

# Inflammatory Bowel Disease

①

(IBD)

It is an umbrella term under which the disorders of ch. inflammation of digestive tract are considered.

Types of IBD → Ulcerative colitis  
→ Crohn's disease.

Ulcerative colitis: Causes long lasting inflammation and ulcers in inner most lining of large intestine (colon)

→ only affects the lining of <sup>Rectum</sup> colon

Crohn's disease: Characterized by inflammation of the lining of digestive tract which spreads deep into tissues → ~~It can affect any part of~~

→ It can affect any part of GIT

→ Affect all layers of Bowel.

Ulcerative colitis : Inflammation & sores leading to formation of ulcers in lining of colon & Rectum.

- with remissions & relapses.
- Ulcers bleed & produce pus.
- Inflammation in colon also causes the colon to empty frequently causing diarrhoea.
- Inflammation occurs in lower part of colon called ulcerative proctitis.
- If entire colon is affected → pan colitis.  
If only left side of colon is affected is called distal colitis.
- Ulcerative colitis occurs in people of any age usually starts b/w 15 & 30 yrs.  
Less frequently b/w 50 & 70 yrs.  
If both parents affected equally → appears to run in families.

### Etiology :

Remains unclear although -  
Interplay of genetic, Microbial & immunologic factors clearly exists.

Environmental factors have clearly be proven  
- 1. Tobacco use - Antibiotics, Appendicectomy, OCP.

Symptoms

- Abd pain
- bloody diarrhoea
- Anemia, fatigue, ~~loss~~ loss of appetite & wt
- Rectal bleeding
- loss of body fluids & ~~essential~~ Nutrients
- Skin lesions
- Joint pain & growth failure in children

→ Ulcerative colitis can also cause problems such as arthritis, Inflammation of eye, Liver disease & osteoporosis.

Pathogenesis

↑ sed amount of colonic sulphate reducing bacteria observed in some pat's = Ulcerative colitis.

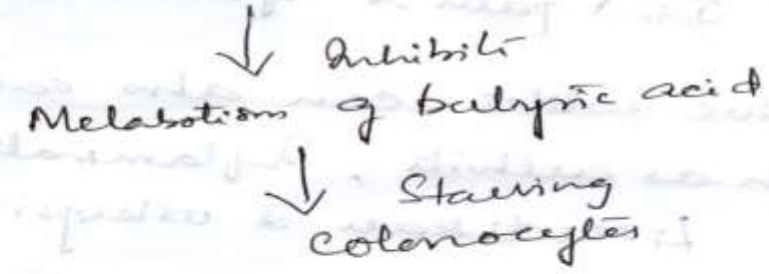
↓  
Resulting in Higher concentration of toxic gas hydrogen sulfide.

→ ~~N-butyrate~~ N-butyrate → a short chain fatty acid gets oxidized through beta oxidation pathway into CO<sub>2</sub> & ketone bodies.

④  
Pathogenesis

N-Butyrate helps to supply nutrients to  
Intestinal Mucosal barrier.

Studies shows that  
→ Hydrogen sulfide plays a role in damaging  
this beta oxidation pathway intercepting short  
chain acetyl-CoA dehydrogenase in hepatokary.



Hydrogen sulfide  
can  
damage gut  
mucosa by  
inhibiting  
butyrate oxidation  
in the mitochondria

Treatment

- Aminosalicylates : Olsalazine → Mesalamine  
Sulfasalazine is a 5-aminosalicylic acid control inflammation.  
Can be given orally, through Enemas / suppositories depending  
upon location of inflammation in the colon
- Corticosteroid → Prednisolone, Methylprednisolone & Hydrocortisone  
reduce inflammation  
Used in Moderna to severe UC  
Side effect like wt gain  
facial hair  
Hypertension  
Diabetes  
long term mineral  
ED Not recommended  
- det for long term  
use.
- Immunomodulation  
1. Azathioprine  
2. 6 Mercaptopurine } reduce inflammation  
by affecting immune system
- Surgery  
Used in pat's who do not respond  
to 5-ASA / Corticosteroid
- 3. Cyclosporine May be used  $\bar{c}$  GMP & azathioprine  
to treat active severe UC in people who  
do not respond to I.V Corticosteroid

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Surgery: About 25-40% of UC pat's have to remove their colons due to

1. Massive bleeding
2. Severe illness
3. Repletion of colon
4. Risk of cancer.

Methods

1. Ileostomy  
Creates opening in the Abd → Attaches to small intestine by which waste will be excreted into pouch when needed.

2. Ileoanal anastomosis  
Where colon is removed & ileum is attached to rectum & anus. Waste is passed as in normal manner.

