

Approach of the patient with diarrhea

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Definition



Diarrhea: Alteration in a normal bowel movement characterized by an increase in the water content, volume, or frequency (more than three per day) of stool.





Acute diarrhea is generally 3 or more loose watery stool lasting at least **3 to 14 day**.



Chronic diarrhea is generally 3 or more loose watery stool lasting for **4 weeks or more**

Acute diarrhea

Classification of diarrhea

**Non inflammatory
diarrhea**

**Inflammatory
diarrhea**

1-Non inflammatory diarrhoea :

Site: small intestine

Pathophysiology:

The enterotoxins of some pathogens come to small intestinal mucosa and disrupt their absorption function without any destruction to them (the mucosa is intact) and trigger them to secrete Na,K,Cl and water to the lumen which leads to large volume watery diarrhoea

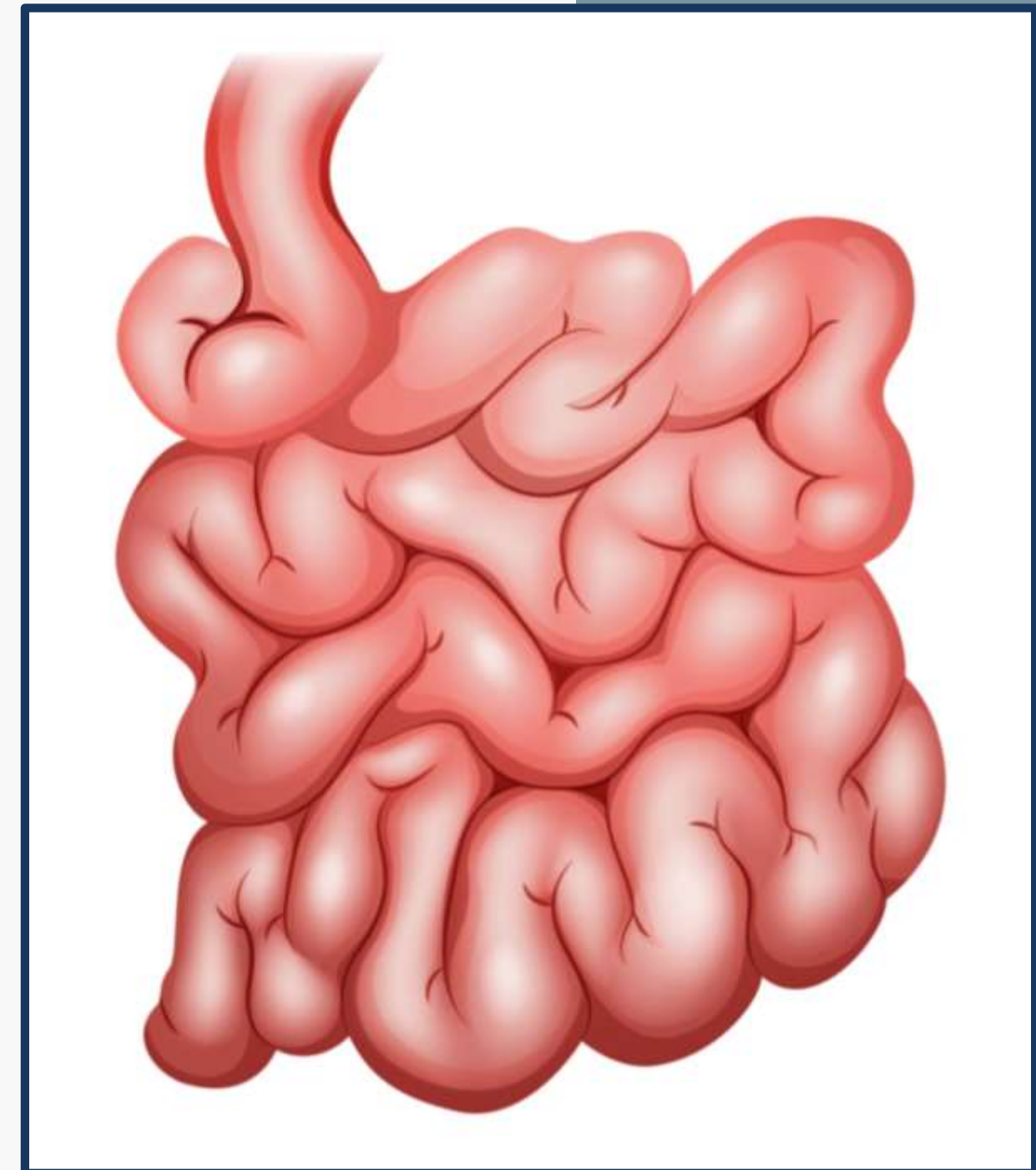
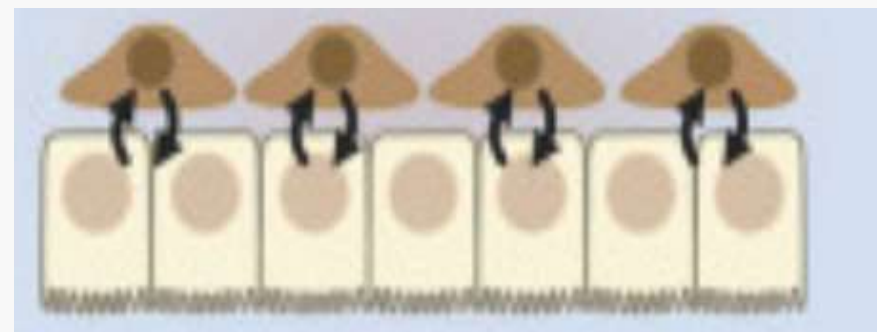
Lab results:

No blood in stool

No faecal WBC

No faecal calprotectin

No mucus



Type 7  Watery, no solid pieces.
Entirely Liquid

Etiology:

it could be viral (most common), bacterial, parasite

A- viral:

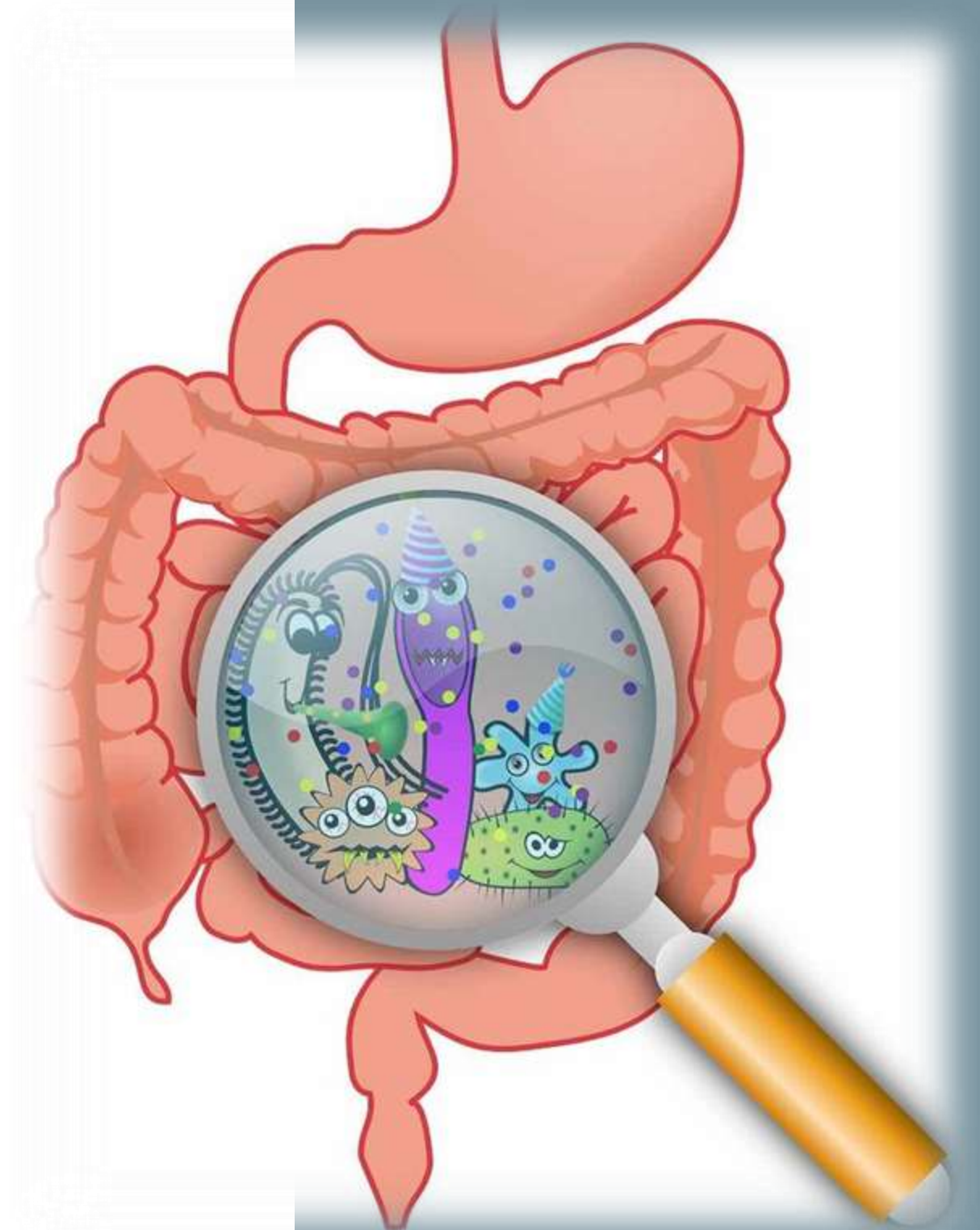
- 1- **norovirus** :Leading cause of viral gastroenteritis, often linked to contaminated food/water.
- 2- **rotavirus**: **Most common cause** of diarrhea , more in children (daycare)
- 3- **Adenovirus**: similar to rotavirus

