

**University of Michigan Health System
Internal Medicine Residency
Gastroenterology/Liver – Inpatient Curriculum**

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Rotation Goals and Educational Purpose

Gastroenterology encompasses the evaluation and treatment of patients with disorders of the gastrointestinal tract, pancreas, biliary tract, and liver. It includes disorders of organs within the abdominal cavity and requires knowledge of the manifestations of gastrointestinal disorders in other organ systems, such as the skin. Additional content areas include nutrition and nutritional deficiencies, and screening and prevention, particularly for colorectal cancer.

The general internist should have a wide range of competency in gastroenterology and should be able to provide primary and in some cases secondary preventive care, evaluate a broad array of gastrointestinal symptoms, and manage many gastrointestinal disorders. The general internist is not expected to perform technical gastroenterology procedures. However, s/he must be familiar with indications, contraindications, interpretation, and complications of these procedures.

This rotation is mandatory for all residents at both the HO1 and HO2/3 levels.

Rotation Competency Objectives

In supplement to the University of Michigan Longitudinal Learning Objectives, the following provide an overview of the knowledge, skills, and behaviors promoted in this rotation.

- I. Medical Knowledge and Patient Care
 - a. Physical and radiologic diagnosis
 - i. By completion of the rotation, HO1 residents should be able to correctly perform appropriate physical examination maneuvers for the detection of common GI diseases.
 - ii. HO2 residents should additionally demonstrate knowledge of common GI radiologic diagnostic tools sufficient to diagnose urgent conditions as well as complications of common GI complaints.
 - b. Management of urgent GI conditions
 - i. By completion of the rotation, HO1 residents are expected to demonstrate knowledge sufficient for initial diagnostic suspicion and management of

common urgent GI conditions, detect “red flags” for potentially unstable conditions, and ensure provision of urgent care within a medically appropriate time frame. They must demonstrate sufficient time-sensitive diagnostic skills to recognize indications for surgical v. non-surgical patient management. HO1 residents must be able to suspect, form an initial diagnostic plan, and initially manage the following conditions with minimal supervision by the end of the rotation:

1. Gastrointestinal bleeding
 2. Abdominal infection
 3. Abdominal perforation
- ii. HO2 residents should additionally, by completion of the rotation, be able to discuss the initial diagnostic and therapeutic evaluation of specific GI conditions. They must provide care consistent with national guidelines (e.g. ASGE, ACG, AGA, AASLD) and prioritize both diagnostic and therapeutic plans for the following urgent conditions:
1. Acute appendicitis
 2. Acute cholecystitis
 3. Acute mesenteric insufficiency
 4. Acute hepatic failure
 5. Acute pancreatitis
 6. Perforated PUD
 7. Diverticulitis and diverticular perforation
 8. Acute upper and lower GI bleeding
- iii. HO3 residents should additionally demonstrate knowledge of the evidence base for management of common urgent GI conditions.
- c. Management of other common GI conditions
- i. By completion of HO2, residents must demonstrate knowledge of the etiology, risk factors, preventive interventions, pathophysiology, natural history, clinical presentations, diagnostic strategies, radiologic evaluation, initial management strategies, endoscopic indications, potential surgical interventions, and chronic care management for the following common GI conditions:
 1. GERD, esophagitis, and esophageal cancer
 2. Gastric emptying disorders
 3. Gastric cancer
 4. GI bleeding (upper) and H. Pylori infection
 5. Inflammatory Bowel Disease
 6. Diarrhea and malabsorption
 7. Colon cancer
 8. Acute pancreatitis
 9. Chronic pancreatic disease
 10. Pancreatic cancer
 11. Gallstone disease, biliary obstruction, and cholangitis
 12. Biliary tract cancer
 13. Liver disease, including: viral hepatitis, alcoholic liver disease, biliary cirrhosis, hemochromatosis, PSC, Wilson’s disease,

autoimmune hepatitis, alpha-1-antitrypsin deficiency, non-alcoholic fatty liver, Budd Chiari, and portal hypertension

14. Cirrhosis and its complications, including: variceal bleeding, hepatic encephalopathy, ascites, spontaneous bacterial peritonitis, acid-base disorders, and hepatorenal syndrome

