

Inflammatory Bowel Disease (IBD)

◆ Definition

- IBD includes **Ulcerative Colitis (UC)** and **Crohn's Disease (CD)**, and sometimes **Indeterminate Colitis**.

🌐 Epidemiology

- Most cases of ulcerative colitis and Crohn's disease have their onset between ages 15 and 40.
- **Bimodal age distribution** for both disorders with a second peak between age 50 and 80
- Male = Female
- Whites > Blacks
- Jews more common than non-Jews

Incidence & Prevalence:

Disease	Incidence (/100,000)	Prevalence (/100,000)
CD	1–10	20–100
UC (more common)	3–15	50–80

- Jewish > non Jewish
- CD: Chromosome 16
- CD+UC: Chromosomes 3, 5, 7, 12, 19
- TNF, IL 1A, HLA A2, HLA DR1, DQW5 (CD), HLA DR2 (UC)
- **More than 300 mutations in Crohn's**

🧠 Age & Disease Pattern

- Bimodal but mainly in 20s
- Jews more commonly affected
- Peak age of productivity

◆ Definition

IBD includes two main chronic **relapsing-remitting** gastrointestinal inflammatory conditions:

- **Ulcerative Colitis (UC)**: Affects only the colon and rectum, with continuous superficial inflammation limited to the mucosa and submucosa, no skip lesions
- **Crohn's Disease (CD)**: Can affect any part of the GI tract from mouth to anus, with transmural inflammation and skip lesions.
- **Indeterminate Colitis**: Used when features overlap and cannot definitively categorize as UC or CD.

Definitions related to UC :

- **Pancolitis**: Inflammation involving the entire colon, from rectum to cecum.
- **Proctitis**: Inflammation limited to the rectum.
- **Left-sided colitis**: Inflammation extending from the rectum up to the splenic flexure.

⚙️ Etiology of Ulcerative Colitis

The **exact cause** of UC is **unknown**, but it's believed to result from an interaction between:

1. **Genetic susceptibility**
 - Family history of IBD is a major risk factor
2. **Immune dysregulation**
 - Overactive immune response to colonic flora
3. **Environmental triggers**
 - Infections, antibiotic exposure, smoking cessation
4. **Vascular**
5. **Psychogenic (80% of UC have depression)**
6. **Dietary (especially fast food)**

🧠 **Summary**: UC develops in genetically predisposed individuals exposed to environmental triggers that cause inappropriate mucosal immune responses against intestinal microbiota.

Ulcerative Colitis – Signs & Symptoms

- Bloody Diarrhea
- Tenesmus (since rectum is always involved)
- Urgency
- Abdominal Pain
- Fever
- Weight Loss
- Joint Pain
- Skin Rash
- Fatigue

 Main presentation is diarrhea with or without blood  First presentation needs to be chronic, if not, it may be infection which is the main DDx

▲ UC Severity (old classification)

Mild Disease

- Proctitis, proctosigmoiditis, distal colitis
- Intermittent rectal bleeding with mucus
- Mild diarrhea: < 4 small loose stools/day

Moderate Disease

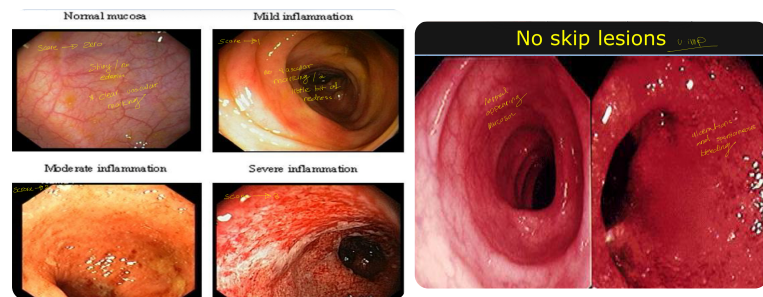
- More than distal colon
- Frequent loose bloody stools (up to 10/day)
- Mild anemia

Severe Disease

- Extensive colonic involvement
- >10 stools/day with cramps, fever (up to 39.5°C)
- Bleeding needing transfusion
- Rapid weight loss → poor nutrition state

Diagnosis of UC

- Depends on symptoms, signs, colonoscopy, labs
- Score Zero = clear vascular markings, no edema and shiny
- Score 1 = no vascular marking and a little bit of redness
- Score 2 = reduced vascularity
- Score 3 = severe bleeding/ulcerations



