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Updates in Diagnosis & Treatment of Inflammatory Bowel Disease:

Practical Aspects for the Primary Care Provider

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Ann & Robert H. Lurie Children's Hospital of Chicago
May 19, 2024

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I have no financial disclosures

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Objectives

- At the conclusion of this session, participants should be able to:
  - Recognize the clinical features and complications of inflammatory bowel disease (IBD)
  - Differentiate between the two main subtypes of IBD: Crohn's disease and ulcerative colitis
  - Identify "red flags" in undiagnosed patients in the primary care setting to determine further workup
  - Summarize diagnostic and treatment options in patients with IBD including medications, surgical management, and dietary therapies
  - Describe special considerations for health maintenance in patients with IBD

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Defining Inflammatory Bowel Disease

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What is Inflammatory Bowel Disease?

Group of idiopathic disorders characterized by **chronic** inflammation of the GI tract

- No cure
- 2 main subtypes
  - Ulcerative Colitis (UC)
  - Crohn's Disease (CD)

**Indeterminate colitis (IBD-U) more commonly seen in pediatric IBD*

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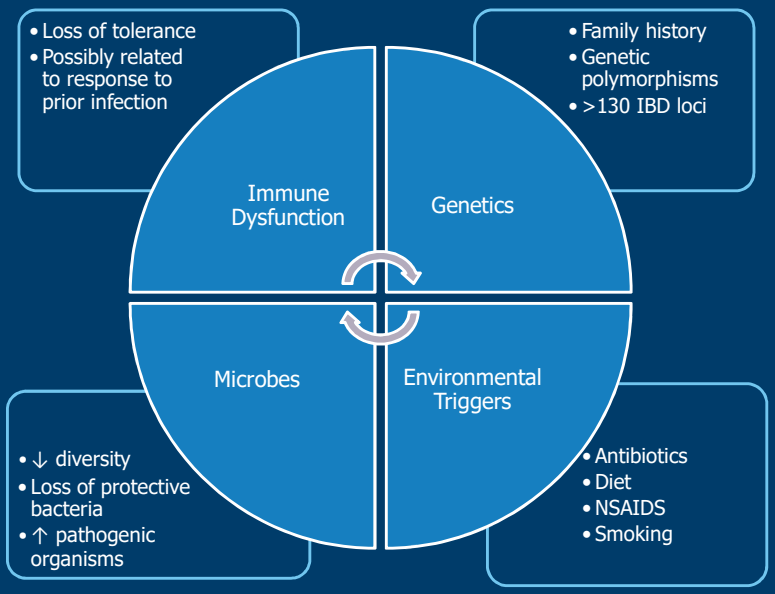
Etiology of IBD

- "It's complicated"



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Etiology of IBD: The Perfect Storm

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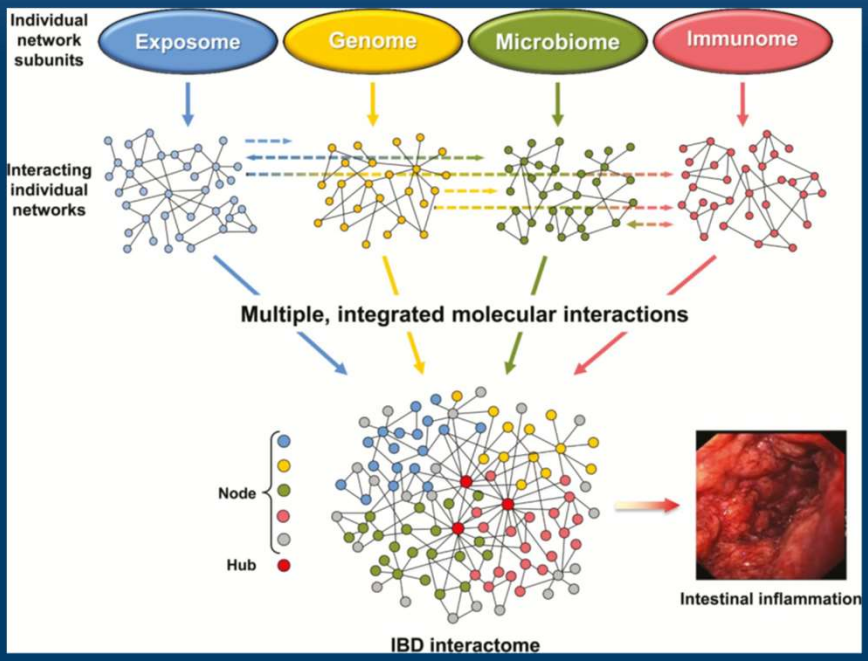

de Souza HSP, et al. Inflamm Bowel Dis. 2018;24(4):671-679.

Increasing Incidence of IBD

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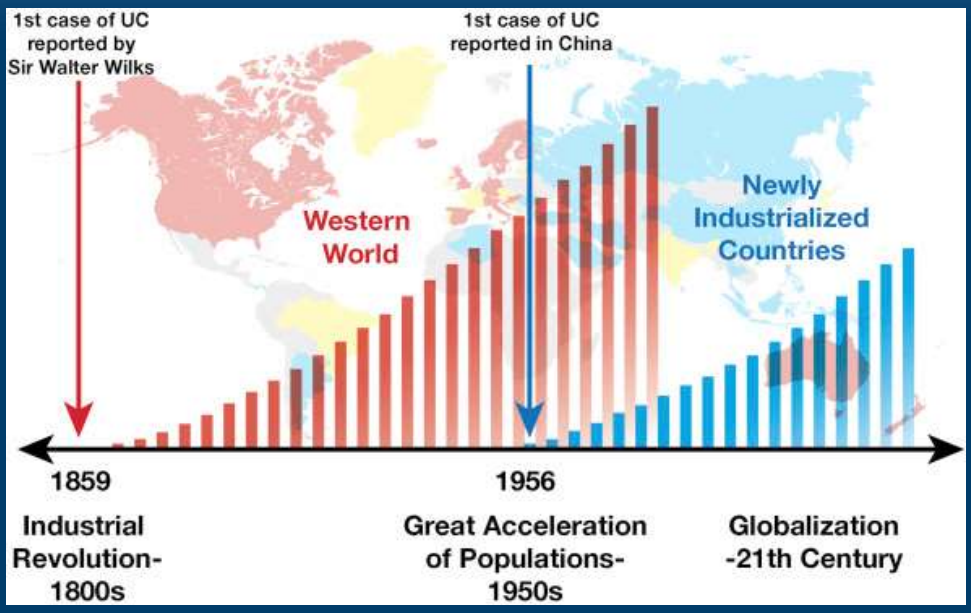

Kaplan G, Ng S. Gastroenterology. 2017;152(2):313-321.

Crohn's Disease vs. Ulcerative Colitis
Location, Location, Location!