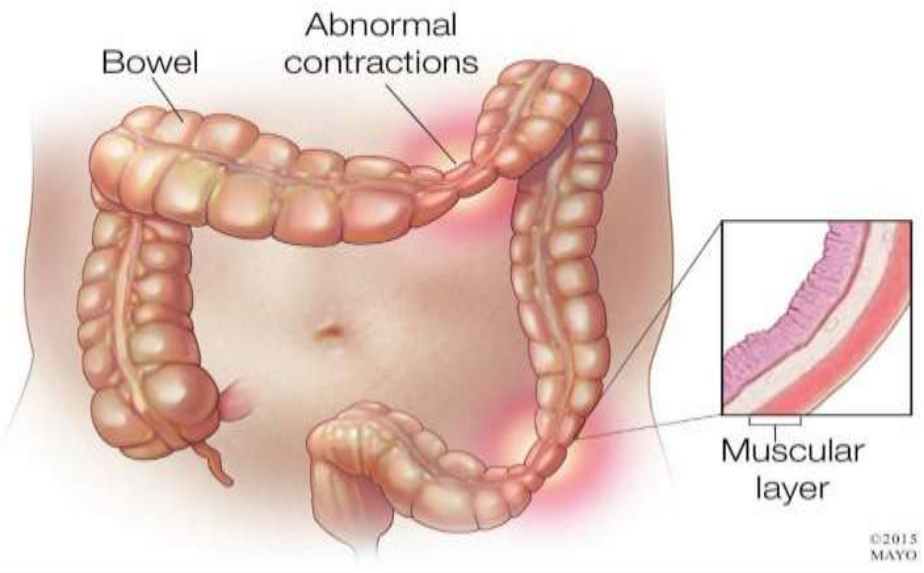
CROHN'S DISEASE

~~Chronic disease~~ :- It is chronic inflammatory disease characterized by inflammation of GI

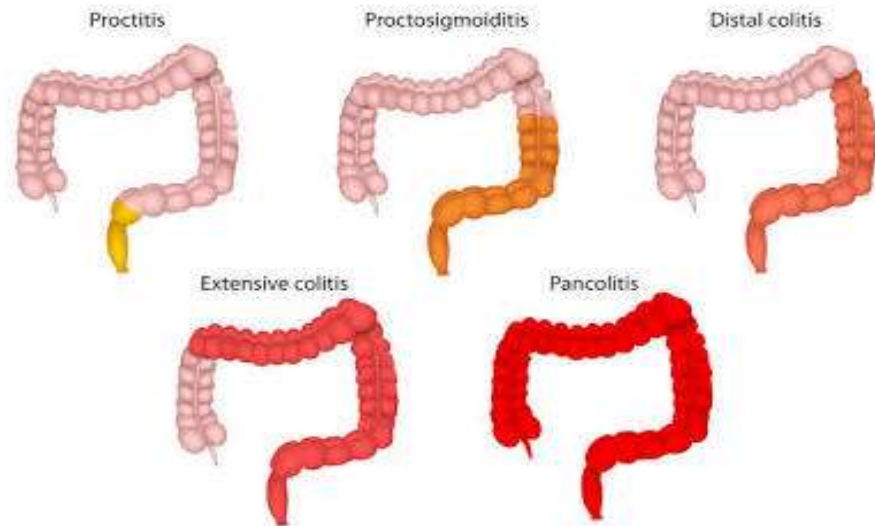
→ It can affect any part of GIT from mouth to anus.

But more commonly found at the end of small intestine where it joins colon. (Ileum).

# Irritable bowel syndrome (IBS)



# TYPES OF ULCERATIVE COLITIS



[newsnetwork.mayoclini...](https://www.mayoclinic.org/news-network)

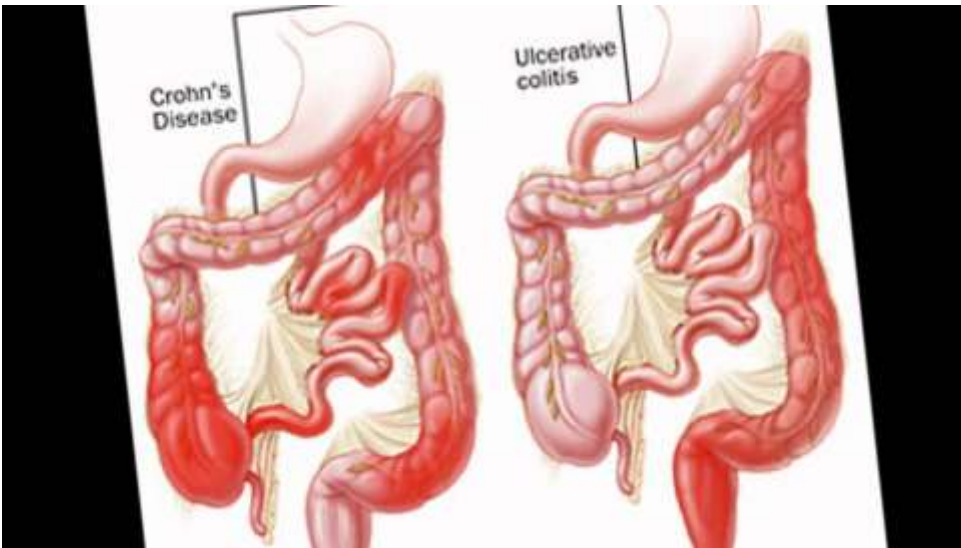
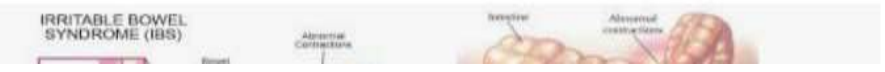
## Mayo Clinic Q and A: For most diagnosed with it, I...