Initial presentation of UC

- Gradual onset of symptoms
- May follow a short episode of rectal bleeding weeks/months earlier
- 1/3 rectum/distal colon
- 1/3 up to splenic flexure
- 1/3 pancolitis
- <10% present with fulminant disease → sudden, severe, rapidly progressive can lead to life-threatening complications

Differential Diagnosis

- Always rule out infections
- Patients with IBD already at risk of infection so if you find infectious diarrhea that does not rule UC out
- Need further investigations

Diagnosis Summary

- History
- Typical endoscopic appearance
- Confirmed by histology from biopsy

Serological Markers

- pANCA: Positive

- ASCA: Negative
- Positive Predictive Value: 75%

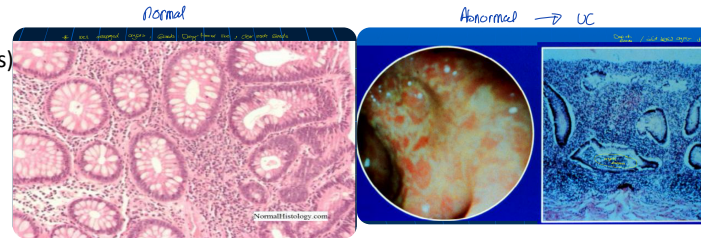
Labs & Imaging

- Stool: R&M, culture, C. difficile toxins, fecal calprotectin
- Imaging: CT, X-ray (important in acute settings)
- Thickened mucosa in UC



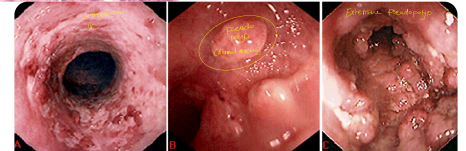
UC Pathology

- Changes limited to mucosa and submucosa (except in severe cases)
- Crypt distortion
- Cryptitis, crypt abscesses
- Lamina propria: acute + chronic cells
- Basal plasma cells and lymphoid infiltration = chronicity



Natural History of UC

- Intermittent flares alternating with remission
- Small % have ongoing symptoms with no remission
- Depends on disease extent
- Overall mortality only slightly increased



Mayo Score (new way to classify the patients , we depend mainly these 4 factors)

Variable
Bowel Movement Freq
Rectal Bleeding
Endoscopy
Physician Assessment

if : 9 and more -> severe

if : 5-9-> moderate

If : less than 5 -> mild

Ulcerative colitis: Endoscopic appearance of ulcerative colitis. Extensive ulceration of the mucosa is the most common endoscopic finding (panel A). The surface is irregular, friable, and erythematous, with loss of the normal vascular markings. Pseudopolyps may form as a reaction to inflammation (panel B); these can become quite extensive (panel C). Courtesy of James B McGee, MD.

Goals of IBD Therapy

- Achieve mucosal healing and induce remission (not achievable in all patients)
- Maintain steroid-free remission (but we actually use them in induction)
- Prevent and treat complications
- Avoid short and long-term drug toxicity
- Improve quality of life
- **Note: Not curable in all patients, but remission is possible (only long term free of symptoms but relapses can occur)**

Management of UC

Induction:

- Steroids (if 5ASA didn't work or if severe)
- 5-ASA (for mild and moderate) **THE MAIN STAY OF TREATMENT OF UC**
- Biologics (Infliximab)

Maintenance:

- 5-ASA
- AZA/6-MP
- Biologics (adalimumab , golimumab, vedlozumab, tofacitinib, ustiknomab) Start induction, bridge to maintenance

5-ASA in UC

- Acute oral phase: superior to placebo in all outcome variables
- Maintenance: 5-ASA > placebo; **similar to sulfasalazine (they have similar efficacy in the long term -> at least 12 months)**
- Topical 5-ASA: as or more effective than topical steroids
- Also useful for maintenance in distal disease
- Very useful in maintenance of remission

Corticosteroids in UC


- New formulations called (**cortement**): moderate efficacy
- The effect of this new drug starts at the terminal ileum and down)
- Only for **8 weeks induction**
- Not for long-term use
- 20% experience remission
- 40% respond
- 34% of UC patients received steroids
- **29% of those will have surgery within 1 year (disadvantage)**

AZA/6-MP in UC


- Induction: 64% (vs placebo 37%)
- Maintenance: 73%
- Risk reduction: 23%
- **Used only for maintenance**
- Keeps ~60% in remission after 1 year