B-bacterial:

- 1- **staphylococcus Aureus** : picnics food
- 2- **bacillus Cereus**: in the rice
- 3- **Enterotoxigenic E.Coli**: most commonly in travellers
- 4- **Vibrio cholera**:
it come as **high volume ,rice watery stool** ,most commonly in travellers

C- parasites:

- 1- **Giardia** (river water)
- 2- **cryptosporidium**:(AIDS patients)



2-Inflammatory diarrhoea :

Site: large intestine(colon)

Pathophysiology:

Entral pathogens cause direct *damage to mucosa* and cause inflammation of the large intestine and disrupt their ability to absorb water from stool which leads to *mucus/bloody diarrhoea* but small in volume

Lab results:

Blood in stool
Mucus in stool
Faecal WBC
Faecal calprotectin



Etiology: its come because of bacterial (most common) or parasitic infections

The common pathogens

A-Bacteria:

1-salmonella: undercooked egg or poultry

2-shigella: associated with haemolytic uremic syndrome

3-campylobacter jejuni: associated with Guillain-Barré syndrome

4-enterohemorrhagic E.coli: associated with haemolytic uremic syndrome

5-clostridium difficile: associated with toxic megacolon and bowel perforation

B-parasites : entamoeba histolytica: associated with amebic liver abscess

Notes.....

- *Most cases of acute diarrhea are associated with contaminated food and water sources*