- d. Performance of GI procedures
 - i. By completion of HO1, residents should be able to perform the following procedures with minimal verbal assistance:
 - 1. Nasogastric intubation
 - 2. Abdominal paracentesis
 - 3. Large bore peripheral IV placement
 - ii. All residents should additionally understand the indications, contraindications, preparation, and basic technique for colonoscopy.
- e. Management of nutritional disorders - HO3 residents should demonstrate knowledge of when and how to initiate enteral and parenteral nutrition. They should distinguish between alternative enteral feeding devices, partial and total parenteral nutrition indications, and PICC versus central line delivery.
- f. Management of life threatening acute and chronic conditions - HO3 residents should reflect understanding of
 - i. indications for liver transplantation
 - ii. palliative care options for patients with gastrointestinal malignancies, including laser therapy, luminal stents, blood transfusions, enteral and parenteral alimentation, radiation and chemotherapy, and hospice care.

II. Interpersonal and Communication Skills

- a. By completion of the rotation, HO1 residents are expected to
 - i. Be able to adapt history-taking skills to the mental status and psychosocial presentation of the patient and family.
 - ii. Under supervision and after having observed the attending or senior resident manage a similar interaction, successfully negotiate appropriate communication and management for a hostile or narcotic-seeking patient.
- b. HO2/3 residents should additionally be able to
 - i. Effectively communicate with patients and colleagues regarding the risks and benefits of GI diagnostic evaluation, addressing safety risks, and incorporating indications and contraindications for interventions;
 - ii. Under supervision, engage patients in informed consent discussions for GI procedures, respecting patient autonomy and promoting patient participation in health care decisions.

III. Professionalism

- a. HO1 residents are expected to:
 - i. Anticipate and address the complexities of family care at home, potential abusive relationships, possible medical compliance problems and financial limitations of health care.
 - ii. Describe the issues surrounding substance abuse in abdominal pain and chronic liver disease, especially in the context of liver transplantation.

- iii. Reflect understanding of appropriate indications to discuss DNR status with patients and families for patients with end-stage liver disease, gastrointestinal malignancy, and other life-threatening GI diseases. Sensitively respond to patient and family decisions regarding palliative care for terminal GI diseases.
 - b. HO2/3 residents additionally are expected to exhibit
 - i. Responsibility to identify a long term care provider for each patient, communicating with the long term provider to ensure continuity of care.
- IV. Practice-Based Learning and Improvement**
- a. HO1 residents must constructively respond to and internalize feedback from faculty, nursing, and allied healthcare providers. They must demonstrate willingness to change identified behaviors.
- V. Systems-Based Practice**
- a. By completion of the rotation, HO1 residents are expected to be able to
 - i. Direct cost-effective diagnostic and treatment plans for common GI symptoms, prioritizing cost effective interventions for appropriately tiered care plans.
 - ii. Effectively access and mobilize emergent and surgical care services.
 - b. HO 2/3 residents will additionally demonstrate ability to
 - i. Interface with allied professionals to assist in initial and long-term (post discharge) patient management.
 - ii. Identify psychosocial support/hospice care options for patients with terminal GI diseases.
 - iii. Know roles of GI/radiology/surgery/social work/nursing /anesthesiology in the team management of patients.
 - iv. Reflect awareness of pre- and post-endoscopy communications systems, facilitating patient transfers both to and from the medical endoscopy unit.

Teaching Methods

- I. Supervised Patient Care (including mix of diseases, patient characteristics, types of clinical encounters, procedures, pathologic material, services, the level of faculty supervision for all resident patient-care activities, and other services interacted with)**
 - a. The emphasis of the rotation is on experiential learning through management of hospitalized GI-liver patients. Residents perform initial hospital H&P and daily management care under the full supervision of a faculty gastroenterologist. Patient-centered, case-based faculty discussions review each patient.
 - b. Patients present from a broad age range and socioeconomic backgrounds, with a spectrum of local to quaternary care needs.
 - c. Residents perform abdominal paracentesis, nasogastric intubation, and peripheral IV placement under supervision until independent competency is demonstrated.
 - d. Residents interact with nurse case managers, GI fellows, and endoscopy techs while providing patient care; residents should consider all such interactions as opportunities for education.

