

# Welcome to the IBD Nurse Fellowship Program!



The program consists of 13 modules:

- Module 1 – Ulcerative Colitis
- Module 2 – Crohn's Disease
- Module 3 – Ulcerative Colitis vs. Crohn's Disease
- Module 4 – Management of Ulcerative Colitis
- Module 5 – Management of Crohn's Disease
- Module 6 – IBD and Surgery
- Module 7 – Medication Adherence in IBD
- Module 8 – Health Promotion and Maintenance in IBD
- Module 9 – Nutrition and IBD
- Module 10 – Extra-intestinal Manifestations of IBD
- Module 11 – Anemia in IBD
- Module 12 – Fatigue in IBD
- Module 13 – Anxiety and Depression in IBD

Each module is divided into sections, all of which are listed in the Table of Contents. The Table of Contents allows you to click on the page numbers to navigate to each section. Each page has a Home Button on the bottom right-hand corner that will take you back to the Table of Contents.

The learning objectives are at the beginning and end of each module. Before completing the module, you will have the opportunity to take a self-directed quiz, which will test your knowledge on several of the key concepts and takeaways from the module. It is recommended that you take the quiz and accomplish all of the learning objectives before moving on to the next module.



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# Module 3

## Ulcerative colitis vs. Crohn's disease

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# Learning objectives



After completing Module 3 you will be able to:

- Describe the key differences between ulcerative colitis and Crohn's disease
- List the common symptoms of ulcerative colitis and Crohn's disease
- Summarize the procedures involved in diagnosing both diseases





# Section 1

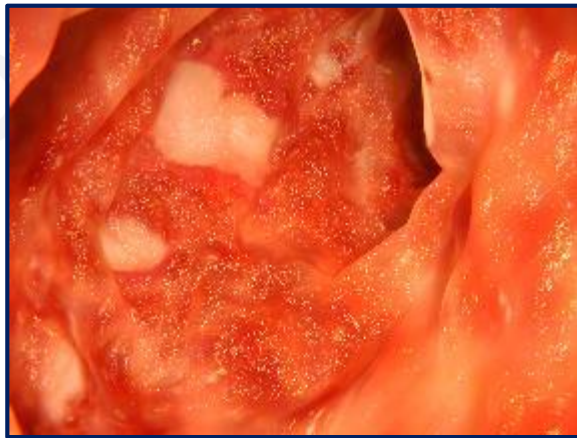
## What discerns ulcerative colitis and Crohn's disease?



# Ulcerative colitis vs. Crohn's disease

## Ulcerative colitis:

- Large intestine (colon) only
- Affects the mucosa of the large intestine
- Causes mucosal inflammation
- Bloody diarrhea is a common symptom
- Continuous inflammation with no patches of healthy tissue in the diseased section



Ulcerative colitis

## Crohn's disease:

- Transmural involvement and skipped lesions
- Can affect any part of the GI tract (aka "gums to bum"), including the large intestine (colon) and the ileum (last part of small intestine)
- Common features include fistulae, granulomas, deep abscesses, stenoses, and segmental lesions



Crohn's disease



# Section 2

## Symptomatology



# Comparison of common symptoms

Symptom	Ulcerative Colitis	Crohn's Disease
Abdominal pain	Sometimes (lower left quadrant)	Yes (lower right quadrant)
Anemia	Yes	Yes
Anorexia	No	Yes
Bloody diarrhea	Yes	No
Diarrhea	Yes	Yes
EIMs (joints, eyes, skin)	Yes	Yes
Fever	No	Yes
Perianal disease	No	Yes
Pubertal delay in pediatrics	No	Yes
Tenesmus	Yes	No
Weight loss	Sometimes	Yes

EIMs, Extra-intestinal manifestations.

Barton JR *et al.*, 1990; Greenstein AJ, 1979; Kanof ME *et al.*, 1988; Safar, B *et al.*, 2007.