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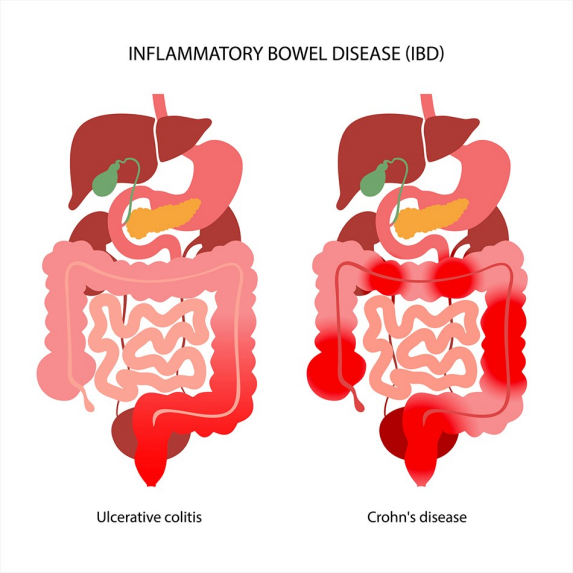

https://www.hopkinsmedicine.org/health/conditions-and-diseases/inflammatory-bowel-disease

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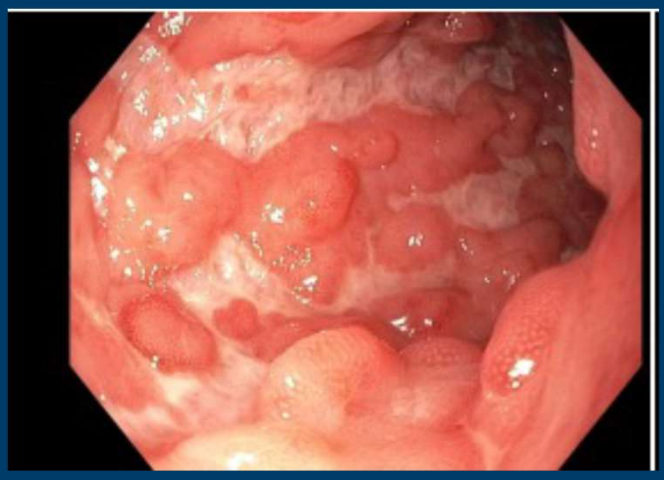
Characteristics of IBD: Crohn's Disease

- Any part of GI Tract
- Discontinuous (skipped lesions)
- Rectal sparing
- Presence of granulomas
- Transmural inflammation
- Fistulae and abscesses
- Strictures = more common
- Perianal Disease



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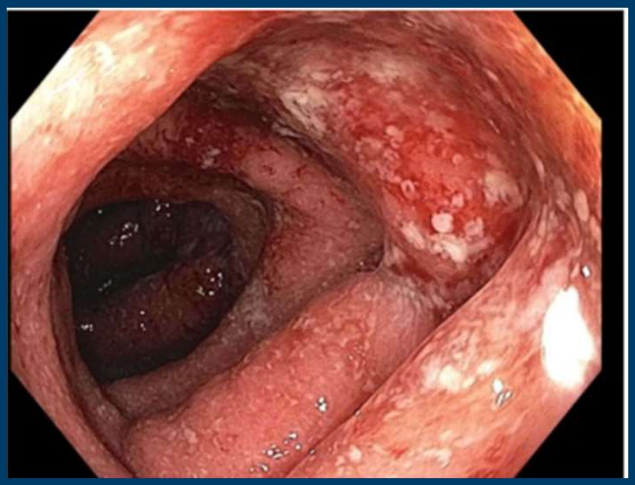
Characteristics of IBD: Ulcerative Colitis



- Colon/rectum only
- Continuous
- No rectal sparing
- No granulomas
- Mucosal inflammation
- Abscesses very rare
- Strictures = rare

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Clinical Presentation of Inflammatory Bowel Disease

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Clinical Presentation of IBD

- Classic Presentation (80%)
  - Abdominal Pain
  - Diarrhea
  - GI bleeding
  - Nausea/vomiting
  - Early satiety
  - Weight loss
  - Oral ulcerations
  - Perianal disease
- Atypical Presentations
  - Growth Failure (pediatric)
  - Anorexia
  - Malaise
  - Fever of unknown origin
  - Endocrine
  - Pubertal Delay (pediatric)
  - Hematologic
  - Anemia
    - Micro, macro, or normocytic

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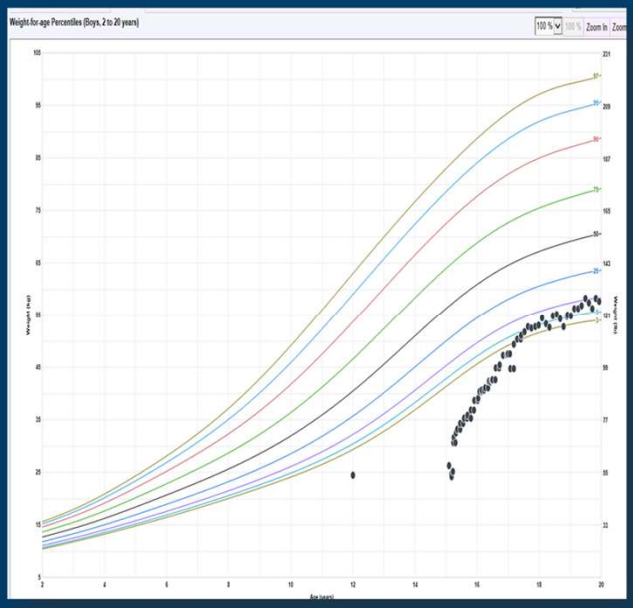
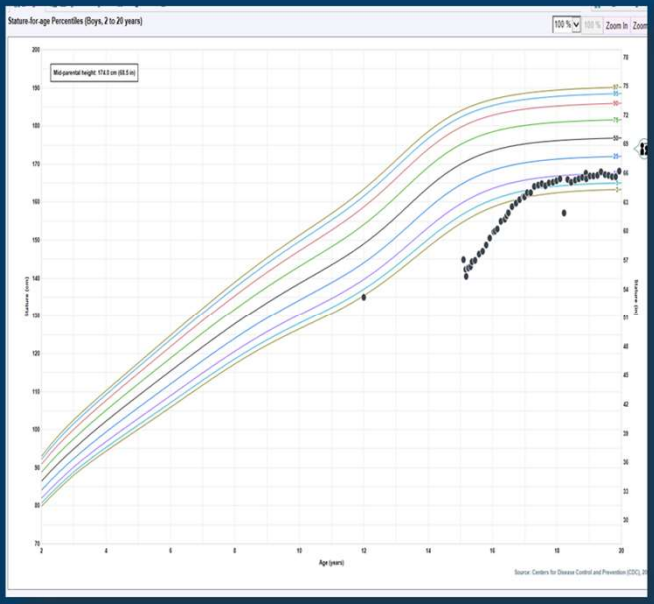
Clinical Presentation of IBD: Growth Failure





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1st primary care pearl: pay attention to their growth curves!

If caught earlier there is a better chance to salvage the growth

Symptoms in Crohn's Disease

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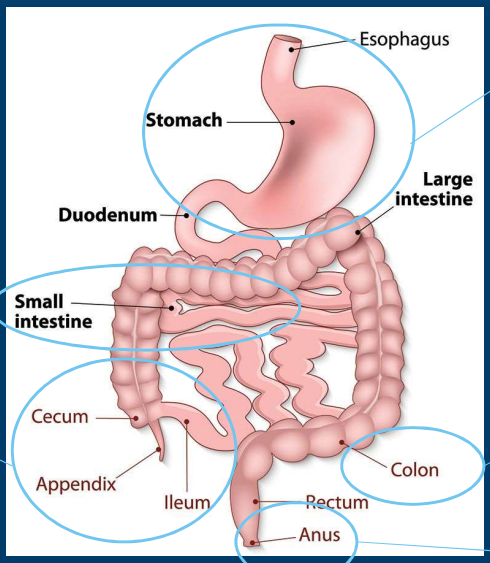
SMALL BOWEL:
Similar to ileocolic, fistulae/abscesses with severe disease

ILEOCOLONIC:
Diarrhea, cramping, weight loss, periumbilical/RLQ pain



UPPER GI TRACT:
Mouth sores, Dysphagia, odynophagia, anorexia, weight loss, nausea, vomiting, epigastric pain