Combo Treatment – SUCCESS Trial

Group	Steroid-Free Remission	Mucosal Healing
IFX + AZA	40%	63%
IFX	24%	55%
AZA	24%	37%

- They sound out that combining these 2 would give better results when using each alone BUT  **Not given >1 year, then switch to AZA or IFX alone**

Severe or Fulminant Colitis

- IV steroids 3–5 days
- If no response → Cyclosporine or Infliximab
- If still no response → Colectomy
- Surgical consult on Day 1  Medical Emergency you should treat quickly to Avoid perforation and massive bleeding

Indications for Surgery in UC

- Persistent symptoms **despite high-dose steroids**
- Steroid dependence
- Disease progression or new complications on max therapy
- Treatment-related side effects (e.g., steroids)
- **Dysplasia or colorectal cancer**

CRC in UC


- Risk ↑ in pancolitis → starts after 8–10 years
- Left-sided colitis → risk after 15–20 years
- **Proctitis → likely no increased CRC risk**
- UC + PSC → high CRC risk → **Annual colonoscopy**

Crohn's Disease – Pathology & Features

- **Transmural inflammation**
- **Skip lesions**
- Mouth to perianal involvement
- **Cobblestone mucosa**
- **Rectal sparing**
- Granulomas
- Fistulas, fissures, abscesses, anal stenosis

Crohn's Disease – Clinical Manifestations

Crohn's disease is characterized by:

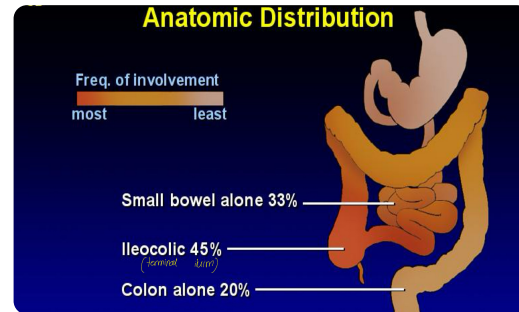
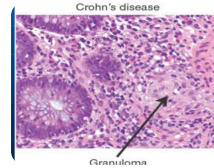
- **Transmural** (full-thickness) inflammation
 - **Skip lesions** (discontinuous disease)
 - Can affect **entire GI tract**: mouth → perianal area
-  involving all areas

Anatomic Distribution

- **Terminal ileum** (most common site)

Crohn's Pathology

- Transmural process
- Cobblestone mucosa
- Rectum usually spared
- Skip areas
- Fistulas, fissures, abscesses, anal stenosis
- **Epithelioid non-caseating granulomas**
- Chronic inflammation
- **Crypt architectural distortion**



Feature	Ulcerative Colitis (UC)	Crohn's Disease (CD)
Crypt distortion	✓ Common and prominent	✓ Present, but less specific
Depth of involvement	Mucosa & submucosa only	Transmural (full wall)
Other features	Crypt abscesses, basal plasmacytosis	Granulomas, transmural lymphoid aggregates

Distribution of Disease

- 80% = small bowel involvement (mostly distal ileum) → 1/3 have ileitis alone
- 50% = ileocolitis (ileum + colon)
- 20% = colon-only disease
- Small % = upper GI or oral
- 1/3 = perianal disease

Clinical Manifestations of CD

- **More variable than UC** due to transmural & patchy involvement
- Fatigue
- Prolonged diarrhea ± blood
- **Abdominal pain**
- **Weight loss**
- Fever
- 10% have no diarrhea
- Poor growth in children

More CD Manifestations

Ileitis / Ileocolitis / Colitis:

- Diarrhea
- Abdominal pain
- Weight loss
- Fever

Bleeding:

- Less frequent than UC

Perforation & Fistulae:

- Sinus tracts → serosal penetration → perforation

Perianal Disease:

- Pain
- Large skin tags
- Anal fissures
- Perirectal abscesses

- Anorectal fistulas

Other GI Sites:

- Severe oral disease
- Esophageal or gastroduodenal CD
- Sprue-like picture

📌 May present with bleeding, but less commonly than UC

🚑 Complications of CD

Local:

1. Intestinal obstruction
2. Severe hemorrhage
3. Acute perforation
4. Fistulae
5. Abscess formation
6. Toxic megacolon

📌 20–30% undergo surgery due to edema that causes SBO

📌 Workup

- History & physical
- Labs: CRP, ASCA (++) , ANCA (—)
- Stool studies
- Colonoscopy / endoscopy
- Imaging / capsule endoscopy