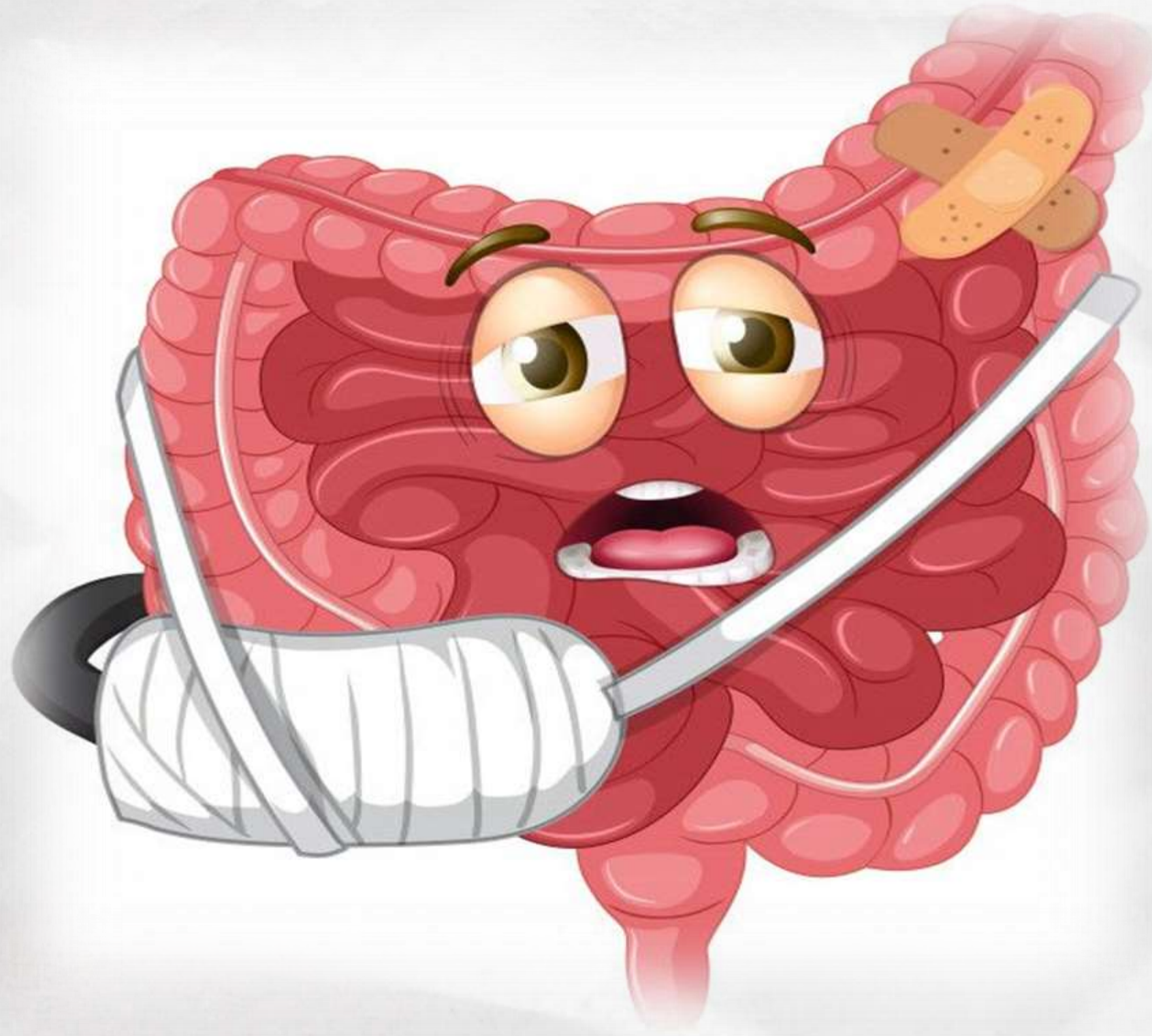
- *Most cases of acute diarrhea are due to infection which is self-limiting..*