COLONIC:
Diarrhea, hematochezia

PERIANAL:
Fistulae, abscesses, fissures

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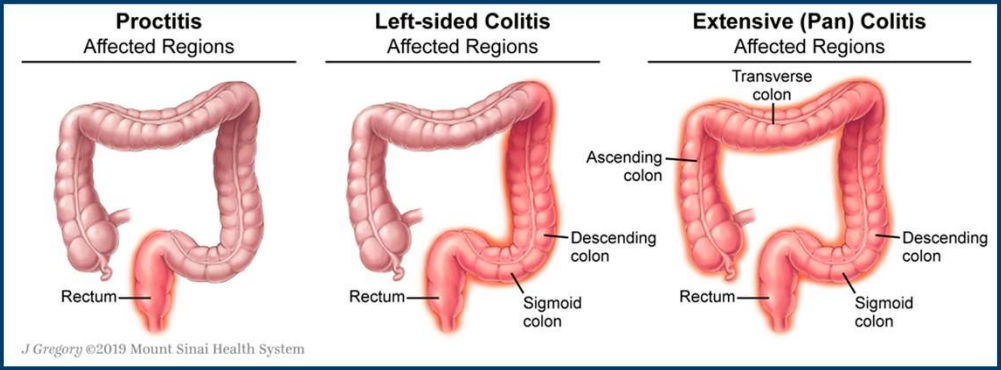
Symptoms in Ulcerative Colitis



Proctitis
- Rectal bleeding
- Rectal pain
- Urgency
- Formed stools

Left-Sided Colitis
- Anorexia
- Weight loss
- Bloody diarrhea
- LLQ pain

Pancolitis
- Anorexia
- Weight loss
- Bloody diarrhea
- Abdominal pain

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Extraintestinal Manifestations

- May precede GI symptoms
- 25-35% of patients with IBD
- Parallel disease activity, **or** have course independent of intestinal disease
- Most common in colonic disease

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Extraintestinal Manifestations

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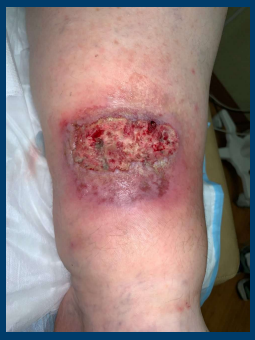
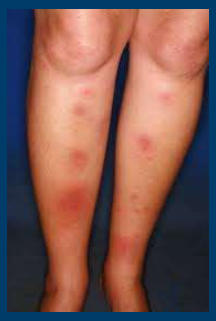
Extraintestinal Manifestations

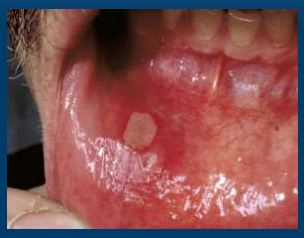
https://www.aao.org/eye-health/diseases/what-is-uveitis



https://carolinefifemd.com/wp-content/uploads/2022/08/Pyrodema-Gangrenosum-4-980x1307.jpg



https://www.dermatologyadvisor.com/home/decision-support-in-medicine/dermatology/erythema-nodosum-leprosum-leprosy/



https://dermnetnz.org/topics/aphthous-ulcer

https://radiologykey.com/sacroiliitis/

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Diagnosis of Inflammatory Bowel Disease

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Mimickers of IBD

- Disorders of the gut brain interaction (DGBI)
- Celiac disease
- Infectious diarrhea
  - C. difficile
  - Stool culture
  - Ova & Parasite
- Polyps
- Hemorrhoids
- Malignancy
- NSAID use
- Peptic Ulcer disease

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Red Flag Signs & Symptoms

- Constitutional symptoms
  - Weight loss, fevers
- Poor growth
- Dysphagia/odynophagia
- Nocturnal awakenings
- Pain localized away from the umbilicus
- Significant change in bowel patterns
- Persistent diarrhea
- GI bleeding
- Perianal Disease (LOOK!!!)
- Family history of significant GI disease autoimmunity

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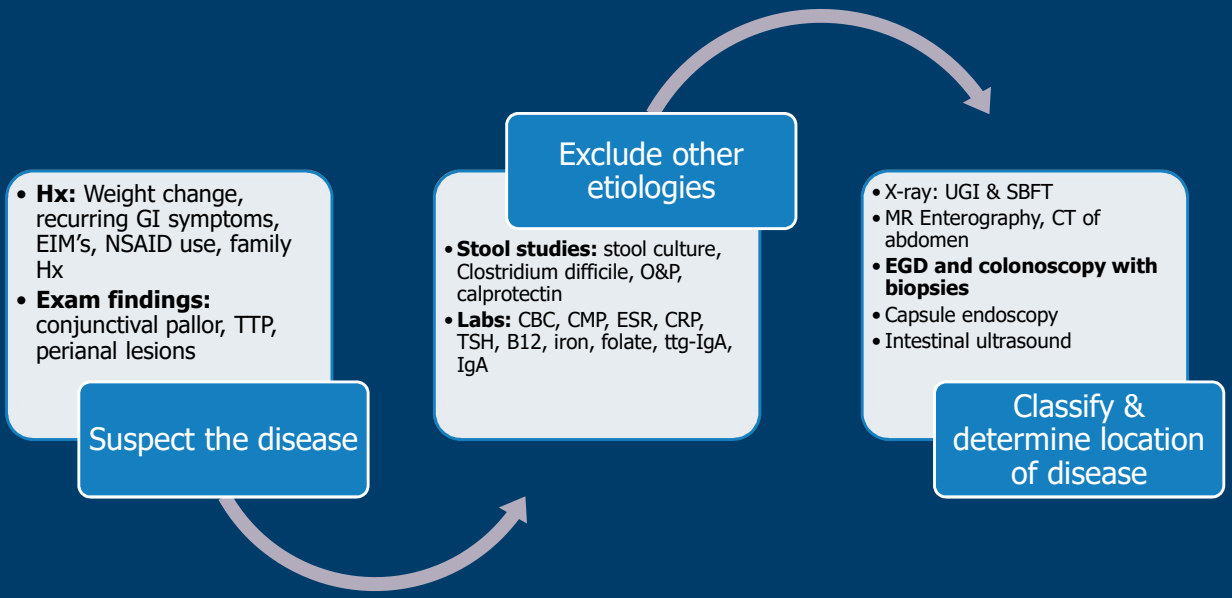
Abdominal pain: Persistent, No apparent correlating factors, Lingers after bowel movements OR relief with vomiting

Diagnostic Approach in IBD



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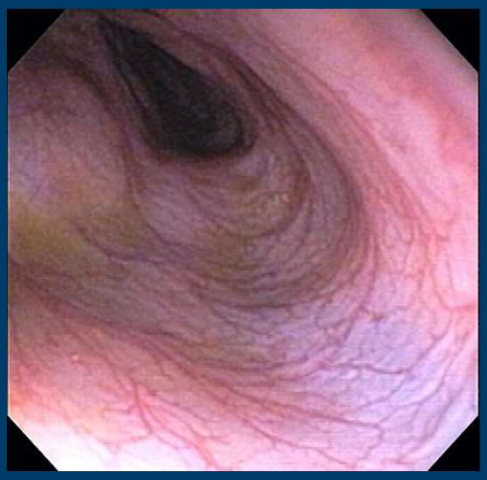
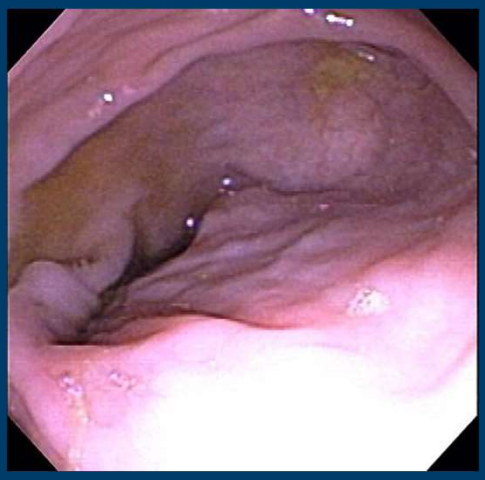
What Does Normal Bowel Look Like?





