of a marked incongruence with one's experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics)
3. A strong desire for the primary and/or secondary sex characteristics of the other gender
4. A strong desire to be of the other gender (or some alternative gender different from one's designated gender)
5. A strong desire to be treated as the other gender (or some alternative gender different from one's designated gender)
6. A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one's designated gender)

B. The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:
1. The condition exists with a disorder of sex development.
2. The condition is posttransitional, in that the individual has transitioned to full-time living in the desired gender (with or without legalization of gender change) and has undergone (or is preparing to have) at least one sex-related medical procedure or treatment regimen—namely, regular sex hormone treatment or gender reassignment surgery confirming the desired gender (*e.g.*, penectomy, vaginoplasty in natal males; mastectomy or phalloplasty in natal females).

Criteria for Gender-Affirming Hormone Therapy (Endocrine Society Guideline)

1. Persistent, well-documented gender dysphoria/gender incongruence
2. The capacity to make a fully informed decision and to consent for treatment
3. The age of majority in a given country (if younger, follow the criteria for adolescents)
4. Mental health concerns, if present, must be reasonably well controlled

Feminizing Regimen

- Oral, cutaneous, or IM estradiol
  - Because estradiol enhances clotting factor synthesis during first pass metabolism, transdermal 17-beta estradiol reduces the risk of VTE
- The Endocrine Society guidelines recommend that the dose be titrated to serum estradiol levels at ~200 pg/mL

Anti-Androgens

- In most European countries, the most commonly prescribed androgen-lowering medication is oral cyproterone acetate (CPA) 50 mg daily (a progestin)
- Spironolactone mostly used in the US, an MR antagonist and a potassium sparing diuretic
  - It has antiandrogen properties by directly lowering testosterone synthesis and blocking testosterone action at the androgen receptor (up to 200mg/Qd)

Feminizing Hormone Therapy (HT)

Transgender females[a]	
Estrogen	
Oral	
Estradiol	2.0–6.0 mg/d
Transdermal	
Estradiol transdermal patch (New patch placed every 3–5 d)	0.025–0.2 mg/d
Parenteral	
Estradiol valerate or cypionate	5–30 mg IM every 2 wk 2–10 mg IM every week
Anti-androgens	
Spironolactone	100–300 mg/d
Cyproterone acetate[b]	25–50 mg/d
GnRH agonist	3.75 mg SQ (SC) monthly 11.25 mg SQ (SC) 3-monthly

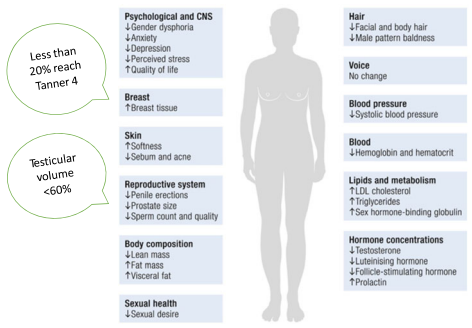


Figure 1. Effects of estrogen and antiandrogen treatment in transgender women. [Reproduced with permission from Endocrine Reviews, Volume 40, Issue 1, February 2019, Pages 97–117

Monitoring Trans Women

Table 15. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Female

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of feminization and for development of adverse reactions.
2. Measure serum testosterone and estradiol every 3 mo.
   a. Serum testosterone levels should be <50 ng/dL.
   b. Serum estradiol should not exceed the peak physiologic range: 100–200 pg/mL.
3. For individuals on spironolactone, serum electrolytes, particularly potassium, should be monitored every 3 mo in the first year and annually thereafter.
4. Routine cancer screening is recommended, as in nontransgender individuals (all tissues present).
5. Consider BMD testing at baseline (160). In individuals at low risk, screening for osteoporosis should be conducted at age 60 years or in those who are not compliant with hormone therapy.

Feminizing HT & DVT Risk

- Thrombosis risk in transgender women is likely increased given the known prothrombotic actions of estrogen
  - Under medical supervision, the risks of transfeminine HT are safer than self-prescribed street HT
- A large study conducted in 162 transgender women treated with transdermal estrogen in Austria found that only 19 had a genetic mutation associated with venous thrombosis (1 with protein C deficiency and 18 with activated protein C resistance) and none developed a thrombotic event, suggesting that estrogens that avoid the hepatic first-pass effect may have less prothrombotic risk (*Fertil Steril*. 2010;93(4):1267–1272)
- **Long-term estrogen and androgen-lowering medications may be associated with increased risk of thromboembolism, which can be mitigated by changing the formulation and route of estrogen therapy**

Role for Progesterone in Feminizing HT Care?

- More rapid feminization: Progesterone competes for the 5-alpha reductase enzyme that converts T into DHT, the hormone that masculinizes skin and hair follicles. Thus, progesterone decreases the masculinizing effects of DHT on unwanted male-pattern hair
- Progesterone feeds back to the hypothalamus slowing the pulsatility of LH and lowering average LH levels, thus decreasing gonadal T production
- Progesterone and estradiol leads to optimal breast maturation and size; Progesterone is necessary for the ductal branching within the breast (and hence, for lactation) and eventual maturation leading to the enlargement of the normal ciswoman's areola diameter of ≥3 cm
- Progesterone adds to estradiol in increasing BMD
- Currently used in some feminizing HT regimens (but not in guidelines)

Masculinizing Regimen

- Under medical supervision, testosterone therapy is safe based on short-term and longer-term safety studies
- Most commonly prescribed are injectable testosterone esters (SQ preferred)
- Topical androgen gel or transdermal patches are also used
- The use of oral testosterone (testosterone undecanoate), axillary solutions, patches, nasal sprays, buccal tablets, or pellets is rarely reported for treatment in transgender men

Masculinizing Regimen

Transgender males	
Testosterone	
Parenteral testosterone	
Testosterone enanthate or cypionate	100–200 mg SQ (IM) every 2 wk or SQ (SC) 50% per week
Testosterone undecanoate[c]	1000 mg every 12 wk
Transdermal testosterone	
Testosterone gel 1.6%[d]	50–100 mg/d
Testosterone transdermal patch	2.5–7.5 mg/d

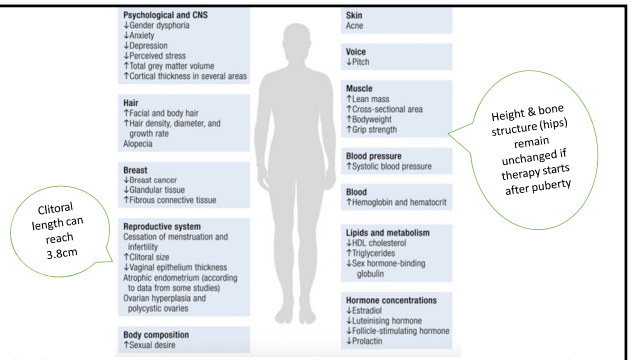


Figure 2. Effects of testosterone treatment in transgender men. [Reproduced with permission from Tangpricha V, den Heijer M. Estrogen and antiandrogen therapy for transgender women. Lancet Diabetes Endocrinol 2017;5:291–300. (41)©2019 Illustration Presentation ENDOCRINE SOCIETY]

Monitoring Trans Men

Table 14. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Male

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of virilization and for development of adverse reactions.
2. Measure serum testosterone every 3 mo until levels are in the normal physiologic male range:[a]
   a. For testosterone enanthate/cypionate injections, the testosterone level should be measured midway between injections. The target level is 400–700 ng/dL to 400 ng/dL. Alternatively, measure peak and trough levels to ensure levels remain in the normal male range.
   b. For parenteral testosterone undecanoate, testosterone should be measured just before the following injection. If the level is <400 ng/dL, adjust dosing interval.
   c. For transdermal testosterone, the testosterone level can be measured no sooner than after 1 wk of daily application (at least 2 h after application).
3. Measure hematocrit or hemoglobin at baseline and every 3 mo for the first year and then one to two times a year. Monitor weight, blood pressure, and lipids at regular intervals.
4. Screening for osteoporosis should be conducted in those who stop testosterone treatment, are not compliant with hormone therapy, or who develop risks for bone loss.
5. If cervical tissue is present, monitoring as recommended by the American College of Obstetricians and Gynecologists.
6. Ovariectomy can be considered after completion of hormone transition.
7. Conduct sub- and periareolar annual breast examinations if mastectomy performed. If mastectomy is not performed, then consider mammograms as recommended by the American Cancer Society.