📌 To differentiate UC vs CD

⚠️ Systemic Symptoms

- Fatigue
- Weight loss
- Fever

⚠️ Extra-Intestinal Complications

Eyes:

- Conjunctivitis
- Uveitis
- Episcleritis

Musculoskeletal:

- Ankylosing spondylitis
- Sacroiliitis
- Peripheral arthritis

Hepatobiliary:

- Primary sclerosing cholangitis
- Steatosis
- Cholelithiasis

Vascular:

- Venous & arterial thromboembolism

Hematologic:

- Autoimmune hemolytic anemia

Skin:

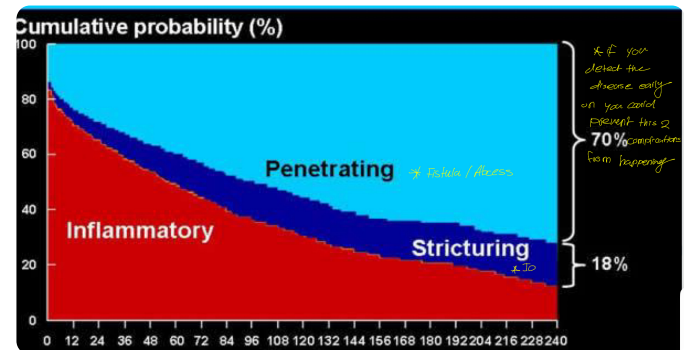
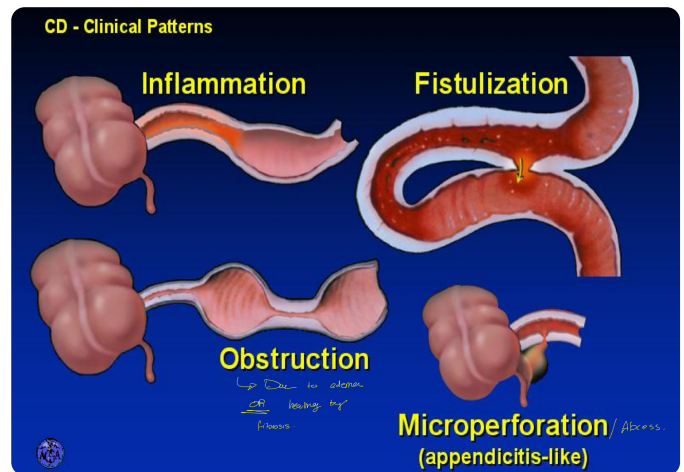
- Erythema nodosum
- Pyoderma gangrenosum

Renal:

- Renal calculi
- Ureteric obstruction
- Fistulas


Bone:

- Metabolic bone disease



📌 For assessment of CD use :




 If you start early on, you could prevent these complications

Treatment of CD

5-ASA in CD:

- Not very effective
- May be used depending on disease location
- High doses recommended
- Maintains surgical remission in some patients

 Even at high doses, not very effective

MTX in CD (only for CD)



- Used in induction and maintenance

Induction:

- MTX vs Placebo: 40% vs 19.1%,

Maintenance:

- MTX: 65%
- Placebo: 39%

 IM 15 mg/week  65% stay in remission after 1 year

AZA/6-MP in CD


Group	Remission Rate
Placebo	62%
AZA	73%

(6-18 months maintenance of remission)  Used for long-term maintenance

SONIC Trial


Corticosteroid-Free Remission at Week 50

Group	Remission
AZA + placebo	28.2%
IFX + placebo	39.6%
IFX + AZA	55.6%

 Best response with combination (but not used for more than 1 year)

Ileocolitis & Colitis in CD

- 5-ASA: Use sulfasalazine / mesalamine in mild disease
- Antibiotics: Metronidazole for abscess/infection
- Corticosteroids: Prednisone 40–60 mg/day for induction
- AZA/6-MP: Maintenance


 Only in mild disease

Refractory Disease

- Still symptomatic on steroids (steroid-resistant)
- Flares when tapering steroids (steroid-dependent)

Treat with:

- AZA / 6-MP
- MTX
- Infliximab
- Adalimumab
- Vedolizumab
- Ustekinumab

 Must try (AZA and MTX) for 16 weeks before switching biologics

Perianal Disease

- Fistula/abscess: Start with Metronidazole (10 mg/kg/day)