- II.** Structured Didactics and Small Group Learning
- a. Faculty provide didactic and Socratic content covering core GI conditions. The content repeats each rotation block, ensuring adequate reinforcement of core content throughout training. Sessions occur in the afternoon.
- III.** Simulation training
- a. Dr. Zimmerman directs colonoscopy simulation training on a Tuesday afternoon during the rotation. Attendance is encouraged; Tuesday afternoon clinic residents are excused from this exercise but may arrange to work through the curriculum at another time. **SEE APPENDIX A** for instructions.
 - b. Procedure videos for abdominal paracentesis and nasogastric intubation should be viewed by all HO1 residents during the rotation. These are available online as posted by the New England Journal of Medicine (enter via the Taubman Library link for free access) at:
<http://content.nejm.org/misc/videos.shtml?ssource=recentVideos>
 - c. Peripheral IV insertion is separately taught in the simulation center for all interns. To request additional IV insertion simulation practice, contact Dr. Davoren Chick.
- IV.** Special projects
- a. Patient safety and systems improvement exercise: Any procedure-related complication is selected for evaluation of error. Such cases are selected on an as-needed basis. Residents review the case with the supervising attending for discussion of improvement opportunities and identification of measures to reduce future error risk.
 - b. “Endoscopy tour” exercise: Residents spend a half day in the medical endoscopy unit, observing and then assisting with upper and lower endoscopy procedures. Teaching endoscopes are available. Residents observe not only knowledge and skills necessary for safe procedural practice, but also the systems communication of endoscopy team personnel.
- V.** Independent study (including reading lists, and other educational resources) – Residents are expected to actively read core content regarding both their patient-based experiences and the common conditions as noted under the rotation learning objectives. The following resources are suggested and are available on line:
- a. Yamada – Textbook of Gastroenterology
 - b. Professional Society guidelines, as posted on websites:
 - i. ASGE: <http://www.asge.org/PublicationsProductsindex.aspx?id=352>
 - ii. ACG: <http://www.acg.gi.org/physicians/clinicalupdates.asp#guidelines>
 - iii. AGA: <http://www.gastro.org/wmspage.cfm?parm1=160>
 - iv. AASLD:
<https://www.aasld.org/eweb/DynamicPage.aspx?Site=AASLD3&WebKey=0ec30b12-5f13-413b-85ea-793bee8b0fef>
 - c. Recommended GI Radiology online learning resources include:
 - i. Acute Pancreatitis web support: “PancMap: A Guide to Early Assessment and fluid resuscitation of acute pancreatitis”, created by The Acute

- Pancreatitis Early Response Project (TAPER) at University of Michigan, led by Dr. Matt DiMagno. www.pancmap.net
- ii. Wayne State University's Department of Medicine has posted a simple teaching file showing normal abdominal CT anatomy. Know this basic information, viewed at:
http://www.med.wayne.edu/diagRadiology/Anatomy_Modules/Abdomen.html
 - iii. The University of Toronto "Techniques for Gastrointestinal Examinations" website:
<http://icarus.med.utoronto.ca/imaging/residents/gi%5Fimaging/index.htm>
 - iv. The University of Toronto "Focal Liver Lesions" website:
<http://icarus.med.utoronto.ca/imaging/residents/focalliverlesions/index.htm>
 - v. The University of Virginia's "Introduction to Gastrointestinal Radiology" is available at: <http://www.med-ed.virginia.edu/courses/rad/gi/index.html>
 - vi. eMedicine has a large spectrum of good quality brief reviews that include radiologic images, at:
<http://www.emedicine.com/radio/index.shtml#gastrointestinal>
 - vii. Dr. Elliott Fishman at Johns Hopkins University has posted excellent tutorial for CT of multiple organ systems at "CT is us":
<http://www.ctisus.com/organsys/index.html>
- d. GI clinical pathology cases with endoscopy images are provided by Dr. Raf Rizk and are available at www.giclinpath.com

Rotation Schedule

All inpatient care rounds meet at ***UH-6B***

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	6:00 Preround 7:30 Faculty Management Rounds 10:00 Resident D/C planning rounds 10:30 Morning Report	6:00 Preround 7:30 GI Conf 8:30 Faculty Management Rounds 10:00 Resident D/C planning rounds 10:30 Morning Report	6:00 Preround 7:30 Faculty Management Rounds 10:00 Resident D/C planning rounds 10:30 Morning Report	6:00 Preround 7:30 Faculty Management Rounds 10:00 Resident D/C planning rounds 10:30 Morning Report	6:00 Preround 7:30 Faculty Management Rounds 10:00 Resident D/C planning rounds 10:30 Morning Report
PM	12:00 Noon Conference 2:00 Teaching Rounds	12:30 Intern Report 2:00 Teaching Rounds	12:00 Noon Conference 2:00 Teaching Rounds	12:00 Noon Conference 2:00 Teaching Rounds	12:00 Grand Rounds 2:00 Teaching Rounds