Endoscopic Findings of Inflammatory Bowel Disease

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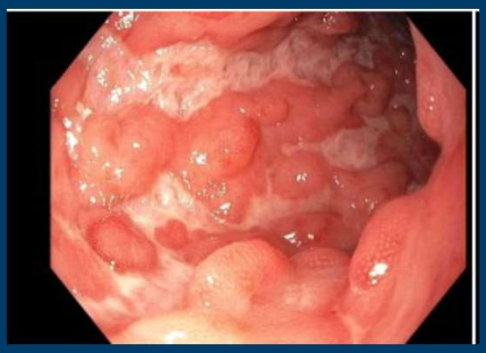
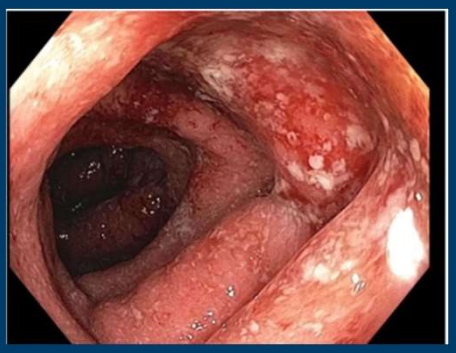
Crohn's Disease



Ulcerative Colitis



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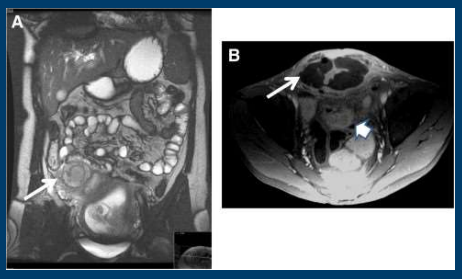
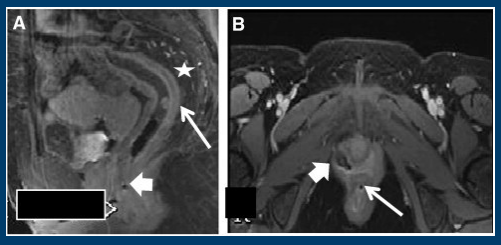
Indications for Small Bowel Imaging

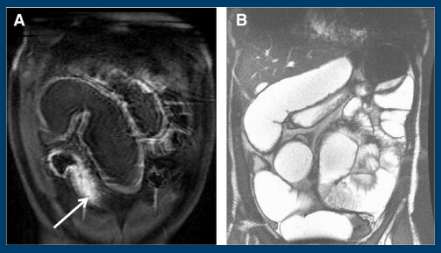
- Determine degree of small bowel involvement
- Evaluate response to medical therapy
- Assess for strictures, abscesses, or fistulae



Abdominal wall abscess



Rectovaginal fistula



Fibrostenotic stricture

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Treatment of Inflammatory Bowel Disease

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Goals of IBD Management

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
- NO STEROIDS
- Prevention of return of inflammation over time (sustained and durable)
- Changing the natural course of the disease

Disease Monitoring and Prevention

- Monitoring for early return of inflammation
- Monitoring therapies
- Prevention of infections
- Access
- Cost-effectiveness

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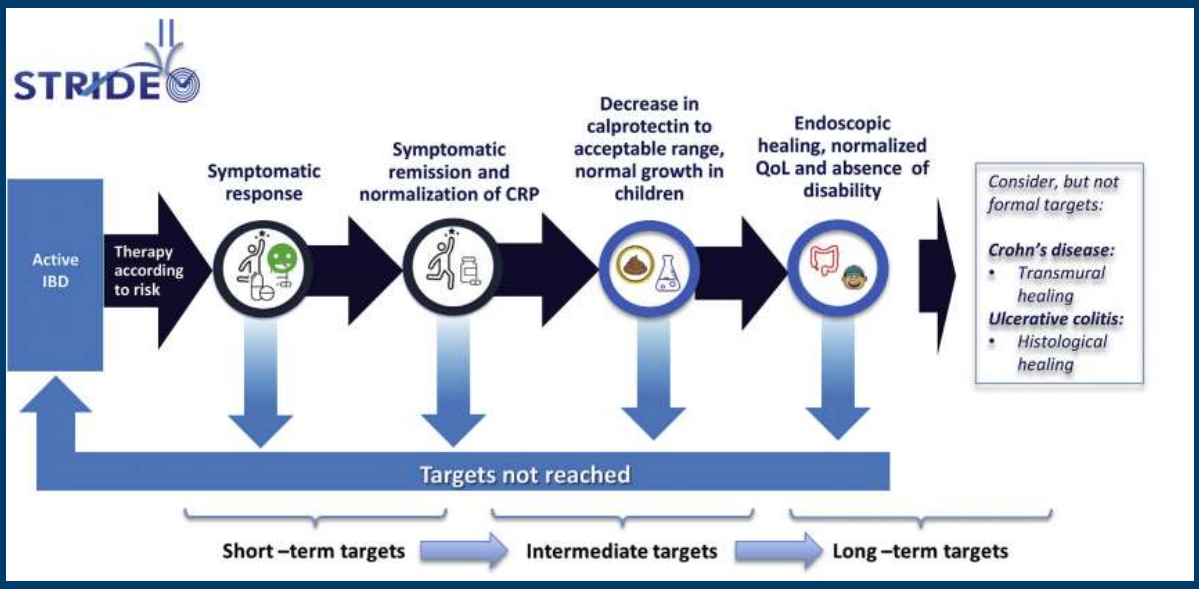
Treatment Targets in IBD



Turner D, et al. Gastroenterol 2021;160:1570-1583.

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Modern Treatments for IBD

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Immune modification/suppression

- 5-ASA (?)*
- Steroids
- Thiopurines/methotrexate
- Anti-TNFα therapies*
- Anti-integrin therapies
- Anti-IL12/23
- JAK inhibitors
- S1P receptor modulators

Microbiota manipulation

- Dietary therapies (exclusion diets)
- Antibiotics
- Prebiotics
- Probiotics
- Intestinal microbiota transfer

Surgery

- Resection of fibrostenosis
- Resection in medically resistant disease

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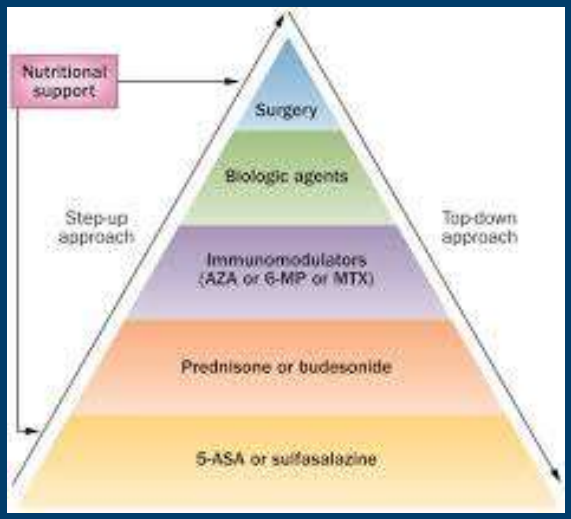
Patient Risk Stratification

Inflammatory bowel disease (IBD) encompasses a heterogeneous group of conditions

Appropriateness of "top down" vs. "step up" approach needs to be individualized based upon patient risk stratification



Aloi M et al. *Nat Rev Gastroenterol Hepatol.* 2014;**11**:99–108.