Revisiting Progesterone

Liver Concerns in Transgender/GNB individuals

- Hepatic adenomas are rare benign liver neoplasms that have been shown to be associated with exogenous hormone use, such as oral contraceptive (OCP) use in cisgender women, & exogenous androgen use in hypogonadal cisgender men.
  - The development of hepatic adenomas in trans or GNB patients on gender affirming hormone therapy have not been widely reported, but a theoretical risk may exist.
- NAFLD is strongly associated with testosterone levels in cisgender women, even in the absence of androgen excess.
- Masculinizing HT has been associated with increased BMI, and fat redistribution to a more android phenotype characterized by increased central/visceral adiposity, a phenotype known to predict an increased risk of dyslipidemia and insulin resistance, which are both NAFLD risk factors.
  - However, whether exogenous testosterone use in individuals assigned female at birth increases the risk for NALFD has not been investigated and merits further study.

Gender Affirmation/Confirmation Surgery (GAS/GCS)

Referral for Surgery

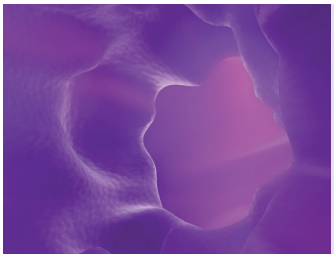
- Patient's personal and treatment history
- Progress
- Eligibility
  - Legal age of majority
  - Ability to make informed decision & provide informed consent
- Two referrals who provide independent assessment
  - One referral for chest/breast surgery
  - No letter for other surgical procedures (ie face)

Recommended Content of Letter

- Identifying characteristics
- Results of psychosocial assessment
- Duration of relationship
- Criteria for surgery have been met (and rationale)
- Informed consent
- Available to coordinate care

WPATH.ORG, SOC v 7

Dr. Loren Schechter



A Review of GI Pathology

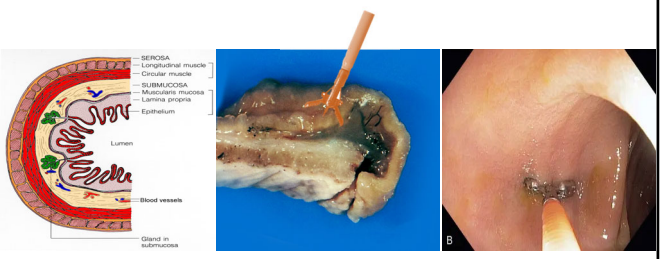
Namrata Setia, MD

GI PATHOLOGY 101

Namrata Setia, MD
Associate Professor
Department of Pathology
University of Chicago, Chicago IL

Objectives

- Scope
- Sampling by protocol
- Multiple biopsy-sites & same vial
- Clinical-endoscopic information
- Ancillary studies
- Unique endoscopy-histology correlates



https://abdominalkey.com/gastrointestinal-tract-endoscopic-and-tissue-processing-techniques-and-normal-histology/

Objectives

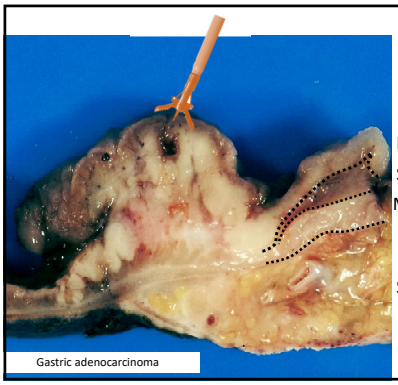
- Scope of mucosal biopsies
- When is sampling by protocol important
- When is it a bad idea to put multiple biopsy site samples in the same vial
- Importance of clinical and endoscopic information to make a meaningful pathologic diagnosis
- Ancillary studies on mucosal biopsies and turnaround time
- Diagnostic endoscopy-histology correlates

Mucosal biopsies of the GI tract only display mucosa

"There is no evidence of neoplasm in these biopsies"

≠

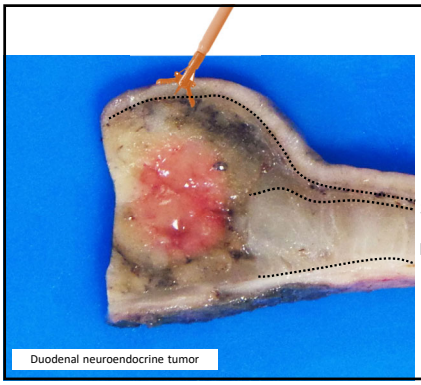
There is no neoplasm



✓

Mucosa
Submucosa
Muscularis propria

Subserosa and serosa

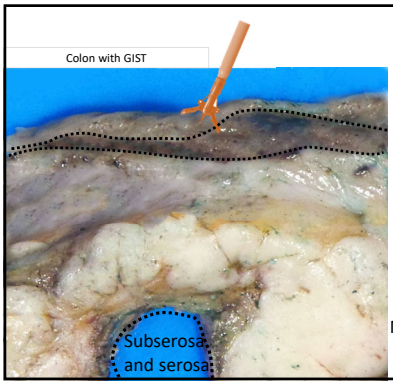


?

Mucosa
Submucosa

Muscularis propria

Subserosa and serosa



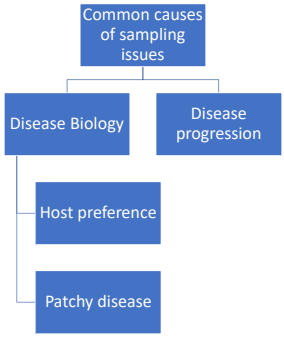
Mucosa
Submucosa

!

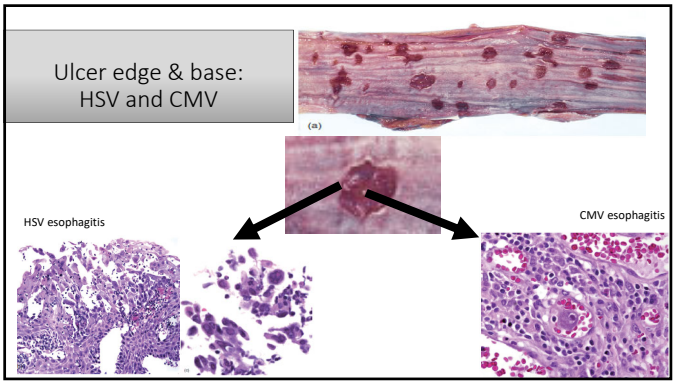
Muscularis propria

Objectives

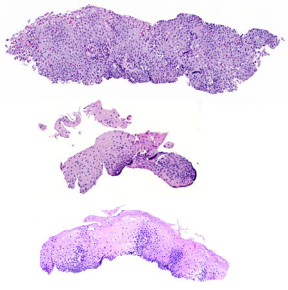
- ~~Scope of mucosal biopsies~~
- When is sampling by protocol important
- When is it a bad idea to put multiple biopsy site samples in the same vial
- Importance of clinical and endoscopic information to make a meaningful pathologic diagnosis
- Ancillary studies on mucosal biopsies and turnaround time
- Diagnostic endoscopy-histology correlates



Ulcer edge & base: HSV and CMV



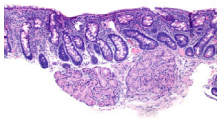
Non-neoplastic GI diseases are often patchy

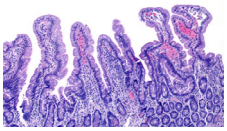


EOSINOPHILIC ESOPHAGITIS

- 2 to 4 biopsy samples each from the proximal and distal esophagus, even if the esophageal mucosa appears normal.
- Biopsy samples should also be taken of the gastric antrum and duodenum when there is a suspicion of eosinophilic gastroenteritis.

Gastrointest Endosc. 2013 Aug;78(2):216-24.

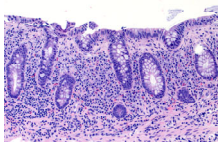


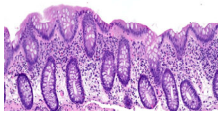


CELIAC DISEASE

- At least 4 from duodenum (including one from the distal duodenum) and 2 from the duodenal bulb (taken at the 9 and 12-o'clock positions) should be taken
- Bulbar biopsies improved detection rates of celiac disease by 18%.

Am J Surg Pathol. 2018 Sep;42(9):e44-e
Gastrointest Endosc. 2013 Aug;78(2):216-
Gastrointest Endosc. 2012 Jun;75(6):119





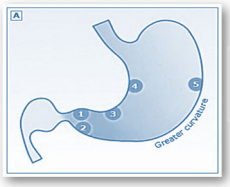
MICROSCOPIC COLITIS

- 8 biopsies total from the right and left sides of the colon to diagnose microscopic colitis (MC)
- Diagnostic sensitivity of biopsy samples from specified sites: ascending colon (97%), transverse colon (96%), and sigmoid colon (91%)
- Flexible sigmoidoscopy has been advocated as an alternative to colonoscopy, but biopsy specimens obtained from only the left side of the colon have slightly impaired sensitivity
- Alternative protocol: two specimens from the ascending colon and two from the descending colon

Gastrointest Endosc. 2013 Aug;78(2):216-24.
Clin Gastroenterol Hepatol 2020 Feb 25.