- Ciprofloxacin 500 mg BID if no response
- Add AZA/6-MP + Biologics
- Surgery if needed

Fistula Treatment

- Infliximab 5 mg/kg at weeks 0, 2, 6
- AZA 2–2.5 mg/kg or 6-MP 1–1.5 mg/kg
- Adalimumab: 33% healing

Surgery in CD

Indications:

- Obstruction
- Perforation
- Chronic disability
- Failed medical therapy

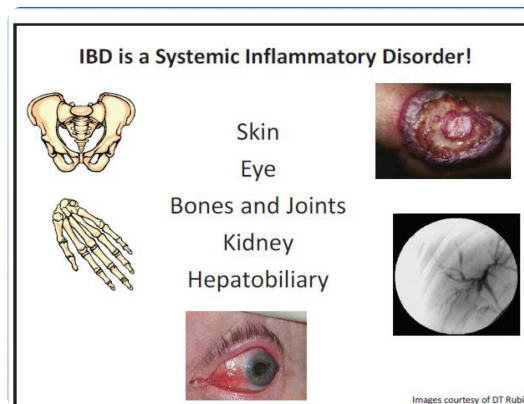
 *Limit surgeries – recurrence risk is high up to 50%*

Colorectal Cancer in CD

- CRC risk in CD \approx UC
- Depends on duration, extent, and age of onset

Systemic Complications (same for UC and CD)



- Eye: conjunctivitis, uveitis, episcleritis
- Joints: spondylitis, sacroiliitis, arthritis
- Liver: PSC, steatosis, gallstones
- Vessels: thrombosis
- Blood: hemolytic anemia
- Skin: erythema nodosum, pyoderma gangrenosum
- Kidneys: stones, obstruction
- Bones: metabolic bone disease




Drug Comparison Table – UC vs CD

Drug	UC	CD	Notes
5-ASA	✅ First-line (oral & topical)	❌ Limited use, not effective	Works best in mild-moderate UC, esp. distal disease
Steroids	✅ Induction of remission	✅ Induction of remission	Not for maintenance; taper off once stable
AZA / 6-MP	✅ Maintenance	✅ Maintenance	Used in steroid-dependent/resistant patients
MTX	❌ Not used	✅ Induction + maintenance	IM/SC 15 mg/week; best after surgery or for flare-ups
Infliximab	✅ Severe or refractory UC	✅ Moderate–severe CD, fistula	Biologic; anti-TNF agent
Adalimumab	❌ (off-label occasionally)	✅ Moderate–severe CD	Preferred SC option for CD
Vedolizumab	✅ Moderate–severe UC	✅ Moderate–severe CD	
Ustekinumab	❌ Limited data	✅ Moderate–severe CD	
Antibiotics	❌ Rare use	✅ Perianal disease, abscess	Metronidazole, Ciprofloxacin — not for remission alone


Most Famous Mnemonics for Ulcerative Colitis (UC)


1. COLON –  What defines UC →  Use this to distinguish UC from Crohn's!

Letter	Stands for
C	Continuous inflammation (no skip lesions)
O	Only affects colon
L	Limited to mucosa & submucosa
O	Originates at rectum
N	Neutrophil-rich crypt abscesses

2. ULCERATIVE –  Features of UC


Letter	Stands for
U	Ulcers in colon
L	Large intestine only
C	Continuous lesions (not skip)
E	Extraintestinal manifestations
R	Rectal involvement always
A	Abscesses in crypts
T	Toxic megacolon risk
I	Increased cancer risk (CRC)
V	Very bloody diarrhea
E	Exacerbations & remissions (cyclic)

 This one's gold for covering **everything in one mnemonic** — high-yield & memorable.

3. CHRONIC BLEED –  Classic symptoms

Letter	Symptom
C	Cramping abdominal pain
H	Hematochezia (bloody stool)
R	Rectal pain / tenesmus
O	Ongoing urgency to defecate
N	No skip lesions
I	Inflammatory markers ↑ (ESR/CRP)
C	Colon involvement only
B	Bowel movement frequency ↑
L	Loss of weight
E	Extraintestinal symptoms
E	Endoscopic ulcers
D	Dysplasia risk

4. pANCA = p-ANCA Positive in UC

 Simple but high-yield.