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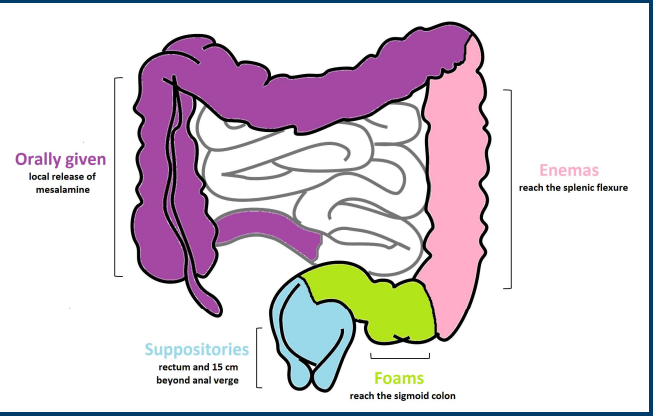
Medications in IBD: 5-Aminosalicylates

- Oral or rectal preparations
- Medications
  - Sulfasalazine
  - Balsalazide
  - Mesalamine
    - Oral: Asacol, Asacol HD, Delzicol, Pentasa, Apriso, Lialda, Colazal
    - Rectal: Rowasa, Canasa
- **Induction and maintenance of remission** for mild-moderate ulcerative colitis
  - *NOT Crohn's disease!*
- Adverse effects
  - Worsening diarrhea, bloody diarrhea, nausea, headache



http://www.ibdclinic.ca/treatment/medications/5-asa/

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Medications in IBD: Corticosteroids

- Medications
  - Methylprednisolone
  - Prednisone
  - Budesonide
    - Uceris
    - Entocort
- Suppress immune system
- **Induce** remission
- Adverse effects
  - Many…

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Adverse Effects of Corticosteroids

Event	Estimated Frequency
Any side-effect leading to stopping prednisone	55%
Ankle swelling	11%
Facial swelling	35%
Easy bruising	7%
Acne	50%
Psychosis - confusion/agitation	1%
Infections	13%
Cataracts	9%
Increased intraocular pressure	22%
High blood pressure	13%
Osteoporosis	33%
Diabetes	Chance increases 10x

[5] Rutgeerts PJ. N Engl J Med. 1994;331(13):842-845

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Medications in IBD: Immunomodulators

- Medications
  - Azathioprine (AZA)
  - 6-mercaptopurine (6-MP)
  - Methotrexate (MTX)
- Oral or SQ injection
- Interfere with DNA and RNA synthesis → immune suppression
- **Maintenance of remission** for moderate-severe disease
- Slow onset of action (2-3 months)
- Side effects: leukopenia, elevated LFTs, nausea, pancreatitis, increased risk of lymphoma with 6-MP
  - Initial EBV exposure

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Medications in IBD: Advanced Therapies

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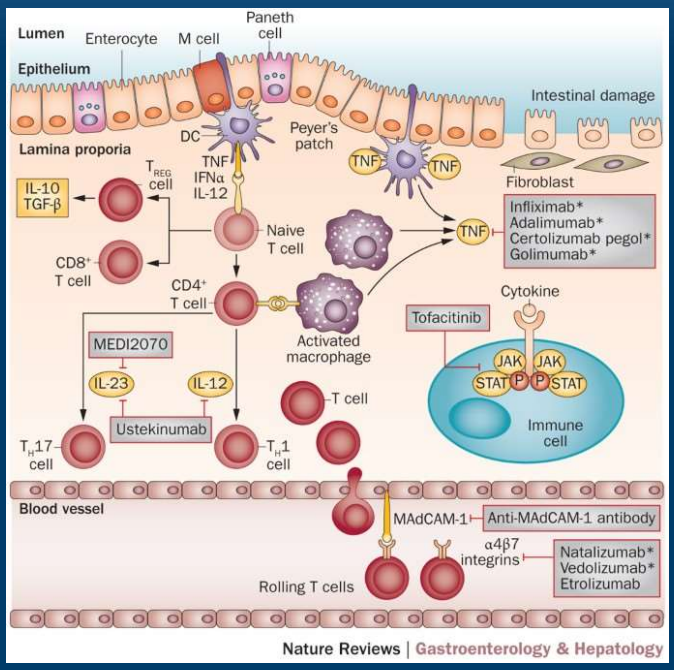
- Classes
  - Anti-TNF
  - Anti-integrins
  - S1P Receptor Modulators
  - Anti-IL-12/23
  - JAK Inhibitors
- MOA: Target specific pathways of the immune system in patients with IBD



Medications in IBD: Advanced Therapies

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Class	Medications	Administration	Onset of action
Anti-TNF (tumor necrosis factor)	• Infliximab* • Adalimumab* • Golimumab Certolizumab pegol	• IV • SQ	2-4 weeks
Anti-integrins	• Vedolizumab • *Natalizumab*	• IV	Up to 14 weeks
S1P receptor modulators	• Ozanimod • Etrasimod	• Oral	Up to 10 weeks
IL-12/23 inhibitors	• Ustekinumab • Risankizumab • Mirikizumab	• Combination (IV then SQ)	Up to 12 weeks
JAK inhibitors	• Tofacitinib • Upadacitinib	• Oral	Up to 8 weeks

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Potential Adverse Effects of Advanced Therapies

	Anti-TNF	Anti-Integrin	S1P	IL12/23 Inhibitors	JAK Inhibitors
Serious infection	+	-	+	-	+
Herpes zoster	-	-	+	-	+
Non-Hodgkins lymphoma	+	-	-	-	?
Demyelination	+	-	-	-	-
DVT/PE	-	-	-	-	+
Hyperlipidemia	-	-	-	-	+
Arrhythmias	-	-	+	-	-

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Generally, anything that affects the immune system can put patients at risk of certain infections

Cancer screening is important as well for this class of medications

Modern Treatments for IBD

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Surgery

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- Resection in medically resistant disease

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Dietary Therapy in IBD

- Exclusive Enteral Nutrition
  - Aka "EEN"
  - Formula diet **only**
  - 4-12 weeks
  - PO vs NG
  - Can be used as maintenance therapy or bridge to therapy **in place of steroids**
  - Limitations: COMPLIANCE!

https://www.ntforibd.org/media/images/toa-heftiba-mZb1YnKJfDU-unsplash.width-600.jpg

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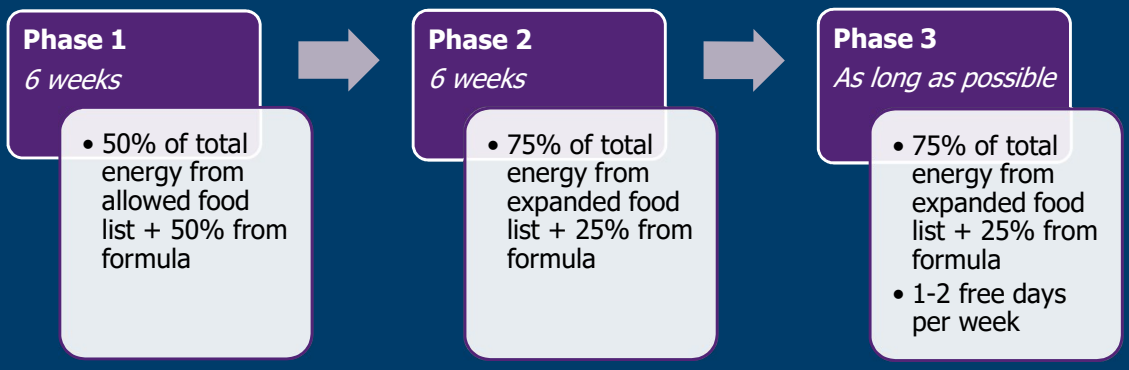
Dietary Therapy in IBD

- Crohn's Disease Exclusion Diet (CDED)
  - 3 phases → start with 50% formula and 50% approved foods, then reduce amount of formula in each phase
  - Limitations: somewhat restrictive, only approved in CD currently