Sampling to document disease progression

AGA guidelines recommend Sydney system biopsy protocol



- incisura x 1
- antrum x2 (lesser and greater curvature)
- corpus x2 (lesser and greater curvature)

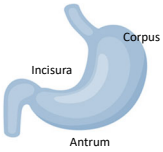
Classifying GIM

Extent
GIM involvement of antrum/incisura and/or corpus in stomach
Limited or Extensive
OLGIM*- Research only

Grade
Severity of GIM involvement of the biopsied fragments
Mild/moderate/severe

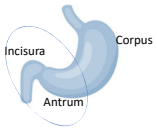
Subtype
Distinct microscopic appearances of GIM
H&E
Special stains- not routinely used
Mucin IHCs- not routinely used

*OLGIM: Operative Link on Gastritis/Intestinal-Metaplasia Assessment



Why so many ways to classify GIM vs BE:
- 2x surface area
- starting point in the ~middle
- less contrast for endoscopist (gland on squamous vs. gland on gland)

Determining the extent

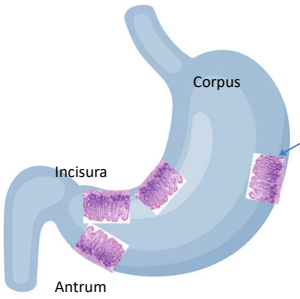


- **Extent of GIM**
  - **Limited/Focal** → **AGA****: antrum/incisura
  - **Extensive** → **AGA****: corpus AND/OR antrum/ incisura

**American Gastroenterological Association

Endoscopy. 2019;51(4):365-388.
Gastroenterology. 2020;158(3):693-702.
Am J Gastroenterol. 2020 May;115(5):641-644.

Extensive GIM- "High risk" GIM



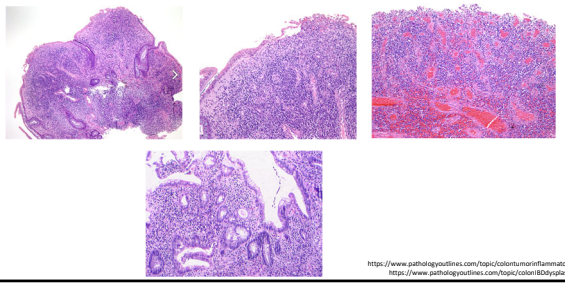
AGA (corpus alone or with antrum/incisura)

Objectives

- ~~Scope of mucosal biopsies~~
- ~~When is sampling by protocol important~~
- When is it a bad idea to put multiple biopsy site samples in the same vial
- Importance of clinical and endoscopic information to make a meaningful pathologic diagnosis
- Ancillary studies on mucosal biopsies and turnaround time
- Diagnostic endoscopy-histology correlates

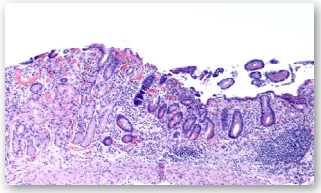
http://cal.md.chula.ac.th/chulapatho/chulapatho/general/neoplasm/

Multiple polyps in the setting of inflammatory bowel disease

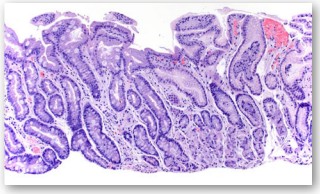


https://www.pathologyoutlines.com/topic/colontumorinflammatory.html
https://www.pathologyoutlines.com/topic/colonIBDdysplasia.html

Determining the extent of GIM

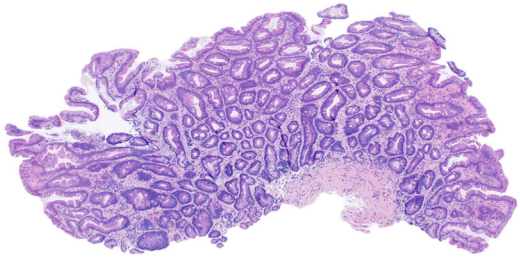


GIM in body/fundus



GIM in antrum

69 yo with "Random stomach" biopsies



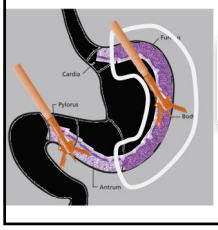
Entire biopsy fragment is involved by GIM

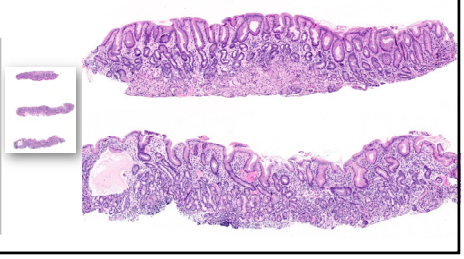
?origin (antrum vs. corpus) of the biopsy fragment and extent of GIM cannot be determined

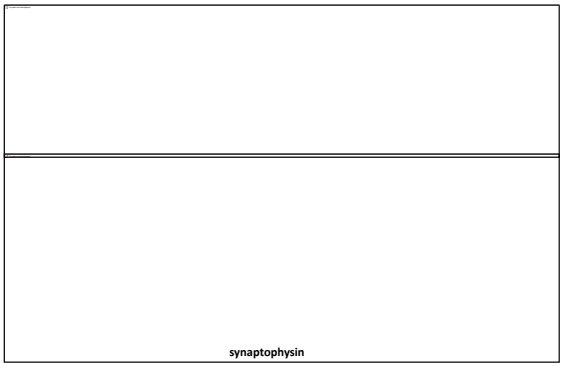
Atrophic gastric mucosa with intestinal metaplasia

Dealing with tricky diagnosis
Autoimmune gastritis

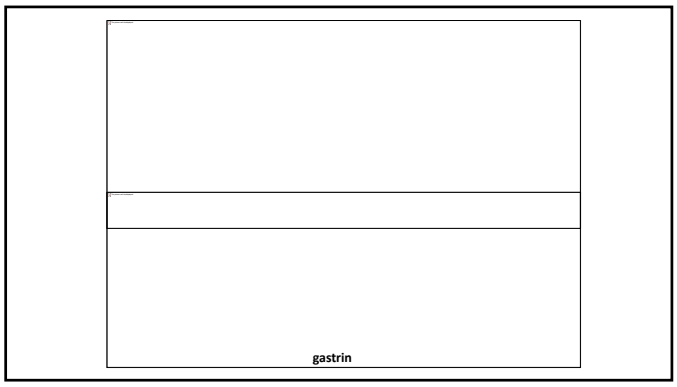
76 yo F with "Random stomach" biopsies







synaptophysin



Objectives

- ~~Scope of mucosal biopsies~~
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- Ancillary studies on mucosal biopsies and turnaround time
- Diagnostic endoscopy-histology correlates

KEYNOTE:

Career Paths for Women in GI

Lin Chang, MD

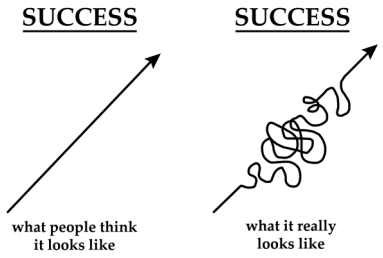
Career Paths for Women in GI

Lin Chang, M.D.
Professor of Medicine
G Oppenheimer Center for Neurobiology of Stress and Resilience
Vatche and Tamar Manoukian Division of Digestive Diseases
David Geffen School of Medicine at UCLA

Overview

- My career path
- Academic practice- research and clinical tracks
  - Protected time, benchmarks and milestones for promotion and career success
  - AGA academic GI survey
- Women in academic practice in GI
- My 10 rules for career success
- Opportunities for fellows and faculty

My Career Path



My Career Path

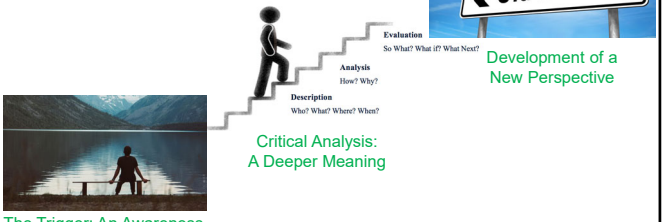
- Medical school, residency and fellowship in UCLA system
- Mayo Clinic, Rochester after fellowship
- Academic position at Harbor-UCLA
- Started in General GI and Pancreaticobiliary disease
- Transitioned to Functional GI field at Year 3-4
- Obtained NIH mentored award in IBS and Fibromyalgia
- Moved to UCLA main campus after Year 4
- Steep learning curve in Brain-gut Interactions and IBS

My Career Path

- Worked in NIH-funded Brain-Gut Research Center for 25 yrs
- Developed expertise in functional GI and motility disorders
- Remained focused in IBS research
- Started with industry talks and expanded to range of clinical and research lectures
- Became active in academic committees: Rome, AGA, ANMS, ACG
- Started leadership skills as ANMS President, Council, Rome
- Increased focus within UCLA: Became PD and then Vice-Chief of GI division
- Clinical Research Councilor of AGA Governing Board

What I Have Learned and 10 Rules for Career Success

1. Self-Reflection



Development of a New Perspective

Critical Analysis: A Deeper Meaning

The Trigger: An Awareness

https://myc.com.my/articles/view/954

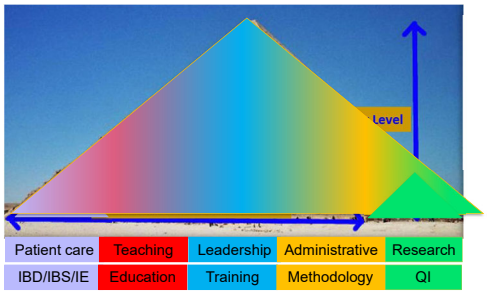
Who Am I?:
Get to know your interests, strengths and skills,

- What area of clinical and research expertise am I interested in?
- What are my strengths?
- What is my skill set and what do I want it to be?
- What type of environment do I want to be working in?
- What do I need to do to succeed?