"positive pANCA in UC"
Whereas Crohn's = ASCA +

5. "RED COLON" – ● *Visual image in endoscopy*

Letter	Finding
R	Red, friable mucosa
E	Erosions
D	Diarrhea (bloody)
C	Continuous inflammation
O	Only colon affected
L	Loss of haustra (lead pipe on imaging)
O	Onset at rectum
N	No granulomas on biopsy

🎓 Bonus: UC vs Crohn's Quick Mnemonic

UC	Crohn's
pANCA +	ASCA +
Continuous	Skip lesions
Colon only	Any part of GI tract
Superficial	Transmural
Crypt abscesses	Granulomas (non-caseating)

Famous & High-Yield Mnemonics for Crohn's Disease

1. CROHN'S – Core Features of Crohn's 🍌

Letter	Meaning
C	Cobblestone mucosa (seen on colonoscopy)
R	Right lower quadrant pain (terminal ileum)
O	Obstruction from strictures
H	High fistula risk
N	Non-caseating granulomas (on biopsy)
S	Skip lesions & Smoking worsens it

💡 This one's a **legend** – if you memorize one mnemonic, it's this.

2. GUT WALL – Pathology & Extent 📋

Letter	Meaning
G	Granulomas (non-caseating)
U	Ulcers (deep, linear)

T	Transmural inflammation
W	Wall thickening (seen on imaging)
A	Anywhere in GI tract
L	Linear ulcers / Longitudinal fissures
L	Lymphoid aggregates

🧠 Helps when recalling **histology** and imaging findings.

3. NO COLON = CROHN? 🧠

Nope! It's misleading – Crohn can affect the colon **but not limited to it** (unlike UC).
So here's a comparison booster:

📊 Crohn vs. UC – Quick Mnemonic:

◆ Feature	◆ Crohn's	◆ UC
Location	Anywhere GI	Colon only
Pattern	Skip lesions	Continuous
Depth	Transmural	Mucosal only
Granulomas	Yes (non-caseating)	Rare
Smoking	Worsens Crohn	Improves UC
Bloody stool	Rare	Common
Fistulas/abscess	Common	Rare
Surgery	Not curative	Often curative

🧠 You can remember this contrast using:

“Crohn Crawls everywhere, UC is Colon-Confined”

4. “Hot Mess GI Tract” – Visual Aid 🧠

Use this phrase to remember:

- **Hot** = inflammation
 - **Mess** = ulcers, cobblestoning, fistulas
 - **GI Tract** = mouth to anus involvement
- Great for picturing how Crohn wreaks havoc *everywhere*.
-

5. ASCA+ = Crohn

Simple board favorite. Just remember:

- **ASCA (Anti-Saccharomyces cerevisiae antibody)** = Positive in Crohn's
- **pANCA** = Usually UC

🗨️ Tip: "ASCA = Anywhere (Crohn)"

Feature	Crohn's Disease 📦	Ulcerative Colitis 🩸
Location	Anywhere in GI tract (mouth to anus)	Only colon and rectum
Common sites	Terminal ileum, colon	Rectum, left colon (starts distally)
Pattern of inflammation	Skip lesions (patchy, discontinuous)	Continuous from rectum proximally
Depth of inflammation	Transmural (full thickness)	Mucosal + submucosal only
Granulomas	Yes – non-caseating (diagnostic if found)	Rare or absent
Bleeding	Minimal or absent	Common – bloody diarrhea is hallmark
Fistulas & strictures	Common (due to deep inflammation)	Rare
Perianal disease	Common (fissures, abscesses, fistulas)	Rare
Cobblestone appearance	Classic endoscopic finding	No – mucosa appears red, friable, ulcerated
Smoking	Worsens Crohn	Protective in UC (weird but true)
Surgical cure	❌ No – recurrence likely after resection	✅ Yes – total colectomy is curative
Cancer risk	↑ with colonic involvement	↑↑ especially with pancolitis >8–10 years
Antibody markers	ASCA+ (Anti-Saccharomyces)	pANCA+
Extraintestinal features	Present (joints, eyes, skin, liver)	Same (sometimes more with UC + PSC)
Toxic megacolon risk	Rare	More common, emergency
Imaging findings	Strictures, fistulas, wall thickening	Lead-pipe colon (loss of haustra)
Bowel wall on imaging	Thickened, fibrotic, "creeping fat"	Thinner wall, more superficial damage
Typical age of onset	Teens–30s, but can occur at any age	15–40 years (same)

🗨️ Easy memory hook:

| Crohn's = **C**rawls, **C**racks, **C**obblestone
 | UC = **U**lcers, **C**ontinuous, **C**olon-only