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# Section 3

## Steps to diagnosis



# Procedures for diagnosing ulcerative colitis and Crohn's disease

- The following procedures can be applied to help identify and diagnose ulcerative colitis and Crohn's disease:
  - Blood tests
  - Stool tests
  - Colonoscopy
  - Barium swallow
  - Ultrasound
  - Computed Tomographic Enterography (CTE)
  - Magnetic Resonance Imaging (MRI)
  - MR Enterography
- These procedures are described in more detail on the following pages

# Blood tests

- Complete blood count (CBC)
  - Low hemoglobin and elevated platelets are commonly observed
- C-reactive protein (CRP)
  - Blood concentrations increase in response to inflammation
  - High levels usually indicates inflammation of the bowels
- Erythrocyte sedimentation rate (ESR)
  - Rate at which RBCs precipitate over a period of 1 hour
  - Rises with increasing colonic disease activity (does not reflect small bowel disease activity)
- Serology – ANCA and ASCA antibodies
  - May be done if IBD is unclassified
  - Many UC patients have ANCA's but no ASCA's
  - Many CD patients have ASCA's but no ANCA's
  - Some patients have neither antibodies
- Other common tests include:
  - Albumin, ferritin/iron studies, TSH, Vitamin B12, Vitamin D, total protein, liver enzymes and liver function tests, celiac serology

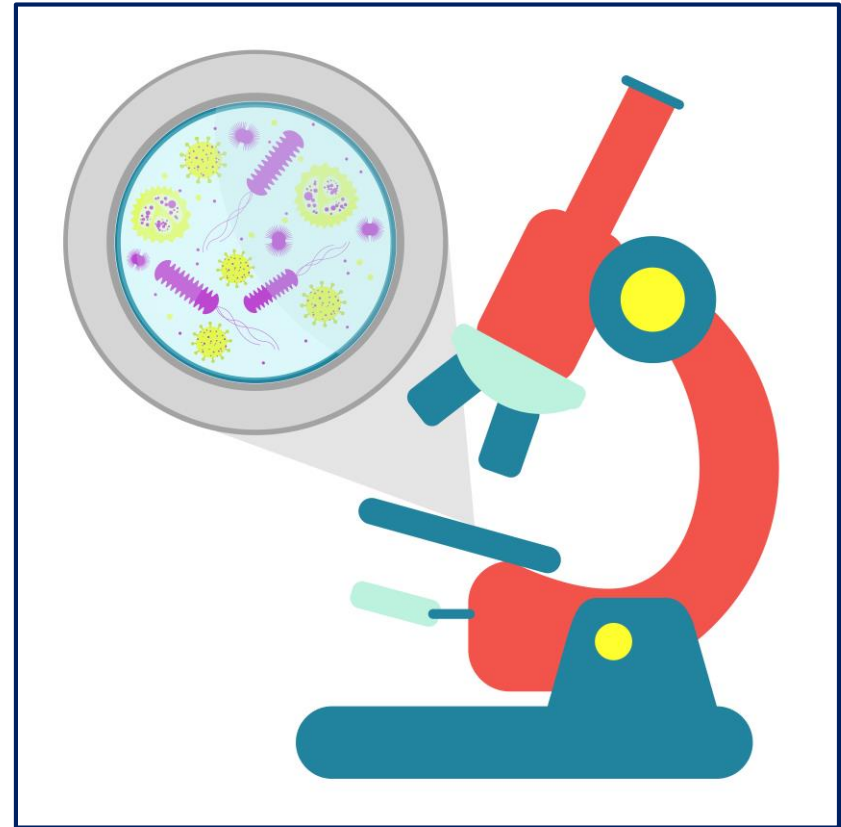


RBCs, red blood cells; ANCA, anti-neutrophil cytoplasmic antibody; ASCA, anti-Saccharomyces cerevisiae antibody; IBD, inflammatory bowel disease; UC, ulcerative colitis; CD, Crohn's disease.

Forbes A, 2003; Scholmerich J *et al.* 2003; Travis S *et al.*, 2003; [crohnsandcolitis.org.uk](http://crohnsandcolitis.org.uk).

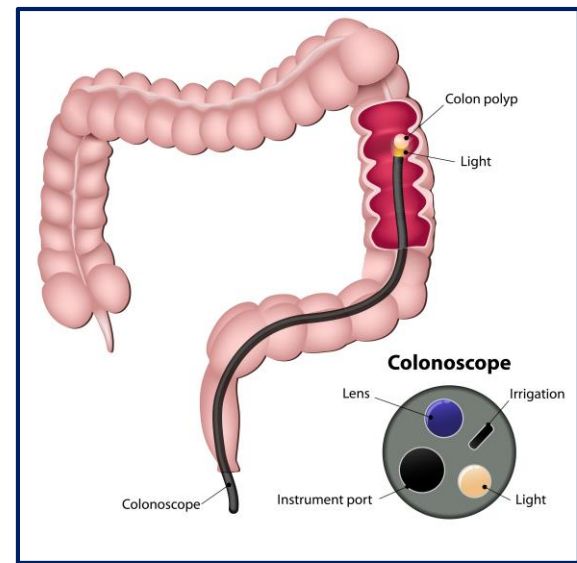
# Stool tests

- 1. Fecal calprotectin (FCP):**  
Elevated FCP indicates the migration of neutrophils to the intestinal mucosa which occurs during intestinal inflammation
- 2. Bacterial cultures:**  
To identify infection
- 3. Stool ova and parasite exam:**  
Detects parasites and their eggs
- 4. Clostridium difficile test:**  
Detects toxin produced by the opportunistic *C. difficile* bacterium