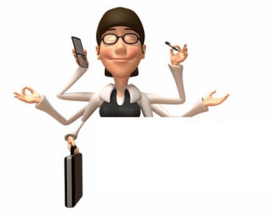
2. Define Goals

- Goal setting based on a critical self-assessment of strengths and areas for improvement
- Need to assess risks and trade-offs to achieve goals and an ability to define success in tangible terms
- Priorities (including work-life balance) change over time
- Input from trusted colleagues, mentors, partner

3. Build your base



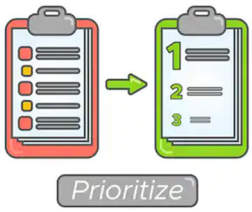
4. Get your work done



4. Don't underestimate the effort

5. Be at the center of the action

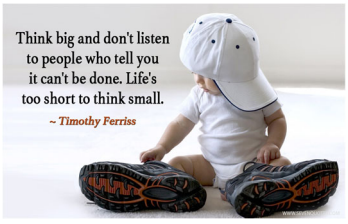
6. Prioritize when everything seems urgent



"Things which matter most must never be at the mercy of things which matter least"

Johann Wolfgang von Goethe

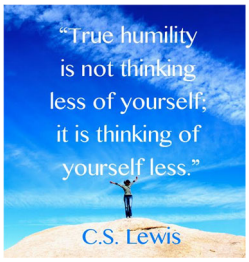
7. Think big picture



8. Be the solution

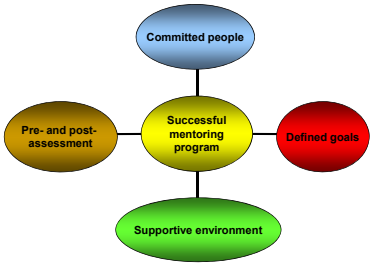
9. Focus on the goal, not yourself

10. Be humble

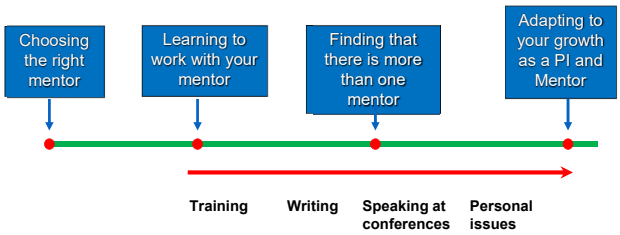


You gotta do it all

Successful Mentorship: The Right Stuff



Mentorship Timeline



Choosing the Right Mentor

- Mentees often seek mentors who have achieved much of what they themselves envision for their careers[1]
- Your individual needs and goals
  - Determine the field in which you would like to build a research career
  - Determine location where you would want to work and live
  - Determine the type of academic environment you work best in
  - Assessing your own strengths and weaknesses

[1]Rustgi and Hecht. Gastroenterology 2011

Assessing whether your mentor is right for you

- Does your mentor really have your best interest in mind?
- Is the mentor helping you obtain funding?
- Is your mentor sharing ideas with you?
- Are they helping you with academic promotion?
- Are they willing to step back to allow you to flourish?
  - Are they allowing you to be first or senior author?
  - Are they suggesting you for speaking engagements?
- Are they recommending you for important committee or organizational work?
- Are they nominating you for awards of recognition?

Take a proactive approach

- Take ownership and responsibility
- Ask for advice and feedback
- Think of research or program ideas and discuss with mentor
- Need to determine what the mentor's strengths are and tailor to what you need
- Know your limits and when to ask for help
- Be mindful of mentor's time (e.g., be prepared)
- Avoid delaying or canceling meetings (can convey lack of interest)

There Can Be More than One Mentor
Areas of mentorship

- Research
- Clinical skills
- Presentations
- Grant/paper writing
- Professional coaching: navigating career moves
- Personal/life issues

Gender Gap in GI Training

Women: 16.4% of US Gastroenterologists

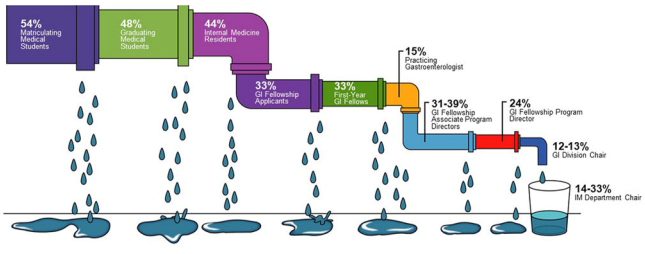
Women Trainees
- IM residents: 40%
- Pediatrics: 65%
- OB-GYN: 81%
- Surgery: 37%

IM Subspecialties
- Rheumatology: 60%
- Endocrinology: 70%
- Geriatrics: 63%

ACGME Data Resource Books (various years) Accessed March 8, 2019

2021: women comprise 39% of fellows, only 22% of senior AGA members and <18% of all practicing gastroenterologists

Attrition of Women Through Pipeline of GI Training and Leadership



Tse CS et al Gastroenterology. 2022;162(1):63-67

Characteristics of Women that Impact Academic Advancement

Characteristics positively impacting advancement
Highly effective team leadership style
Good multitaskers
Demonstrated clinical excellence
Characteristics negatively impacting advancement
Perfectionism; imposter syndrome
Readily give credit to others; limited skills at self-promotion
Limited flexibility to move or travel
Difficulty negotiating: "Women Don't Ask"

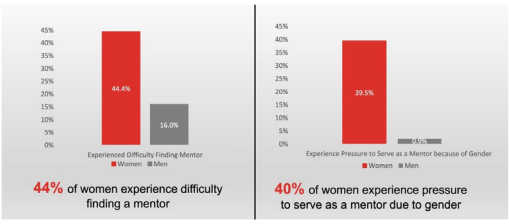
Zimmerman EM. Gastroenterology 2019;157:598–601

Recommendations for Women

- Keep a master CV and create “offspring” (e.g., biosketch) for special purposes
- Practice good time management
- Give yourself a break at certain times in your career
- Don’t get overextended; say “no”
- Know your local institutional resources: Dean’s office of your school or college
- Seek out national resources: AAMC, AGA, AASLD, ASGE, ACG, NASPGHAN
- Cultivate mentors of all genders; be a good mentee
- Learn leadership skills through local or national courses (e.g., AGA Women’s Leadership Conference)

Zimmerman EM. Gastroenterology 2019;157:598–601

Gender Disparities Impact Women Mentors and Mentees in Gastroenterology



44% of women experience difficulty finding a mentor

40% of women experience pressure to serve as a mentor due to gender

Survey of 20 academic institutions in US. 796 GI fellows and faculty received the survey link, with 334 physicians responding to the survey (42% response rate) and 299 (90%; 129 women and 170 men) completed survey (37% completion rate).