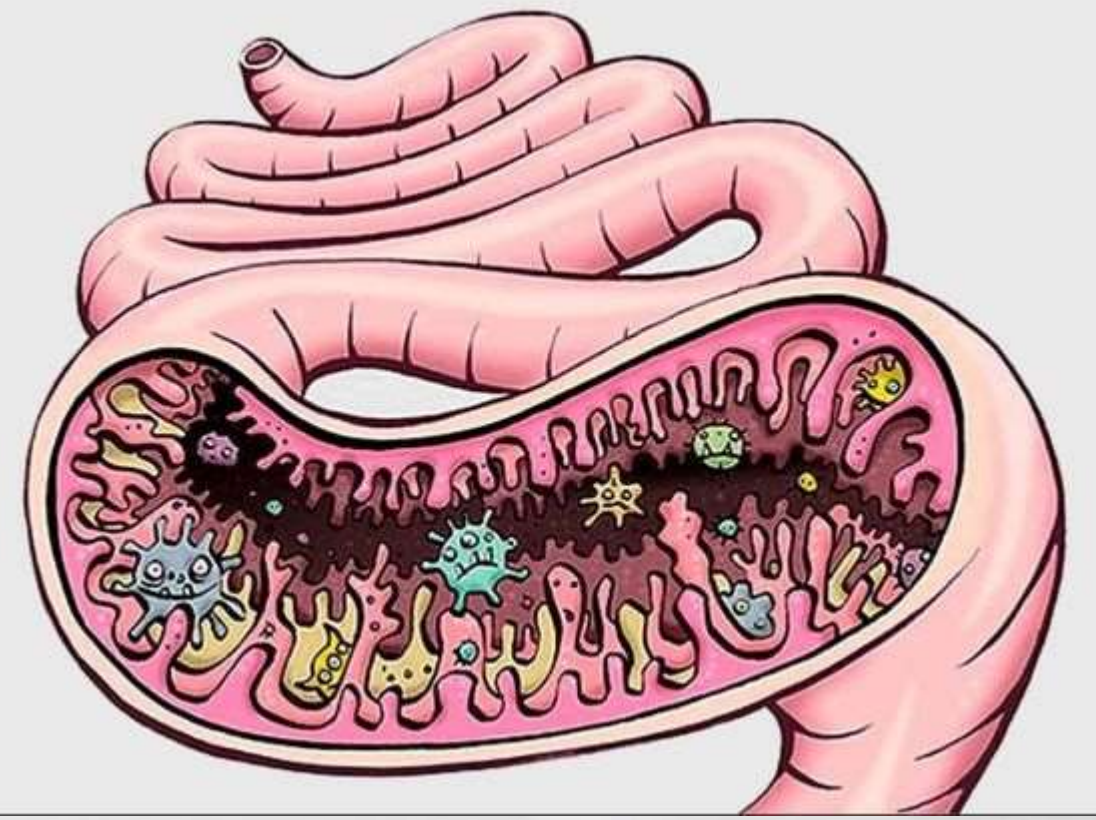
Table 1. Noninflammatory vs. Inflammatory Diarrheal Syndromes

<i>Factor</i>	<i>Noninflammatory</i>	<i>Inflammatory</i>
Etiology	Usually viral, but can be bacterial or parasitic	Generally invasive or toxin-producing bacteria
Pathophysiology	More likely to promote intestinal secretion without significant disruption in the intestinal mucosa	More likely to disrupt mucosal integrity, which may lead to tissue invasion and destruction
History and examination findings	Nausea, vomiting; normothermia; abdominal cramping; larger stool volume; nonbloody, watery stool	Fever, abdominal pain, tenesmus, smaller stool volume, bloody stool
Laboratory findings	Absence of fecal leukocytes	Presence of fecal leukocytes
Common pathogens	Enterotoxigenic <i>Escherichia coli</i> , <i>Clostridium perfringens</i> , <i>Bacillus cereus</i> , <i>Staphylococcus aureus</i> , <i>Rotavirus</i> , <i>Norovirus</i> , <i>Giardia</i> , <i>Cryptosporidium</i> , <i>Vibrio cholerae</i>	<i>Salmonella</i> (non-Typhi species), <i>Shigella</i> , <i>Campylobacter</i> , Shiga toxin–producing <i>E. coli</i> , enteroinvasive <i>E. coli</i> , <i>Clostridium difficile</i> , <i>Entamoeba histolytica</i> , <i>Yersinia</i>
Other	Generally milder disease Severe fluid loss can still occur, especially in malnourished patients	Generally more severe disease

Information from references 7 and 8.