Evaluation Methods

Learning goals are established with each resident by the attending at the beginning of the month. Formative face-to-face feedback to residents by attendings occurs at mid-month. Each month, attendings complete online competency-based evaluations of each resident. The evaluation is shared with the resident, is available for on-line review by the resident at his/her convenience, and is sent to the residency office for internal review. The evaluation is part of the resident file and is incorporated into semiannual performance reviews for directed resident feedback.

Following initial simulation center procedure demonstration and teaching, residents are assessed for procedural competency using a standardized performance assessment checklist.

Residents complete a service evaluation of the rotation faculty monthly.

APPENDIX A

Inpatient GI Colonoscopy Simulator Curriculum and Instructions For Residents and Students

Updated: May 2010
POC: Jennifer Jorgensen, pager 16185

During your time on the inpatient rotation, you will be able to use the colonoscopy simulator in the simulation center. We have reserved the simulator every Tuesday from 1 pm to 2 pm. The fellow on the service can take two to three residents and/or students down to the simulation center at a time – more will be too boring since there is only one simulator. The first time you go down, you will need to be oriented by the fellow. All fellows will need to be oriented by me as well as by the simulation center, but this will only take about 30 minutes – please arrange to do this prior to or during the first week of your inpatient rotation.

In addition to the practical experiences and didactics that are included on the simulator, you should also read the attached ASGE consensus statement on colorectal cancer screening.

Overall Learning Objectives

- Resident will be able to describe the anatomy involved in colonoscopy.
- Resident will demonstrate proper operation of the colonoscope.
- Resident will perform simulated colonoscopy with the goal of reaching the splenic flexure independently.
- Resident will be able to describe common lesions found during colonoscopy.
- Resident will be able to discuss techniques used for overcoming common problems such as looping or patient discomfort.
- Resident will demonstrate understanding of the indications and contraindications for colonoscopy.

Instructions and Check-list for completing your simulator training.

Basic information:

1. Please call Woojin Shim at 764-1312 to confirm the time you will be at the simulation center. Fellows - he will also be your initial point of contact to give you your ID code and password.
2. Please note that you must NEVER insert the scope into the mannequin until you have been instructed to by the simulator. If you do this improperly, the entire machine must be returned to the manufacturer to be repaired. Inserting the scope forcefully or too quickly can also cause the system to lock up. If this occurs, please shut down the system, remove the scope once the tension is released, and restart the system.
3. This is an old system. Please note that you have to push the mouse button firmly in order to navigate around the screen.
4. If you have problems with the equipment during your training, please contact Woojin. His desk is to the left as you walk in the main entrance of the simulation center.

Getting Started:

1. The endoscopy simulator is located in the large room through the first door on your right as you pass the main entrance of the center and is located on the wall opposite the door. Look for the plastic butt.
2. Open the front case and turn on the CPU.
3. Ensure that the speakers are on (they are just above the CPU).
4. Make sure the colonoscope (not the bronch or EGD scope) is connected to the simulator.
5. Make sure the plastic butt is attached to the front of the column.
6. You will need an ID and password to use the simulator. If you do not have one, contact me and/or Woojin.
7. Be sure you shut down the simulator at the end of your session. You do this just like you would shut down any computer.

Navigating the Didactic Training

1. Use only the didactics under the “colonoscopy” menu. First click on “introduction” (on the left) then hit “continue” (on the right).
2. Next click on “Didactic Content” then “procedure overview”. This will bring you to a screen which lists the following five categories
 - Patient selection
 - Anatomy
 - Patient preparation

- Technique
 - Clinical tips
3. Select “Patient Selection”, then “indications”. After you have read this, you can just hit “next item” at the bottom right of the screen to navigate through the remaining topics. Some of the topics include videos, so just hit the play button to view these.
4. Here is a list of all of the topics you may wish to cover:
- Patient selection
 - Indications
 - Contraindications
 - Complications
 - Anatomy
 - Embryologic
 - Gross
 - Endoscopic
 - Patient preparation
 - Patient education
 - Consent
 - Colon prep – skip this – it is outdated.
 - Premedication
 - Positioning
 - Technique
 - Scope operation
 - Anorectal exam
 - Insertion
 - Rectum to sigmoid
 - Encountering loops
 - Descending colon to splenic flexure
 - Transverse colon to cecum
 - Intubation of the terminal ileum
 - Inspection
 - Retroflexion
 - Clinical tips
 - Advancement with suction
 - Abdominal pressure
 - Patient positioning
 - Finding the lumen
 - Paradoxical motion
 - N-loop
 - Alpha-loop
 - Reverser alpha-loop
 - Alpha maneuver