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Gender Disparities: Mentorship from Mentee’s Perspective

Characteristic	Women (%)	Men (%)	P value
Prefer mentor of same gender*	38.6	4.2	<0.0001
Prefer mentor of same race/ethnicity*	3.4	3.6	<0.0001
Gender of current/most influential mentor- M vs F vs Both	45.5 vs 34.3 vs 20.2	70.2 vs 12.2 vs 17.6	<0.0001
Difficulty finding an appropriate mentor	44.4	16	<0.0001
Lack of ability to find mentor with same gender	12.8	0.9	0.0004
Mentor helped me choose research focus	44.4	56.9	0.039
Mentor facilitated participation in editorial boards	15.1	29	0.005
Mentor facilitated my participation in chairing conferences	13.5	29.6	0.0011

299 (90%; 129 women and 170 men) completed survey (37% completion rate).
*Rated as Important vs. Neutral or Not Important

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Gender Disparities: Mentorship from Mentor’s Perspective

Characteristic	Women (%)	Men (%)	P value
% Women mentees (past and present) <30 vs 31-60 vs >60	28.6 vs 32.3 vs 38.7	47.9 vs 46.2 vs 6	<0.0001
Comfortable asking/advising men mentees about work-life balance (including family planning)*	51.3	73.4	0.0070
Comfortable asking/advising women mentees about work-life balance (including family planning)*	88.3	63.8	0.0005
Effectiveness as a mentor Effective vs Neutral vs Non effective	33.3 vs 57.3 vs 9.3	52.6 vs 41.4 vs 6	<0.0001
Experienced pressure to serve as mentor because of gender	39.5	0.9	<0.0001
Experienced pressure to serve as mentor because of race/ethnicity	15.6	4.3	0.0091
Satisfaction in current job Satisfied vs Neutral vs Not Satisfied	69.3 vs 22.1 vs 8.7	85.3 vs 11.8 vs 2.9	0.0029

299 (90%; 129 women and 170 men) completed survey (37% completion rate).
*Rated as Comfortable vs Neutral vs Uncomfortable

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Recommendations for Improving Mentorship for Women in Gastroenterology

- **For mentees**
  - Seek out near-peer mentors
  - Identify both junior and senior faculty mentors
  - Identify mentors outside of GI or institution
  - Find mentors in different areas
  - Clarify expectations early on to ensure appropriate match
  - Prepare for meetings with mentor to optimize time spent

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Recommendations for Improving Mentorship for Women in Gastroenterology

- **For mentors**
  - Maintain gender-diverse group of mentees
  - Become comfortable discussing challenges that are specific to women in medicine and GI
  - Focus on opportunities for mentor/mentee joint productivity (research, papers, QI)

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Recommendations for Improving Mentorship for Women in Gastroenterology

- **For divisions/institutions**
  - Leadership must be proactive to mentor/mentee pairings and clear expectations for faculty and trainees
  - Formalize mentorship programs
  - Mentorship training sessions should be encouraged and prioritized with gender equity and awareness in GI
  - Encourage gender diversity among mentees for faculty members
  - Increase pool of women in senior and leadership roles with adequate support
- **For professional societies**
  - Active marketing of existing mentorship programs
  - Recruit women across professional spectrum for GI mentoring opportunities
  - Encourage men members to mentor and sponsor both women and men in GI

Rabinowitz LG et al Am J Gastroenterol. 2021;116(9):1876-1884

Mentorship: Take Home Points

- Finding the right mentor for you is the most important factor
- There are mentors that offer wisdom in different aspects of your career/life
- Learn from and focus on the positives that the mentor possesses
- Communication and feedback is important
- A mentor should be a “mentor” and not a “supervisor,” i.e. want you to succeed without only being a benefit to themselves
- Mentoring is not always a “feel good” exercise but be open to it
- Makes you face reality, your weaknesses and strengths
- Change happens; anticipate, adapt and can make things better
- It is all about learning, growing and getting better

AGA's Small Talk, Big Topics: Mentorship

Lin Chang and Jim Lewis:
Mentorship, part 1 – Insights from experienced mentors

https://gastro.org/fellows-and-early-career/small-talk-big-topics-podcast/

Ways to Build Your Leadership Experience

Opportunity	Examples
Get Involved	Join a committee at your institution, local organization or national GI society in an area that interests you so that it will overlap with your career goals
Gain Leadership Experience	Include completed committee work in your CV to show your leadership experience, which is key when being considered for leadership opportunities. For example, include in your CV your role as task force leader for a project on a national society committee and the outcome of that project
Build Your National Reputation	Include completed committee work in your CV to establish your national reputation, which is key for academic promotion. For example, organizing, moderating, and/or participating in a panel discussion at a national meeting or reviewing and updating patient education materials for a national GI society
Grow Your Network	Networking is about meeting new people and establishing relationships. When you build your network, you are increasing your chances for more opportunities to come your way while also increasing the number of people you could sponsor for future opportunities
Say Yes	When offered an opportunity that will help you to achieve your 5- to 10-year career goals, take it. You do not need to be 100% qualified; you are expected to learn while you are already in the position. While learning to say no is an excellent skill for time management and for eliminating extraneous duties that do not help you achieve your career goals, make sure you also learn when to say yes. One way to determine whether you should say yes is to give yourself time to think about the opportunity and reassess your goals
Share Your Goals	If others are not aware of your career goals, they will be less likely to nominate you when a position becomes available

Rotundo LC and Gaidos JKJ. DDS 2022;67:397-399

ACG: Career Preparation

- **Mentoring Program**
  - Gain access to faculty from diverse practice models, academic departments, and geographic regions
  - Goal is to foster dialogue between mentors and trainees, give trainees opportunity to gain valuable guidance and career advice from faculty not readily accessible to them in their training programs
- **Navigating, Networking and Negotiating Your First Job Workshop**
  - Focus on details of private practice vs academics, contract analysis, networking skills, negotiating skills and work-life balance.
  - Annually on Friday before ACG Annual Postgraduate Course
- **Trainees' Luncheon**
  - ACG Postgrad course. Past topics: "Finding a GI Practice That is Right for You," "What I learned My First Year in Practice," "The Art of Presentation," "How to Be Successful in Practice," and "A 4th Year of Fellowship Training: What You Need to Know."

ACG: Career Preparation

- **Career Opportunities for Women in GI Luncheon**
  - Advice from a panel of women GI leaders annually at the ACG Annual Postgraduate Course
  - Discussion is geared towards residents and trainees and addresses the importance of balancing career and family, and reviews general opportunities for women in medicine and GI
- **ACG Virtual Grand Rounds Career Edition**
  - Monthly webinar series focused on career-based topics geared to Trainees and Junior Faculty

AGA: Career Planning

- **Young Delegates Program**
  - Complete short-term projects on variety of AGA programs and initiative
  - Review abstracts for DDW® session
  - Participate in a focus group
  - Review a new AGA program in advance of launch and provide your feedback.
  - Media opportunities
  - Serve as a mentor
  - Provide topic ideas for AGA publications and podcasts
- **AGA Career Compass**
  - App offers easily accessible career planning, leadership training, mentor matching and clinical resources for where you're at now and where you want to go in your career
  - Mentor-mentee relationship: matches mentee with mutually interested mentors based on shared interests, experiences and needs

AGA: Career Planning

- **Small talk, Big Topics**
  - New podcast for early career GIs and trainees. Interviews with experts in the field to break down clinical guidance and share advice on how to make it big in GI
  - New episodes are released every other Tuesday
- **AGA Mentor and Advisor Program**
  - Online advice service that consists of more than 20 senior AGA members who have offered to provide informal mentoring to younger colleagues or those who may be contemplating a career change.
  - AGA members may confidentially submit questions to a specific mentor.
  - Topics include: Alternative careers in GI, Administration, Business of GI, Clinical practice, Getting involved in professional organizations, Industry, Private practice

Academic, Research, and Leadership Training

- AGA-AASLD Academic Skills Workshop
  - Grant writing and scientific manuscripts
  - Identifying sources of funding for basic GI science and clinical research
  - Pathways, tracks and expectations in academic medicine
  - Career development
- Lean Academy & QI
- Institutional or national leadership courses
- Women's leadership conference
- Development training

Academic Success Through Committee Membership

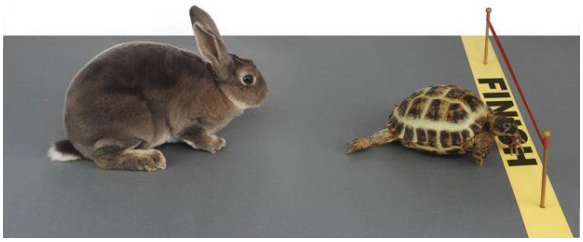
Framework for academic success	Example
Define career goals and develop a niche	Committee participation can help refine and develop clinical and research interests through mentorship and networking opportunities.
Mentorship and sponsorship	Mentorship and sponsorship between senior faculty and trainees or junior faculty can develop through collaboration on committee sponsored initiatives or through longitudinal mentorship programs.
Peer mentorship/support	Connecting with peers in specialty to share experience, build diversity, amplify support, and create inclusive environment.
Networking	Participation allows for networking opportunities through active engagement in committee meetings. Collaboration on committee sponsored initiatives can enhance visibility and career advancement.
Research opportunities	Leverage membership to lead research initiatives or innovative programs within specialty, refine protocols, and garner multicenter data
Funding and other resources	Access to repositories of trainee and early career member resources, such as small training grants.
Professional development	Committee leadership can enhance communication skills, foster collaboration across institutions and disciplines, teach strategies in conflict resolution and staff management.