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Other Dietary Therapies in IBD

- Not a comprehensive list:
  - Anti-inflammatory Diet
  - Autoimmune Protocol Diet
  - Crohn's Disease Exclusion Diet
  - CD-TREAT Diet
  - EEN
  - Low FODMAP Diet
  - Mediterranean Diet
  - Specific Carbohydrate Diet
  - Semi-vegetarian Diet
  - Ulcerative Colitis Exclusion Diet +/- Fecal Microbiota Transplant

- General concept = whole foods, less processed
- Mediterranean diet recommended by IOIBD
- Can help with symptom control

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https://www.perthpest.com.au/types-of-pests/bed-bugs/bed-bugs-scared-baby/

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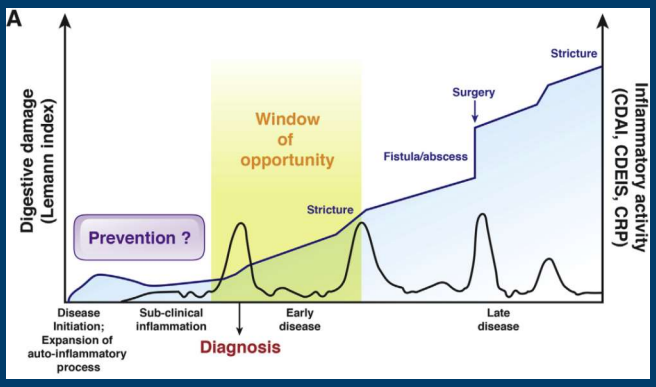
What are the risks of untreated IBD?



Peyrin-Biroulet et al. Am J Gastroenterol 2010
Colombel et al. Gastroenterology 2017
Solberg et al. Clin Gastroenterol Hepatol 2007
Jess et al. Clin Gastroenterol Hepatol 2012

- Surgery
  - Strictures and/or fistula occur in >50% of patients with Crohn's disease after 10 years of disease
- Colon cancer
  - Significantly increased risk compared to the general population
- Blood clots
  - Greater risk for deep vein thrombosis
- Hospitalizations/surgeries
- Poor quality of life

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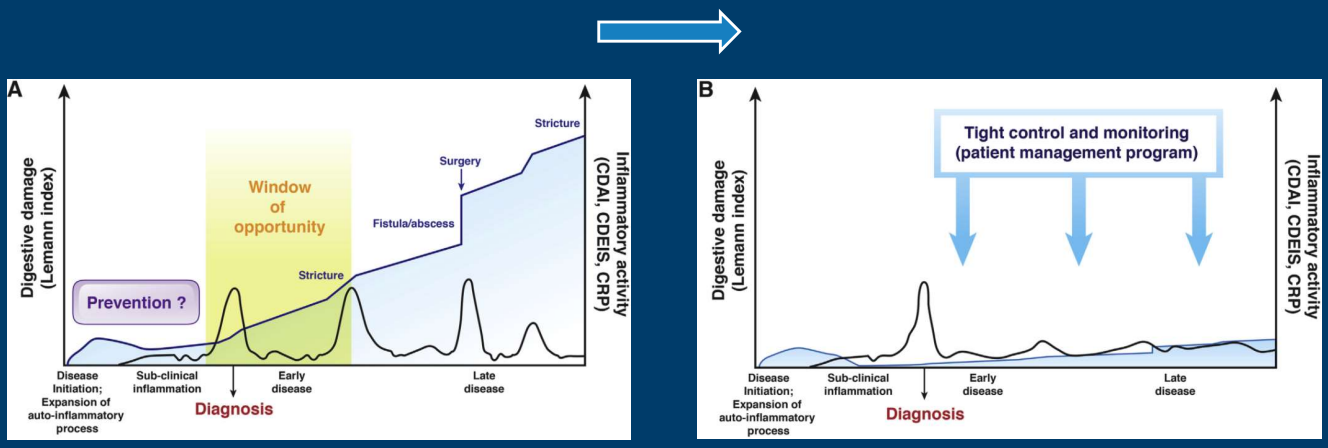
Goal of Treatment = Alter Natural History of Disease



Colombel JF et al. Gastroenterology 2017; 152:351-361

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Prognostic Predictors of Severe Disease Course

Crohn's Disease (CD)	Ulcerative Colitis (UC)
• Young age at diagnosis <30 yrs • Stricturing or penetrating disease • Perianal disease • Ileal, ileocolonic disease • Cigarette smoking • Disease duration > 10 yrs • Severe/deep mucosal ulceration • Extensive disease • Steroid dependence/resistance • Hospitalization • Previous surgery	• Young age at diagnosis (<40 yrs) • Male gender • Disease duration > 10 yrs • Severe mucosal disease • Extensive colitis • Steroid dependence/resistance • Hospitalization

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Health Maintenance in Inflammatory Bowel Disease

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Teamwork Makes the Dream Work!

- GI provider often treated as PCP by many patients
- Partnership with GI and PCP is key!
- GI often will make recommendations though importance of following up with PCP

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Psychosocial Health

- Anxiety and depression are common in IBD
  - 25-40% of patients with pediatric disease (both active and inactive disease)
    - Decreased quality of life
    - Poor adherence to therapy/appointments
    - Loss of control
    - Substance abuse (need to ask!)
- 15% of children have thoughts of death on screening tools
  - Pain is a frequent trigger for suicidal thoughts
- Regular screening recommended
  - Variety of tools: Patient Health Questionnaire-9 (PHQ-9) and Beck Depressive Inventory (BDI) most commonly used, high sensitivity and specificity
- Treatment: Nonpharmacologic and Pharmacologic

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Ocular Health

- Annual screening with *ophthalmologist* recommended
  - **IBD-associated manifestations**
    - Uveitis
    - Episcleritis
    - Orbital myositis
  - **Corticosteroid-associated manifestations**
    - Glaucoma
    - Early cataracts

https://www.aao.org/eye-health/diseases/what-is-uveitis

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Skeletal Health

https://monib-health.com/files/blog-post/03afdbd66e7929b125f8597834fa83a4_63_thumb.jpg.webp?=1640515274

- Osteopenia and osteoporosis are common in patients with IBD
  - Decreased BMD at diagnosis in 43% of CD and 39%, compared to 29% of controls (n=58)
  - Elevated inflammatory cytokines inversely correlated with BMD
- Risk factors

- Hypovitaminosis D is prevalent in IBD
  - 25-OH vitamin D levels suboptimal in 58.3%, insufficient in 14.3%, deficient in 5.8% (n=448)
  - Levels inversely associated with ESR

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Skeletal Health Recommendations

- Regular monitoring of linear growth, growth velocity and pubertal development
- DXA at baseline and every 1-2 years if low BMD noted or risks factors
- Monitor vitamin D levels at least annually
  - Treat hypovitaminosis D with high doses
  - Once optimal status achieved, continue 800-1000 IU daily
- RDA of elemental calcium daily
- Encourage weight bearing activities and resistance training

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Immunizations in IBD

- Vaccinate as scheduled in patients who are ***not*** on immunosuppressive therapy
  - 5-ASA, dietary therapy, antibiotics
  - ACIP guidelines:
- Special considerations for immunosuppressed patients
  - Ideal world—immunize before start of immunosuppression
    - Live vaccines ≥ 4 weeks before, inactivated vaccines ≥ 2 weeks
  - Real world—treatment should not be delayed
    - Role for dietary therapy as a bridge to allow immunization?
  - Immunosuppressed patients respond to inactivated vaccines!