5. When you finish with the last section under “clinical tips” hit “continue”. This will take you back to the main colonoscopy menu. You can then choose “Pathology Atlas” which will bring you to a screen with the following categories:
 - Normal mucosa
 - Polyps
 - Carcinoma
 - Diverticuli
 - Colitis
 - Vascular
 - Other

6. Choose “normal mucosa” then “anorectal” then use the “next item” to navigate through all of the pathology pictures. Here is a list of the topics you should cover:
 - Normal mucosa
 - Anorectal
 - Rectum
 - Sigmoid
 - Splenic flexure
 - Descending colon
 - Transverse colon
 - Skip hepatic flexure through terminal ileum
 - Polyps
 - Pedunculated-4
 - Sessile-5
 - Suction polyp
 - Carcinoma
 - 6 examples
 - Diverticuli
 - 2 examples
 - Colitis
 - UC – 3
 - Crohn’s – 2
 - Pseudomembranous – 2
 - Ischemic - 2
 - Vascular
 - Internal hemorrhoids
 - External hemorrhoids
 - Other
 - Melanosis coli

7. Then hit “continue” then “new module” then under “colonoscopy” choose “biopsy” then “continue”. This will give you another menu. Choose

“procedure overview”. The only topics you will want to view on this menu are “technique and clinical tips”. Here is a list of the topics you should cover:

- Technique
 - Scope operation
 - Biopsy forceps
 - Skip other sections - you don't need to know them yet.
- Clinical tips
 - Optimal distance
 - Submucosal tenting
 - Difficult locations

Practice Cases:

1. When you are done viewing the didactic information, click on “continue” then “new module” then under the colonoscopy menu, click on “introduction” then “continue” then click on the first case then click “continue”.
2. You will get a message that the machine is loading – DO NOT INSERT THE SCOPE UNTIL INSTRUCTED TO DO SO.
3. There are six standard cases to go through. At the end of each case, hit “continue”. This will take you to a feedback / summary page that gives you information about how much air you insufflated, how much colonic mucosa you visualized, how much pain you caused the patient, etc. After viewing, hit “continue” again and proceed to the next case.
4. After you have completed the six standard cases, you can choose “new module” then “biopsy” then “continue” and there are 6 additional cases. Do some of these if you have time.
5. Note that on the cases there is a virtual attending that can give you verbal guidance on how to maneuver the scope. You can also hit “external view” to see where you are in the colon.
6. When you are done for the day, hit “continue” to save your work, then “exit” then shut down the computer as you would any computer.

APPENDIX B

www.PancMap.net

TAPER Project
The Acute Pancreatitis Early Response Project

July 13, 2010
 University of Michigan

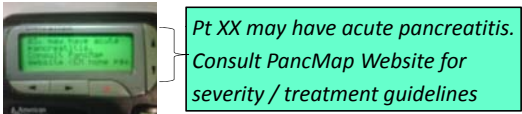
Matt DiMugno MD, Raf Rizk MD, Erick Wamsteker MD,
 Jeff Desmond MD, Bob Hyzy MD,
 Lena Napolitano MD

<http://www.PancMap.Net>


- ### Project Goals
- Provide point of care clinical decision support
 - Early recognition and risk stratification
 - Treatment milestones and goal directed resuscitation
- <http://www.PancMap.Net>

Emergency Dept Patient Screening

- A page will be sent to primary ED provider when Amylase or Lipase 3 X normal



<http://www.PancMap.Net>



- ### PancMap Website
- #### Utility in ED - Summary of Steps
- Establish diagnosis
 - Risk stratify early and repeatedly
 - Consider ICU evaluation with high severity score
 - Follow resuscitation treatment guidelines
 - Reassess frequently follow treatment milestones
- #### Utility in Hospital
- Educational tool to facilitate care among providers
- <http://www.PancMap.Net>