Aby ES et al Gastroenterology 2021;161:1361–1365

Finding Your Best Path

- Follow your passion, interests, “instincts”
- Discuss with people, both within medicine and outside of medicine
- Use current and past mentors/advisors; need an advocate
- Reach out to external mentors, collaborators, colleagues
- Integrate personal/family and geographic factors
- Set priorities (which can evolve over time) and focus
- Make the most of opportunities: workshops, committees, leadership
- Pay it forward

Remember that the tortoise beat the hare



Promoting Equity in Women Post-Pandemic

Vineet Arora, MD, MAPP

WOMEN IN MEDICINE

Women in Medicine Salvaging and Sustaining in a Pandemic World: Making IMPACT

Vineet Arora, MD, MAPP
Herbert T. Abelson Professor of Medicine
Dean for Medical Education,
University of Chicago Pritzker School of Medicine
@futuredocs

WOMEN IN MEDICINE

Learning objectives

- Discuss how to sustain and salvage professionally and personally through a pandemic particularly given barriers to gender equity

WOMEN IN MEDICINE

How Did I Get Interested in This?

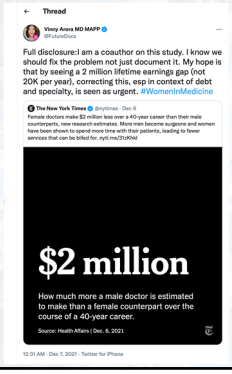
- Transparency
- Negotiation Skills
- "Loyalty bonus"
- Concerted efforts to promoting women into leadership positions


The New York Times

Dr. Paid Less: An Old Title Still Fits Female Physicians

Arora VM. Paging Dr. Lily Ledbetter. JAMA IM. July 2016.

WOMEN IN MEDICINE


Thread

Vinny Arora MD MAPP @FutureDocs

Full disclosure:I am a coauthor on this study. I know we should fix the problem not just document it. My hope is that by seeing a 2 million lifetime earnings gap (not 20K per year), correcting this, esp in context of debt and specialty, is seen as urgent. #WomenInMedicine

The New York Times @nytimes · Dec 6

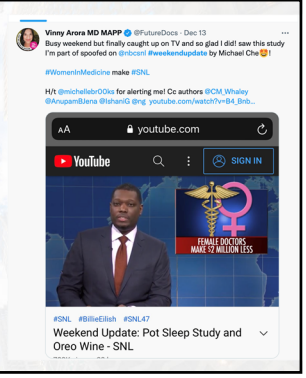
Female doctors make $2 million less over a 40-year career than their male counterparts, new research estimates. More men become surgeons and women have been shown to spend more time with their patients, leading to fewer services that can be billed for. nyti.ms/3Ut0Hol

$2 million

How much more a male doctor is estimated to make than a female counterpart over the course of a 40-year career.

Source: Health Affairs | Dec. 6, 2021

12:31 AM · Dec 7, 2021 · Twitter for iPhone


Vinny Arora MD MAPP @FutureDocs · Dec 13

Busy weekend but finally caught up on TV and so glad I did! saw this study I'm part of spoofed on @nbcsnl #weekendupdate by Michael Che!

#WomenInMedicine make #SNL

H/t @michellebr00ks for alerting me! Cc authors @CM_Whaley @AnupamBJena @IshaniG @rg youtube.com/watch?v=B4_Bno...

youtube.com

YouTube SIGN IN

FEMALE DOCTORS MAKE 92 MILLION LESS

#SNL #BillieEilish #SNL47

Weekend Update: Pot Sleep Study and Oreo Wine - SNL

STAT Sections Topics Multimedia Popular STAT Plus Job Board About Us Newsletters Log In

FIRST OPINION

Invisible women: Female doctors and health care leaders are being hidden in plain sight

By JULIE K. SILVER / OCTOBER 24, 2016

PM R 9 (2017) 804-815

Invited Perspective

Where Are the Women? The Underrepresentation of Women Physicians Among Recognition Award Recipients From Medical Specialty Societies

Julie K. Silver, MD, Chloe S. Slocum, MD, Anna M. Bank, MD, Saurabha Bhatnagar, MD, Cheri A. Blauwet, MD, Julie A. Poorman, PhD, Amparo Villablanca, MD, Sareh Parangi, MD

Society	Award	Total	% Women Awardees	2016 %Women Faculty by Dept	2015 % Women in Practice
American Academy of Dermatology	Arnold P. Gold Foundation Humanism in Medicine Award	7	0%	49.2%	47.1%
American Academy of Dermatology	Marion B. Sulzberger, MD, Memorial Award and Lectureship	24	8.3%	49.2%	47.1%
American Academy of Neurology	Wayne A. Hening Sleep Medicine Investigator Award	6	0%	37.8%	28.1%
American Academy of Ortho Surgeons	Humanitarian Award	20	0%	17.8%	5.0%
American Academy of Ortho Surgeons	Tipton Leadership Award	11	0%	17.8%	5.0%
American Academy of ENT - Head & Neck Surgery	AAO-HNSF / International Hearing Foundation / Michael M. Paparella, MD Endowed Lecture	6	0%	31.5%	15.8%
American Academy PM&R	Outstanding Council Service Award - Musculoskeletal	7	0%	45.9%	35.1%
American Academy PM&R	Walter J Zeiter Lecturer	47	6.4%	45.9%	35.1%
American Association of Neuro-Surgeons	International Lifetime Recognition Award	10	0%	37.8%	7.8%
American Association of Plastic Surgeons	Honorary Award	51	0%	14.1%	15.0%
American Neurological Association	George W. Jacoby Award	20	0%	37.8%	28.1%
American Society for Anesthesiologists	Distinguished Service Award	69	4.3%	36.1%	24.9%
American Society of Plastic Surgery	ASPS Honorary Citation Award	60	1.7%	14.1%	15.0%
Association of Academic Physiatrists	McLean Outstanding Resident/Fellow Award	6	0%	45.9%	38.8%

Grand rounds Introductions: implicit bias

Files et al. J Wom Health 2017

#Ilooklikeadoctor: Dr. Tamika Cross

Tamika Cross updated her status.
October 9, 2016 ·

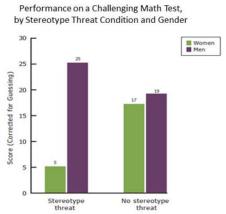
I'm sure many of my fellow young, corporate America working women of color can all understand my frustration when I say I'm sick of being disrespected.

Was on Delta flight DL945 and someone 2 rows in front of me was screaming for help. Her husband was unresponsive. I naturally jumped into Doctor mode as no one else was getting up. Unbuckle my seatbelt and throw my tray table up and as I'm about to stand up, flight attendant says "everyone stay calm, it's just a night terror, he is alright". I continue to watch the scene closely.

A couple mins later he is unresponsive again and the flight attendant yells "call overhead for a physician on board". I raised my hand to grab her attention. She said to me "oh no sweetie put ur hand down, we are looking for actual physicians or nurses or some type of medical personnel, we don't have time to talk to you" I tried to inform her that I was a physician but I was continually cut off by condescending remarks.

Then overhead they paged "any physician on board please press your button". I stare at her as I go to press my button. She said "oh wow you're an actual physician?" I reply yes. She said "let me see your credentials. What type of Doctor are you? Where do you work? Why were you in Detroit?" (Please remember this man is still in need of help and she is blocking my way from even standing up while

Negative stereotypes about girls' and women's abilities in math and science adversely affect their performance in these fields.



- Expose girls to successful female role models in math and science.
- Teach students about stereotype threat.

Source: Spencer, S. J., Steele, C. M., & Quinn, D. M., 1999, "Stereotype threat and women's math performance," *Journal of Experimental Social Psychology*, 35(1), p. 13.

AAUW Breaking through Barriers for Women and Girls

The JAMA Network

From: **Comparison of Male vs Female Resident Milestone Evaluations by Faculty During Emergency Medicine Residency Training**

JAMA Intern Med. 2017;177(5):651-657. doi:10.1001/jamainternmed.2016.9616

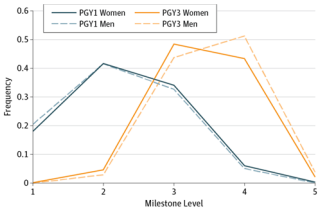


Figure Legend:

Frequency Distribution of Milestone Levels for Postgraduate Year (PGY) 1 and PGY3 Attending and Resident PhysiciansData for the histograms are binned by integer milestone level because few attending physicians chose to use half-milestone intervals (1.5, 2.5, 3.5, and 4.5) when performing evaluations.

Dayal, O'Connor, et al. 2017.