DEAR MAYO CLINIC: For the past year or so, I feel like I am often either constipated or I have [...]

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(6)

→ No Medical cure but therapies are available to reduce the symptoms of Crohn's

Etiology : Virus or bacteria may cause Crohn's disease  
↓  
Inflamed digestive tract.

1. Immune system

↓  
Body's Immune system fights off the invading microorganism "*Mycobacterium avium*"  
subspecies *paratuberculosis*

→ Some believe that genetic susceptibility may trigger an abnormal response to the bacteria / others say that abnormal immune response to bacteria that normally live in intestine.

2. Heredity : 20% of people with Crohn's have their children the same disease.

seems to be associated with early onset of symptoms

3. Environment : ~~High~~ diet high in fatty fats  
Refined foods.  
Smoking -

⑦

Symptoms 1: Diarrhoea → cells in affected areas secrete large amounts of water & salt

→ Hence cannot absorb excess fluid.

↓ Results

Diarrhoea.

→ Altered intestinal contractions can contribute to loose stools.

→ In mild cases → simply loose or more frequent than usual.

→ In severe cases . May have dozens of bowel movements / day affecting both sleep & daily activities.

2. Abd pain & cramping : Inflammation & ulceration

↓ cause

Parts of bowel walls to swell

↓  
Eventually thicken & scar tissue.

↓  
Which affects the normal movement of intestinal tract

↓  
lead to pain & cramping.

→ Mild Crohn's — slight to moderate intestinal discomfort.



⑧ In severe cases → bleeding is often serious & ongoing.

3. Blood stools : Food moving through digestive tract can cause inflamed tissue to bleed.

It may bleed on its own and there will be bright red blood or darker blood mixed with stools called occult blood.

4. Ulcers : Small, scattered sores on the surface of the intestine eventually these sores may become large ulcers that penetrate deep into or through the intestinal walls.

5. Reduced appetite & wt loss → Abt pain & cramping and inflammatory reaction in the wall of bowel can affect both appetite & ability to digest & absorb food.

6. fever, fatigue as well as arthritis  
Eye inflammation, skin disorders & inflammation  
liver.

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Pathogenesis : The inflammation in the walls of digestive tract leads to pain  
Malabsorption of Nutrients and poor -  
Osmosis

↓  
So water stays in digestive system  
↓ causing  
to diarrhoea

→ It also causes damage to the tissues in Mucosa - lining -

Usually Mucosal lining is permeable only for small particles of food & water -

→ If inflammation damages the walls it means that larger particles of food & other substances that would normally not get through, are able to pass into the blood stream.

→ Damaged walls known as "leaky Gut"

→ When the substances that should not be in the blood stream are found by the immune system which is on surveillance all the time, it attacks them & antibodies are created to new food substances -