# Colonoscopy

- Considered the “Gold Standard”
- Visual examination from rectum to terminal ileum
- Allows for a biopsy to be collected and microscopically examined
- A colonoscopy can help to identify:



Colonoscopy

Ulcerative Colitis	Crohn's Disease
Chronic inflammatory cells in the lamina propria	Mucosal pseudopolyps
Focal fragmentation or cryptitis	“Cobblestoning” features
Marked architectural distortion	Granulomas may be present
Continuous involvement	Transmural, discontinuous
Inflammatory polyps and pseudopolyps	Abscesses/fistulae

Kadell BM, 2003; Salena BJ *et al.*, 1994; Soucy *et al.*, 2012.



# Barium swallow

- Also known as:
  - Esophagus-Stomach-Small Bowel (ESSB)
  - Upper GI Radiography with Small Bowel Follow-Through (UGI + SBFT)
- Allows for images of the esophagus and entire small bowel to be viewed
- Useful when lesions, fistulas, or strictures of the small intestine are suspected
- Patient ingests a chalky substance
- X-Rays are then taken as patient moves throughout different positions



Barium swallow of the esophagus

Batres *et al.*, 2002.

Image source: [https://openi.nlm.nih.gov/detailedresult.php?img=3420783\\_CRIM.OTOLARYNGOLOGY2012-406167.001&query=barium%20swallow&it=xg&req=4&npos=86](https://openi.nlm.nih.gov/detailedresult.php?img=3420783_CRIM.OTOLARYNGOLOGY2012-406167.001&query=barium%20swallow&it=xg&req=4&npos=86). Copyright © 2012 Ryan L. Kau et al.

# Ultrasound

- High frequency sound waves are transmitted by moving a probe over the abdomen
- Helps with evaluating bowel wall thickness and surrounding structures including:
  - Peri-intestinal inflammatory reactions
  - Extent and localization of involved bowel segments
  - Detection of extraluminal complications such as fistulae and abscesses
- Non-invasive with no radiation exposure



Ultrasound of the bowel

Dietrich CF, 2009.

Image source: [https://openi.nlm.nih.gov/detailedresult.php?img=3155120\\_1752-1947-5-294-2&query=ultrasound%20colon&it=xg&req=4&npos=44](https://openi.nlm.nih.gov/detailedresult.php?img=3155120_1752-1947-5-294-2&query=ultrasound%20colon&it=xg&req=4&npos=44). Copyright © 2011 Bousseaden et al; licensee: BioMed Central Ltd.

# Computed Tomographic Enterography (CTE)

- Provides detailed images of the small bowel by using an oral contrast media



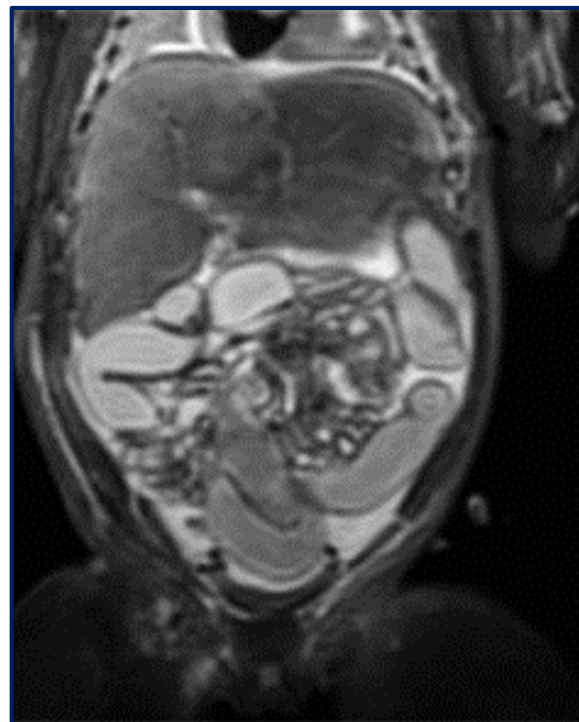
CT scanner

- Combines advantages of CT and enteroclysis
  - Extensive extraluminal information and visualization
  - Distension of small bowel for visualization
- Considered by some to be superior to other barium studies in the evaluation of symptomatic Crohn's disease
- Extremely useful for the detection of:
  - Fistulae
  - Abscesses
  - Skip lesions
  - Lymphadenopathy
  - Conglomeration of small bowel loops