Feedback to Female Residents


ORIGINAL RESEARCH

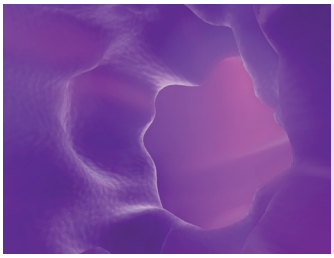
Gender Differences in Attending Physicians' Feedback to Residents: A Qualitative Analysis

Anna S. Mueller, MA, PhD
Tania M. Jenkins, MA, PhD
Melissa Osborne
Arjun Dayal, MD
Daniel M. O'Connor, MD
Vineet M. Arora, MD, MAP

- 1317 direct obs evals from 67 faculty for 47 residents
- Ideal EM Resident possesses many stereotypical masculine traits
- When male residents struggled, received consistent feedback
- **When female residents struggled, they received discordant feedback on autonomy & assertiveness**

Journal of Graduate Medical Education®

- "[Emma is] progressing well, very thoughtful, reliable, *appropriate confidence and autonomy.*" (Harrison, attending; emphasis added)
- "I would encourage Emma to *be more assertive*. During critical resuscitations, she should let those working around her *know that she is the team leader.*" (Adam, attending; emphasis added)
- "[Emma] *argues a lot with the attending*, is *very confident* in her diagnosis, and *has a hard time entertaining other possibilities*." (Hillary, attending; emphasis added)



SPECIALTY CENTERS

UNIVERSITY OF CHICAGO MEDICINE DIGESTIVE DISEASE CENTER

The Digestive Diseases Center at the University of Chicago Medicine is a collaborative, multidisciplinary network of physicians, researchers and allied health professionals who share a legacy of innovation and a common purpose: to improve the lives of patients who suffer from digestive diseases. The Digestive Diseases Center comprises 15 areas of clinical and research strengths at the University of Chicago Medicine.

CELIAC DISEASE CENTER

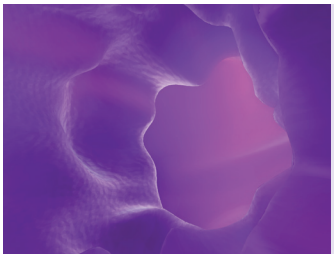
The University of Chicago Medicine's Celiac Disease Center is an internationally recognized center of excellence providing comprehensive patient and professional education, expert diagnosis and treatment for both children and adults, groundbreaking bench and clinical research, and active leadership in advocacy efforts. Our mission is to cure celiac disease. As we focus on research towards a cure, we also strive to raise awareness and diagnosis rates through education and advocacy.

CENTER FOR COLON AND RECTAL DISEASES

The University of Chicago Medicine has a rich tradition of national leadership and innovation in the surgical management of complex colorectal disease, especially inflammatory bowel disease, and sphincter-saving approaches to rectal cancer. Our team, as part of the Digestive Diseases Center, continues to build on this heritage in the treatment of a wide range of challenging colon, rectal and anal diseases, including pelvic floor disorders and perianal disease. We are recognized experts in the surgical treatment of these diseases, and when appropriate, use some of today's most advanced, leading-edge surgical techniques. In fact, more than half of colorectal surgeries we perform are done using minimally invasive techniques. Our collaborative team approach—including physician assistants, medical assistants, nurses and nurse practitioners, as well as highly experienced enterostomal and wound care nurses—has a profound effect on patient outcomes. Our combined expertise ensures that each patient receives the care he or she needs to thrive after surgery.

CENTER FOR ENDOSCOPIC RESEARCH AND THERAPEUTICS (CERT)

CERT offers patients, and their referring physicians, the benefits of endoscopic expertise as well as a comprehensive approach to patient care. Our resources—from cutting-edge technology to physicians, advanced practice nurses and scheduling staff—are exclusively dedicated to serving CERT patients. Our state-of-the-art endoscopy suite, located in the Center for Care and Discovery, offers the most advanced complement of technologies in the region. We use these technologies to diagnose and/or treat a wide variety of complex gastrointestinal disorders, including esophageal and pancreatic cancers, large colon polyps, pancreatic and bile duct stones, pancreatitis and Barrett's esophagus.



SPECIALTY CENTERS

CENTER FOR ENDOSCOPIC TREATMENT OF OBESITY

At the University of Chicago Medicine, we partner with our patients who are struggling with weight and provide them with a nonsurgical program that uses endoscopic therapies as a powerful tool to facilitate or enhance weight loss. Though it is not a cure for obesity, when used properly, endoscopic interventions can provide an effective way to achieve sustained weight loss, with patients averaging between eight percent to nearly 20 percent of their total body weight. As the only program in Chicago currently offering endoscopic sleeve gastroplasty, we provide patients with the latest treatments for nonsurgical weight loss. In addition to performing a wide variety of procedures to best meet our patients' needs, we also offer patients access to clinical trials, enabling them to benefit from novel treatment solutions not yet widely available on the market.

CENTER FOR ESOPHAGEAL DISEASES

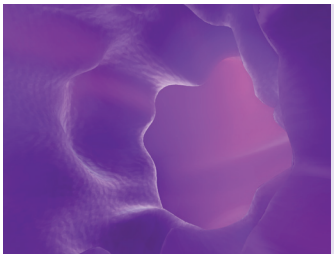
The Center for Esophageal Diseases is one of the few centers in the U.S. dedicated solely to the diagnosis and treatment of esophageal disease. We bring together nationally and internationally recognized clinicians and researchers in a variety of related disciplines to provide patients with advanced options, resources and a level of experience and innovation available at only a handful of leading medical centers in the world. Our approach is both personalized and multidisciplinary, and our outcomes are considered a model for outstanding patient care.

CENTER FOR LIVER DISEASES

For more than 20 years, the University of Chicago Center for Liver Diseases has helped set the standard of care for the management of many liver diseases, including hepatitis C, which has now reached the pinnacle of its therapy. We also have helped shape the therapeutic journey toward a cure for chronic hepatitis B. Today, we are helping to find an effective treatment for nonalcoholic fatty liver disease, and we are studying various biologic markers for the diagnosis and potential treatment targets of liver cancer. Our experienced team of hepatologists, mid-level providers and specialty nurses work with patients very closely to deliver personalized medicine that addresses each patient's needs. We have a multidisciplinary team of hepatologists, diagnostic radiologists, oncologists, and hepatobiliary and liver transplant surgeons who provide unparalleled comprehensive care for primary liver cancer in our Liver Tumor Clinic, where many challenging cases are often given new hope. We also take a collaborative approach to the management of fatty liver disease in our Metabolic Liver Clinic by working closely with an endocrinologist and dietitian, and Centers for Endoscopic and Surgical Treatment of Obesity to provide the most innovative, comprehensive treatments. Our liver transplant program is renowned nationally and worldwide. It is the oldest in the Midwest, and fourth oldest in the nation. Our program has the lowest waitlist mortality in Illinois - that is, patients on our waitlist have the lowest chance of dying before they receive a liver transplant. We also have excellent graft and patient survival rates. Our center also ranks at the top nationally in multi-organ transplant procedures. In terms of both volume and experience, we have performed the greatest number of combined liver, heart and kidney transplants, and are fourth in combined liver and heart transplants in the country.

CENTER FOR GASTROINTESTINAL ONCOLOGY

The Center for Gastrointestinal Oncology brings together experts from two of the University of Chicago Medicine's nationally recognized programs: cancer and gastroenterology. Both are consistently ranked among the top in the nation, and include physicians who are internationally recognized for their expertise. Our approach to diagnosis and treatment is multidisciplinary and consensus-based, so that patients—including those with rare or complex disease—benefit from collaborative problem solving among specialists in medical, surgical, and radiation oncology, general surgery and gastroenterology. Whenever possible, we offer minimally invasive, including robotic procedures for GI tumor biopsy and resection. Our team includes internationally renowned GI specialists and physicians who are pioneers in the use and development of endoscopy—including the use of probe-based confocal laser endomicroscopy. Our patients receive access to revolutionary clinical trials, offering the next generation of treatment to hose with gastrointestinal cancer. Through innovative surgical and radiation techniques, investigational and established medicines and novel molecular targeted therapies, our physicians offer patients the highest chances of success against a wide variety of cancers.



SPECIALTY CENTERS

CENTER FOR SMALL BOWEL DISEASE AND NUTRITION

The Small Bowel Disease and Nutrition Program includes comprehensive management of small bowel bleeding, short bowel syndrome/intestinal failure, celiac disease and obesity. We were one of the first in the United States to perform double balloon enteroscopy for the treatment of small bowel bleeding, to use radiologic expertise in small bowel imaging, and to perform minimally invasive small bowel surgery. The center is uniquely staffed by a multidisciplinary nutrition support team to diagnose and manage short bowel syndrome/intestinal failure, diarrhea/malabsorption syndromes, and patients with feeding difficulties. The nutrition team, established in 1980, provides expert administration of parenteral and enteral nutrition in the inpatient and outpatient setting. Our obesity management program is unique in its focus on nutrition education by a certified physician-chef. In addition to the education and treatments provided to our patients, we also are actively researching novel therapies in the treatment of celiac disease, short bowel syndrome and other intestinal disorders.