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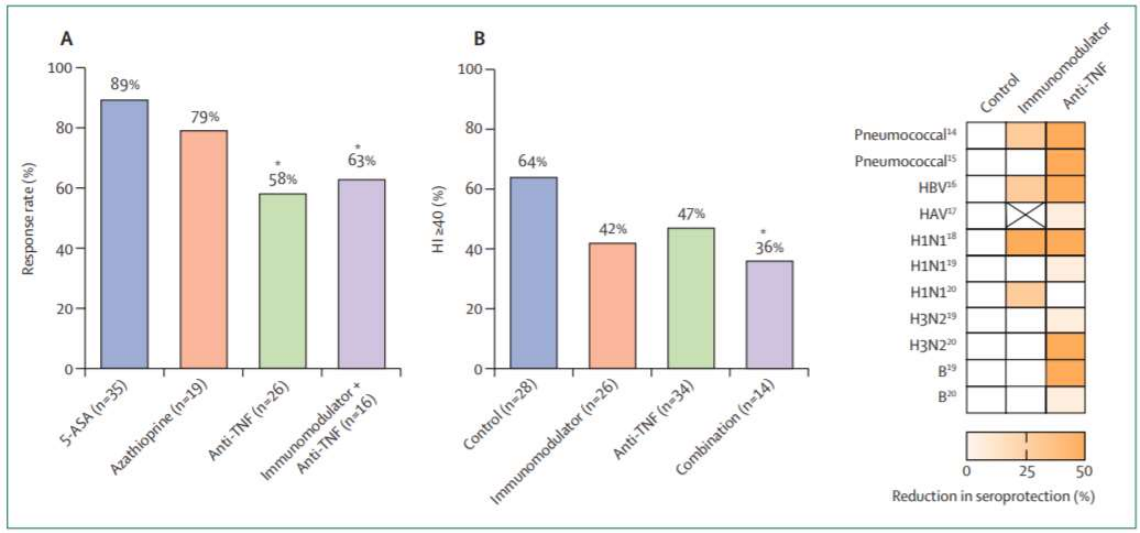
Immunogenicity of Vaccines



Alexander JL, Moran GW et al. Lancet Gastroenterol Hepatol 2021;6:218-224

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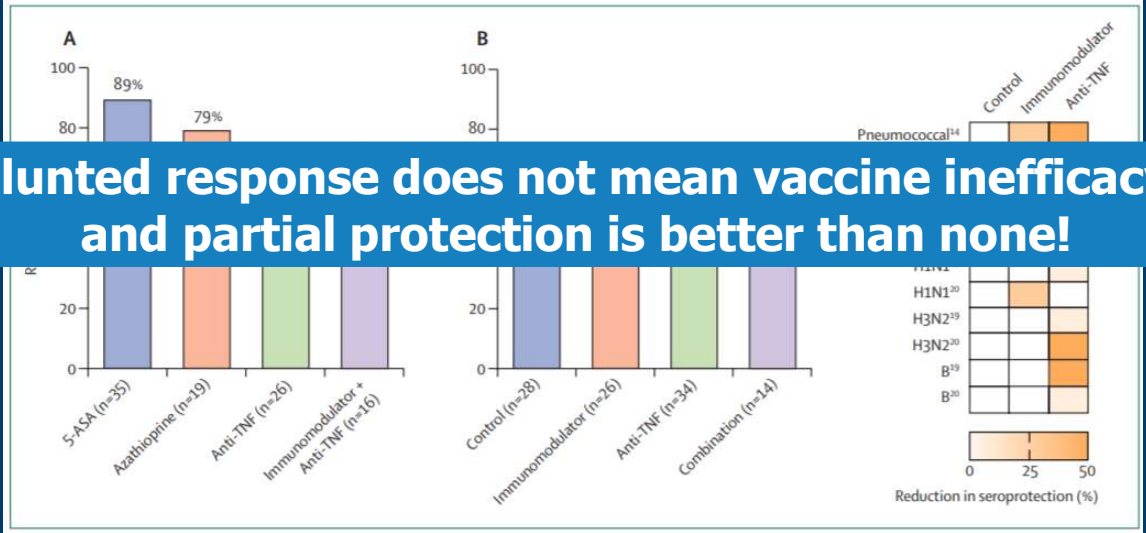
Immunogenicity of Vaccines



Blunted response does not mean vaccine inefficacy and partial protection is better than none!

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Pneumococcal Vaccine Recommendations in Immunocompromised Children (Abbreviated)

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- Age 2-5*:
  - Unvaccinated or Incomplete PCV series with <3 doses before 2 y/o
    - Give 2 doses of PCV15 or **PCV20** (give the second dose at least 8 weeks after the first)
  - Children who received 3 PCV doses before 12 months, but have not received 4th booster
    - Give 1 dose of PCV15 or **PCV20**
- Age 6-18*:
  - Never received PCV13, PCV15, or PCV20
    - Give 1 dose of PCV15 or **PCV20** regardless of whether child has received PPSV23 or PCV7
      - When PCV15 is used, it should be followed by PPSV23 if not previously given
      - When PCV20 is used, no PPSV23 needed
    - Received PCV13 or PCV15 before age 6, never received PCV 20
      - Received PPSV23?
        - Yes: Give **PCV20** or second dose of PPSV23 5 years later
        - No: Give **PCV20** or PPSV23, if PPSV23 is used, will need another PCV vaccine 5 years later

https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html 56

Pneumococcal Vaccine Recommendations in Immunocompromised Adults 19-64 (Abbreviated)

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- Never received any pneumococcal vaccine (or only PCV7)
  - Give 1 dose of PCV15 or **PCV20.**
    - When PCV15 is used, it should be followed by a dose of PPSV23 at least 1 year later. When PCV20 is used, it does not need to be followed by a dose of PPSV23. Their vaccines are then complete
- Only received PPSV23
  - Give 1 dose of PCV15 or **PCV20** at least 1 year after the most recent PPSV23 vaccination.
- Only received PCV13
  - Give 1 dose of **PCV20** or PPSV23.
    - The PCV20 dose should be given at least 1 year after PCV13. When PCV20 is used, their vaccines are then complete. The PPSV23 dose should be given at least 8 weeks after PCV13. When PPSV23 is used, they need another pneumococcal vaccine at least 5 years later
- Received PCV13 and 1 dose of PPSV23
  - Give 1 dose of **PCV20** or a second PPSV23 dose.
    - The PCV20 dose should be given at least 5 years after the last pneumococcal vaccine. The second dose of PPSV23 should be given at least 8 weeks after PCV13 and 5 years after PPSV23.

https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html 57

Pneumococcal Vaccine Recommendations in Immunocompromised Adults >65 (Abbreviated)

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- Never received any pneumococcal vaccine (or only PCV7)
  - Give 1 dose of PCV15 or **PCV20.**
    - When PCV15 is used, it should be followed by a dose of PPSV23 at least 8 weeks later. When PCV20 is used, it does not need to be followed by a dose of PPSV23. Their vaccines are then complete
- Only received PPSV23
  - Give 1 dose of PCV15 or **PCV20** at least 1 year after the most recent PPSV23 vaccination.
- Only received PCV13
  - Give 1 dose of **PCV20** or PPSV23.
    - The PCV20 dose should be given at least 1 year after PCV13. When PCV20 is used, their vaccines are then complete. The PPSV23 dose should be given at least 8 weeks after PCV13.
- Received PCV13 and 1 dose of PPSV23
  - PPSV23 given BEFORE age 65 → Give 1 dose of **PCV20** or PPSV23
  - PPSV23 given AFTER age 65 → Use shared clinical decision-making to decide whether to administer PCV20

https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html 58

Varicella and Zoster Recommendations

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- IBD patients have higher risk of VZV infection (IRR 1.21-1.68)
  - Patients with IBD have higher rate of hospital admission for zoster (OR 2.4)
- Obtain varicella titers if vaccine history is not clear
- Recognize that partially vaccinated patients may have atypical presentations
- Administer Shingrix to eligible patients!
  - Adults 19 years and older who are or will be immunocompromised
  - 2 dose series given within 2-6 months