# Magnetic Resonance Imaging (MRI)

- Uses a magnetic field and radio waves to create detailed images of the organs and tissues within the body
- Capable of detecting disease location, extent, and complications
- Particularly useful for assessing rectal/anal area and surrounding tissue, especially for Crohn's patients with pelvic and perianal fistulae and/or abscesses
- No radiation exposure but access to this technology can be an issue



MRI of the bowel

Lin MN, *et al.*, 2008.

Image source:

[https://openi.nlm.nih.gov/detailedresult.php?img=4381098\\_247\\_2014\\_3166\\_Fig15\\_HTML&query=Magnetic%20Resonance%20Imaging%20colon&it=xg&req=4&npos=25](https://openi.nlm.nih.gov/detailedresult.php?img=4381098_247_2014_3166_Fig15_HTML&query=Magnetic%20Resonance%20Imaging%20colon&it=xg&req=4&npos=25). Copyright © Arthurs OJ, et al. *Pediatr Radiol.* 2015.

# MR Enterography

- Magnetic resonance examination targeted at the small bowel
- Provides high-image resolution and excellent soft-tissue contrast without exposure to ionizing radiation
- Used to detect small bowel obstructions and small bowel fistulae and/or abscesses



MR enterography setting





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# Section 4

## Self-assessment quiz



# Self-assessment quiz



- Now that you have reviewed the module content, you have the opportunity to test your knowledge and understanding of the material by completing a self-assessment
- The assessment consists of 5 multiple choice questions
- Please attempt each question before looking at the answer key, which is located on page 26
- The answer key provides the rationale for each answer and indicates where the correct answer can be found in the module



# Question 1

Which of the following features is characteristic of ulcerative colitis?

- a) Transmural involvement and skipped lesions
- b) Continuous inflammation with no patches of healthy tissue in the diseased section
- c) Fistulae and segmental lesions
- d) Granulomas and deep abscesses

## Question 2

Which of the following features typically differs between Crohn's disease and ulcerative colitis?

- a) Area of the GI tract affected
- b) Mucosal inflammation
- c) Bloody diarrhea
- d) All of the above

## Question 3

Which of the following symptoms generally occurs in Crohn's disease but not in ulcerative colitis?

- a) Anorexia
- b) Diarrhea and abdominal pain
- c) Weight loss
- d) Tenesmus



# Question 4

Which procedure for diagnosing ulcerative colitis and Crohn's disease allows for a biopsy to be collected and microscopically examined?

- a) MR Enterography
- b) Fecal calprotectin test
- c) Barium swallow
- d) Colonoscopy



# Question 5

Which of the following diagnostic tests helps with evaluating bowel wall thickness?

- a) Computed Tomographic Enterography
- b) Magnetic Resonance Imaging
- c) Ultrasound
- d) MR Enterography

# Answer key

1. **The correct answer is b.** Continuous inflammation with no patches of healthy tissue in the diseased section is characteristic of ulcerative colitis. See page 6 for more information on this topic.
2. **The correct answer is a.** Crohn's disease can affect any part of the gastrointestinal tract, including the large intestine and the ileum, while ulcerative colitis affects the large intestine only. See page 6 for more information on this topic.
3. **The correct answer is a.** Anorexia is a common symptom of Crohn's disease but not ulcerative colitis. See page 8 for more information on this topic.
4. **The correct answer is d.** A colonoscopy allows for a biopsy to be collected and microscopically examined. It is considered the "Gold Standard" of tests for diagnosis of both ulcerative colitis and Crohn's disease. See page 13 for more information on this topic.
5. **The correct answer is c.** Ultrasounds help to evaluate bowel wall thickness. See page 15 for more information on this topic.

# Congratulations!



You have completed the 3<sup>rd</sup> module of the program.

Based on what you learned in Module 3, you should be able to:

- Describe the key differences between ulcerative colitis and Crohn's disease
- List the common symptoms of ulcerative colitis and Crohn's disease
- Summarize the procedures involved in diagnosing both diseases

If you have answered the quiz questions correctly and achieved the learning objectives, you are ready to move on to Module 4, which will focus on the management of ulcerative colitis.



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