CENTER FOR THE SURGICAL TREATMENT OF OBESITY

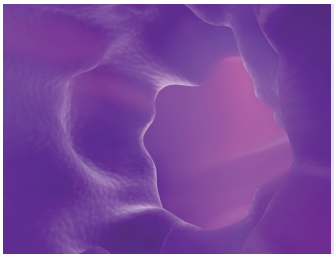
Obesity is a multifaceted disease with many causes and treatments. Our program provides individualized, patient-centric, compassionate and truly multidisciplinary care to help those with severe obesity achieve the best health outcomes possible. We make our recommendations based on the individual circumstances of our patients, so that they may be successful in attaining their desired or needed health goals. Our physicians work side-by-side with our dietitians and psychologists in the clinic—both pre- and post-operatively—and are committed to lifelong follow up with our patients. We are the only center in the region that individualizes recommendations and performs all four surgical options for the treatment of obesity. Our expertise in the treatment of super obesity (BMI >50) has garnered numerous invitations to present and demonstrate our approach and outcomes at local, regional, national and international conferences. We are the regionally recognized referral center for complications and other suboptimal outcomes following procedures performed at other institutions, and we routinely serve as educational hosts for visiting surgeons, dietitians and program managers as they initiate the incorporation of more advanced procedures and techniques into their practices.

GASTROINTESTINAL CANCER RISK AND PREVENTION CLINIC

The Gastrointestinal Cancer Risk and Prevention Clinic offers personalized and precision medicine for patients at increased risk for or survivors of gastrointestinal malignancies. As gastroenterologists, genetic counselors, oncologists, and surgeons. we work together in a multidisciplinary collaborative team to provide state-of-the art cancer risk assessment, genetic testing, management of hereditary syndromes, and cancer prevention strategies, such as control of inflammation in colitis.

GENERAL GASTROENTEROLOGY

The Center for General Gastroenterology provides comprehensive and innovative endoscopic and medical treatment for a variety of digestive disorders. Our physicians have experience and expertise in managing conditions such as heartburn and gastroesophageal reflux disease, acid-peptic disorders, colorectal cancer screening, occult and overt gastrointestinal bleeding, gastrointestinal infections and functional bowel diseases. Our general gastroenterologists are involved in robust clinical research programs including optimizing outcomes of patients hospitalized with upper and lower gastrointestinal bleeding, and improving quality of colorectal cancer screening.



SPECIALTY CENTERS

INFLAMMATORY BOWEL DISEASE CENTER

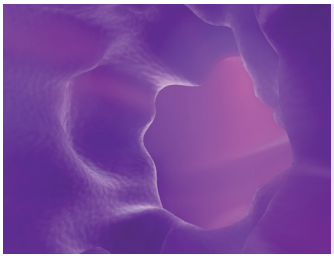
The Inflammatory Bowel Disease Center is committed to providing the highest caliber of care to patients who suffer from Crohn's disease, ulcerative colitis and related conditions. Outstanding patient care is at the center of everything we do, from providing state-of-the-art medical therapies and nutritional counseling, to using minimally invasive approaches for complex surgeries to decrease pain, scarring and recovery times, outstanding patient care is at the center of everything we do. In order to best serve our patients, we conduct ongoing medical research to advance our understanding of these conditions. We also deliver unique and highly relevant educational programs for patients and professionals. As one of only a limited number of research centers in the country testing new IBD treatments, we can offer a variety of clinical trial therapies—the most advanced treatments available—at the earliest possible time in patients' care. Every patient benefits from the expertise of our world-renowned clinicians and researchers, whose multidisciplinary, collaborative approach extends from patient care to advancing the science of medicine.

PANCREATIC DISEASE CENTER

Diseases of the pancreas require comprehensive care from a multidisciplinary and integrated team of experts. Our pancreatic disease team includes recognized leaders in specialties from gastroenterology to interventional radiology and pain management, and extends to include nutritionists, nurses and genetic counselors. Together, we offer unparalleled expertise in diagnosing and treating all types of pancreatic conditions, including severe acute and chronic pancreatitis, complications from pancreatitis, pancreatic pseudocyst and walled-off necrosis, treatment of large pancreatic duct stones using extracorporeal shock wave lithotripsy, pancreatic cystic lesions, genetic conditions that affect the pancreas including CFTR, PRSS1, CTRC and SPINK; and autoimmune pancreatitis, among others. IN conjunction with the Center for Endoscopic Research and Therapeutics, we are leaders in the use of minimally invasive, per-oral techniques for complex conditions that might otherwise require major surgery. We are also leaders in early detection in patients who are at high risk of developing pancreatic cancer. Our physician-scientists are involved in several multicenter research trials examining novel genetic links to pancreatitis and pancreatic cancer, new medications that improve outcomes after total pancreatectomy and islet autocell transplantation, and treatment outcomes after transmural treatment of walled-off necrosis, a complication from severe pancreatitis.

BASIC AND TRANSLATIONAL RESEARCH

At the heart of the Digestive Diseases Center lies basic and translational research, the latter defined as the application of basic knowledge to clinical practice. In this regard, our program is uniquely and intimately connected with the clinicians and clinical research programs at the University of Chicago Medicine. Within the Digestive Diseases Research Core Center (DDRCC), we focus on providing the best patient care by building a better understanding of gastrointestinal diseases in order to improve diagnosis, treatment and outcomes. Our research programs are supported by investigator-initiated grants of nearly $10 million per year from the NIH, Crohn's and Colitis Foundation of America, Castro-Intestinal Research Foundation of Chicago, Broad Medication Research Program, and other sources of extramural and philanthropic funds. The DDRCC promotes collaborative, multidisciplinary development of research and technology, and is one of only 17 such centers in the U.S. Our support of GI research has led to the discovery of the first IBD gene (NOD2), new understanding of the causes and management of celiac disease, insights into the role of gut microbes in complex immune disorders, and elucidation of the genetic and dietary mechanisms causing colon cancer. We are internationally renowned for our work on the gut microbiome, mucosal immunology, host-microbe interactions and cancer. Strong interactions and collaborations with Argonne National Laboratory and the Marine Biological Laboratory at Woods Hole (both affiliate research institutions of the University of Chicago) complement and extend



SPECIALTY CENTERS

our reach, as does our participation in SHARE, a consortium of seven research institutions whose pooled patient databases and other resources permit studies that otherwise could not be conducted by a single institution.

CLINICAL RESEARCH

At the University of Chicago Medicine, clinicians, patients and researchers participate in and benefit from a rigorously research-based approach to patient care. Year after year, we conduct or participate in more clinical trials than any other hospital in Illinois, offering patients and the physicians who refer them access to the most promising treatments and new standards of care. New ideas and new information shape our daily practice of medicine. They deepen our understanding of health and disease and amplify our ability to develop better treatments for all medical conditions, from the simplest to the most complex. Within the Digestive Diseases Center, a database of material pertaining to more than 5,000 patients, is the vital infrastructure for clinical trials of conventional and novel medical therapies intended to diagnose and treat a wide range of digestive diseases. In hepatology, we are currently conducting research in the areas of liver transplantation, fatty liver disease and other inflammatory liver disorders. Our research in nutrition is studying the impact of lactose intolerance in minority health outcomes, as well as obesity and celiac disease. Other studies are examining the optimization of colorectal cancer screening for average and high-risk patients, the effect of genetic counseling and the possibilities of chemoprevention. We are currently leading more than 200 research studies on human subjects with digestive diseases. This includes more than 20 IBD-related clinical trials, such as an NIH-supported human microbiome study that seeks to understand the role of intestinal microbes in the development of IBD. Whether working independently or as part of the multicenter research teams, we are asking—and answering—the questions that will lead to more effective treatments, better practice and better patient outcomes for healthcare professionals across the country and around the world.

CONTACT US

GI Physician Connect for referral assistance, patient appointments or consultations
1-844-UC GI DOC
1-844-824-4362

UCM Physician Connect for referrals
1-800-824-2282

UCM Transfer Connect for inpatient transfers
1-855-834-4782

UPCOMING EVENTS

SEPT **23-24** 2022	**ANNUAL UPDATES IN DIGESTIVE DISEASES MEETS ACING THE GI BOARD EXAM** Hybrid Event: **Virtual and In-person** Location: **David Rubenstein Forum, University of Chicago Campus** **1201 E. 60th St., Chicago** **Contact:** Amy Majkowski for additional information. **Amy2@uchicago.edu**
MAR **4** 2023	**WOMEN IN DIGESTIVE DISEASES: AT THE FOREFRONT** Location: **TBD** **Contact:** Amy Majkowski for additional information. **Amy2@uchicago.edu**

AT THE FOREFRONT
UChicago Medicine

WOMEN IN DIGESTIVE DISEASES: AT THE FOREFRONT

MARCH 26, 2022