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COVID Vaccination

- "In patients with IBD taking immunosuppressive drugs, including biologics and small-molecule inhibitors, the key concerns are related to the theoretical risk of suboptimal vaccine response rather than side-effects"[1]
  - Corticosteroids may decrease vaccine efficacy
- Administer at the earliest opportunity
- Patient's can receive any of the currently approved vaccinations
  - Can be co-administered with other vaccines

- Recommendations vary by age and immune status

- https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

[1]Alexander JL, Moran GW et al. Lancet Gastroenterol Hepatol 2021;6:218-224

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Immunization Pearls

- Ensure pediatric patients receive recommended immunizations as per ACIP schedule
- Avoid live virus vaccines in immunocompromised patients
  - Administer 4 weeks before starting, or 3 months after stopping (1 month for steroids)
- Immunize IBD patients annually against influenza
- Give pneumococcal vaccination to immunocompromised patients
- Recommend COVID vaccination in all patients
- Immunize household contacts

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Cancer Risk in Inflammatory Bowel Disease

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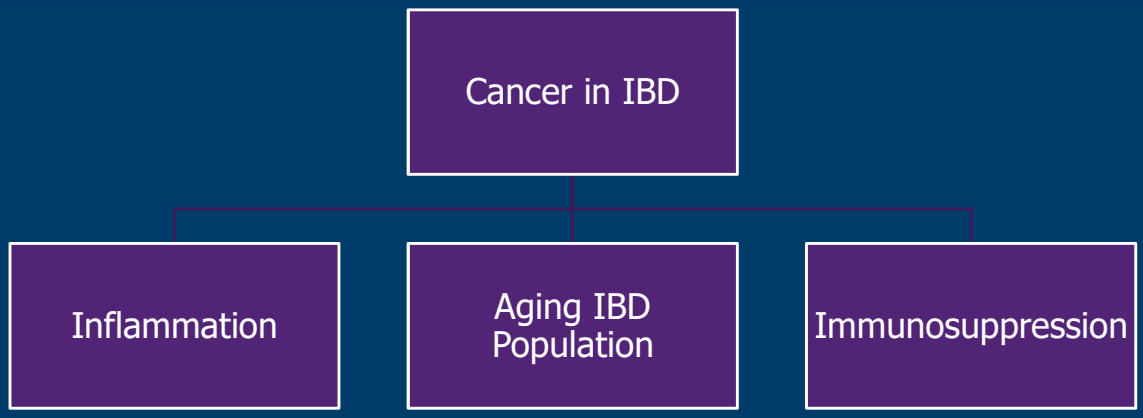

Colorectal cancer
Small bowel
Adenocarcinoma
Intestinal lymphoma
Anal carcinoma
Cholangiocarcinoma

Similar to general aging population

Lymphoma
Melanoma
Non-melanoma skin cancer
Urinary tract cancer
Cervical cancer

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Cancer Screening Recommendations

- Colorectal cancer
  - Applies to patients with colonic disease (UC or colonic involvement in CD)
    - Surveillance colonoscopy 8-10 years after diagnosis and then every 1-3 years
    - More frequent colonoscopies in patients with PSC
- Skin cancer
  - Screen for melanoma INDEPENDENT of biologic use (ACG)
  - Screening for NMSC in patients on immunosuppression
    - Annual dermatology exams
- Cervical cancer
  - Women on immunosuppression including biologics, small molecules and immunomodulators
    - Annual pap smear starting at age 21 (all patients)
    - AGA: yearly screening for sexually active females
    - HPV vaccination per ACIP guidelines (also applies to men)

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Reproductive Health

- Use of OCP in patient with IBD not associated with increased risk of a flare
- Estrogen based contraception may increase risk of venous thromboembolism (2 fold increase)
  - Further compounded by active disease
- Choice of contraceptive—shared decision making
  - Patient, prescribing clinician, gastroenterology clinician should provide input
  - Efficacy, tolerability and risk of VTE should be considered

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Considerations for Specific Populations in Inflammatory Bowel Disease

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Pregnancy in Inflammatory Bowel Disease

- **Biggest risk to fetus = active disease!**
- PIANO Study
  - NO increased risk of adverse events (congenital malformations, spontaneous abortions, preterm birth, low birth weight) in patients on biologics and/or thiopurines
  - Increased risk of infections if preterm birth
  - https://gastroenterology.ucsf.edu/research/piano
- Medication guidance
  - Contraindicated: methotrexate
  - Avoid: corticosteroids, ozanimod, JAK inhibitors (tofacitinib, upadacitinib)
  - Continue: mesalamine/sulfasalazine, azathioprine/6-MP, anti-TNF, IL 12/23 inhibitors, vedolizumab, low dose aspirin

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Pregnancy in Inflammatory Bowel Disease

- Breastfeeding is safe for patients on biologics ☺
  - No adverse effects on growth, milestones, or infection rate
  - Not enough data for small molecules
- Infant vaccinations
  - Give all inactivated vaccines as scheduled
  - Avoid live vaccines within the first 6 months if immunosuppressed; 12 months if breastfeeding (Rotavirus)

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Aging in Inflammatory Bowel Disease

- Older adults are living longer
  - Projected increase of 200% for older adults with IBD
  - 2015: 26% of IBD patients were over age 65
- No change in disease phenotype
- Considerations in aging population
  - Comorbidities
  - Infections
  - Malignancies
  - SCREEN FOR OSTEOPOROSIS!

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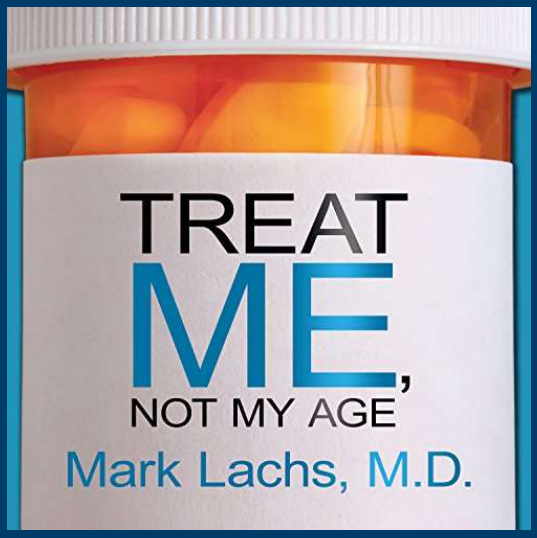
Aging in Inflammatory Bowel Disease

- Medication guidance
  - Avoid: thiopurines, corticosteroids
  - Consider: vedolizumab, IL 12/23 inhibitors
  - Discuss based on clinical picture:
    - Anti-TNF: if minimal melanoma and leukemia/lymphoma risks
    - Methotrexate: if minimal melanoma risks
    - JAK inhibitors: if minimal cancer risks
    - S1P receptor modulators: if minimal leukemia/lymphoma risks



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A Few Pearls…

- PCP involvement = key
- Contraception
- Antibiotic treatment
- Medications to avoid
  - NSAID's
  - Clindamycin
  - Loperamide
  - Opioids
- Flare vs infection management

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In Summary…

- Presentation of IBD is heterogeneous and includes both GI and extraintestinal manifestations
- Risks of disease and treatment change across the lifespan
- Treatment targets have evolved—goal is to modify disease course and change outcomes
  - Increasing use of advanced therapies (biologics, small molecules)
    - Helpful to know key side effects that you may see in the primary setting
- Partnering between primary care providers and IBD clinicians is necessary to ensure adequate preventative care, including all appropriate vaccinations

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Questions?

Thank you!
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