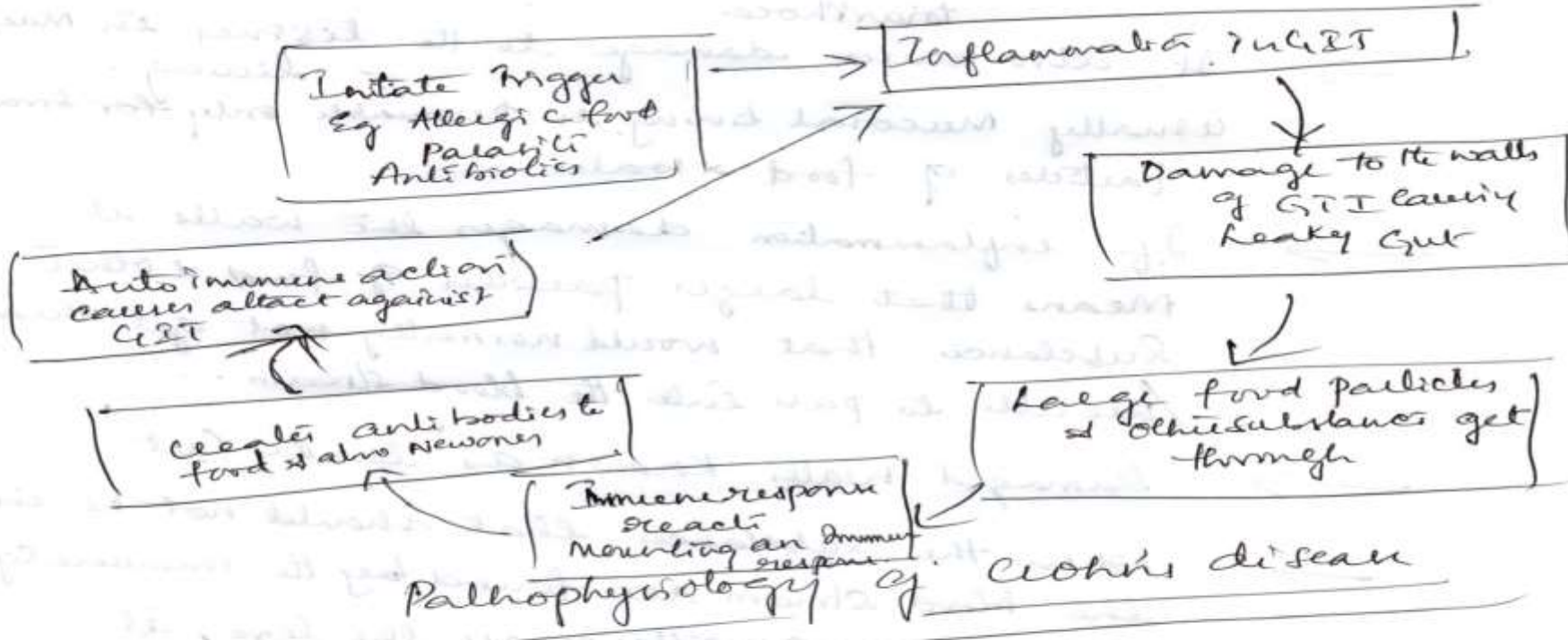
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then immune system gets over active & starts attacking the digestive tissues

↓ which causes

More inflammation & More leaky gut

↓ Hence vicious cycle



(ii)

Treatment : 3 Anti-inflammatory drugs : Include

1. Sulfasalazine
2. Mesalamine
3. Corticosteroids

} Reduce inflammation that triggers signs & symptoms.

II Immune system suppressors :

1. Azathioprine
2. 6 Mercaptopurine
3. Infliximab

} Not only reduce inflammation also affect immune system

↳ 2. Removes TNF in the bloodstream

↓  
1. Works by neutralizing a protein produced by immune system known as TNF

4. Cyclosporine : potent drug used to heal Crohn's related fistulas

5. Methotrexate : is used to treat cancer.

6. Ciprofloxacin ~~improves~~ <sup>Heals</sup> ~~to~~ ~~the~~ fistulas & abscesses with Crohn's disease.  
Antibiotic

7. Anti Diarrheals → reduce relieve signs & symptoms  
↓  
Loperamide : Mild to Moderate diarrhea

(12) NSAIDs like Aspirin, Ibuprofen, Naproxen } Makes the symptoms worse.

Iron supplements : → Ch. Intestinal bleeding  
↓  
Iron deficiency anemia

Iron supplements may help to restore iron levels & ↓ se anemia once the bleeding is stopped

Vit B12 Def's : which is absorbed from terminal ileum → which is affected by Crohn's

↓  
May be in deficit

B12 helps to prevent anemia, hence monthly sup might be required → for life if ileum has been removed during surgery.

Emergency : In widely spread Crohn's → Removal of colon & rectum required.

Diet : To eliminate certain foods & beverages from diet which aggravates Crohn's colitis symptoms.

(13)

During stress . More signs & symptoms worse by triggering the disease .  
Secrets more acid during stress

- Complications
1. Obstruction : Part of bowel become thickened & narrow block the flow of digestive contents through affected part .
  2. Ulcers → Sores open into ulcers in terminal ileum/colon .  
Sometimes intertwined fistulas occur .
  3. Anal fissure → Crack / cleft in skin around anus where infection can occur .
  4. Malnutrition → Anal pain & discharge make difficult to eat / for intestine to absorb enough nutrients
  5. Other problems

- ↓
- Arthritis , Inflammation of eyes or skin
  - Some believe that immune system response that produce inflammation in intestine cause inflammation in other parts of the body .
  - Long standing Crohn's disease develop osteoporosis , a condition that cause weaken & brittle bones
  - Low levels of Vit K → involves in binding Ca to bone .