Chronic diarrhea



Definition and epidemiology



Chronic diarrhea is defined as passing of loose or watery stool, at least three times a day, for more than 4 weeks.

Affect any age group, but specific causes may vary with age like:

- 1. IBD are much more common with adults**
- 2. Medications induced diarrhea comes with older patients**
- 3. Women are more susceptible for IBS**

Only 5% of population would suffer from chronic diarrhea, but it's more common in western countries, because of high prevalence of IBD and other diseases.



Chronic diarrhea

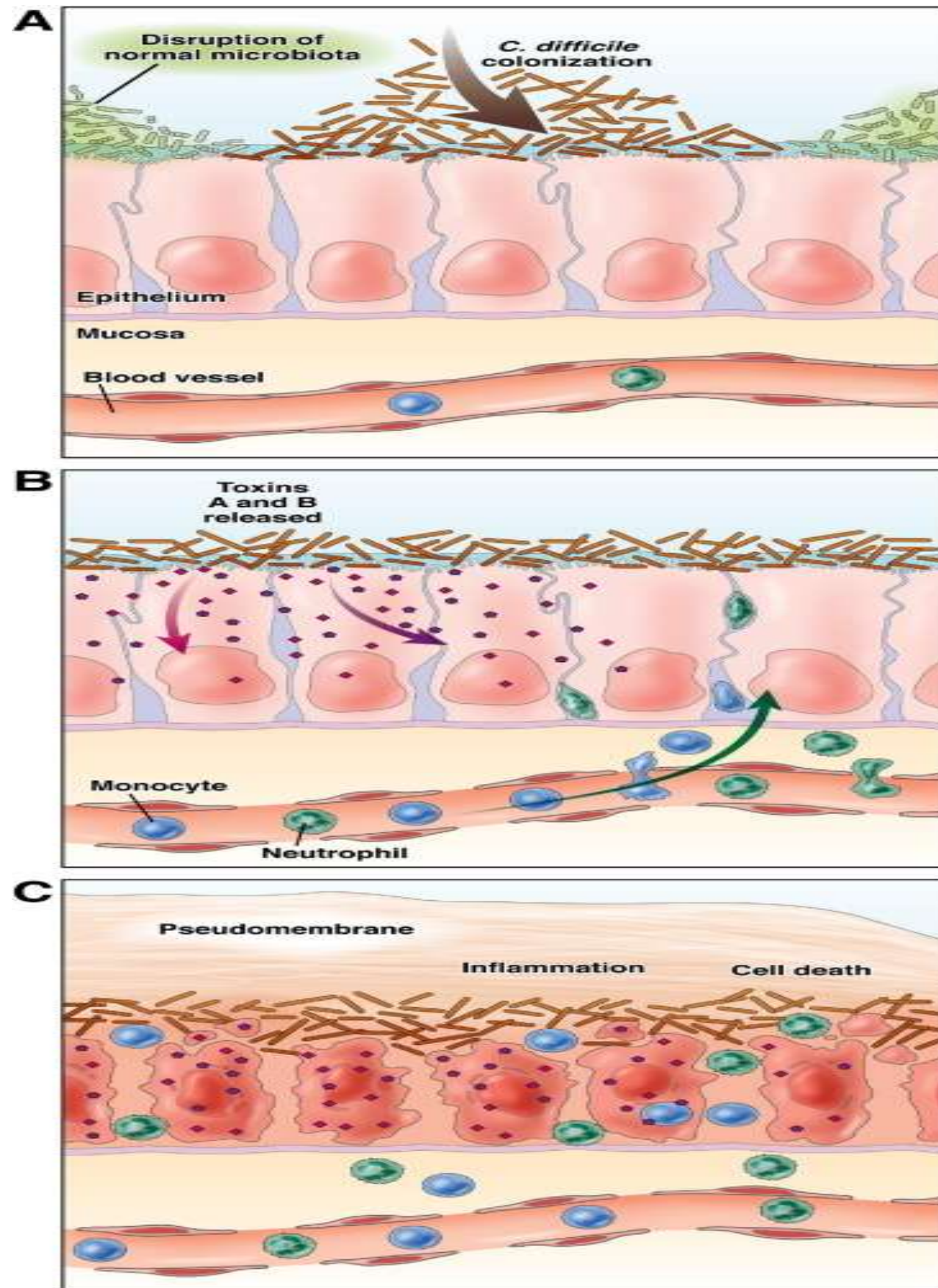
Classification of diarrhea

**Non inflammatory
diarrhea**

**Inflammatory
diarrhea**



Inflammatory form:



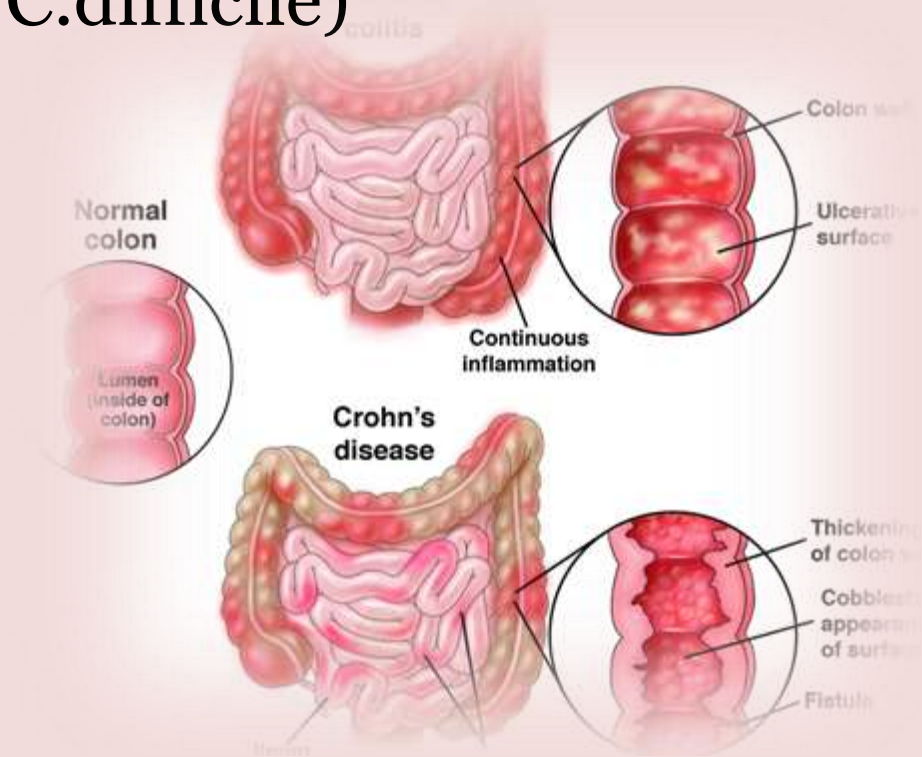
This form of diarrhoea accompanied with diseases cause damage to intestinal lumen, leading to intestinal mucosa destruction.

Activated immune reaction leads to secretion of neutrophils mediators in stool (**Calprotectin**), also inflammation increase the function of goblet cells to secrets mucus into stool.

By that pathway, stool becomes filled with blood ,mucus and inflammatory mediators.

Common causes of inflammatory diarrhoea:

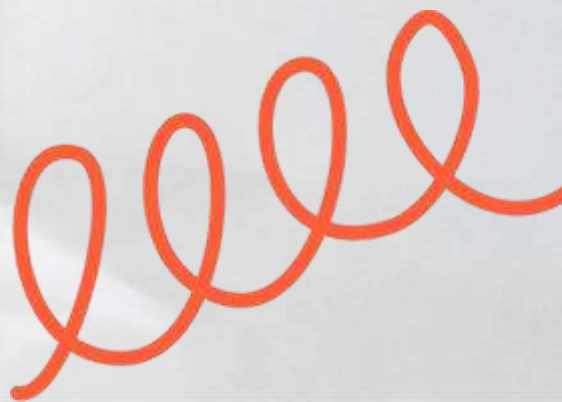
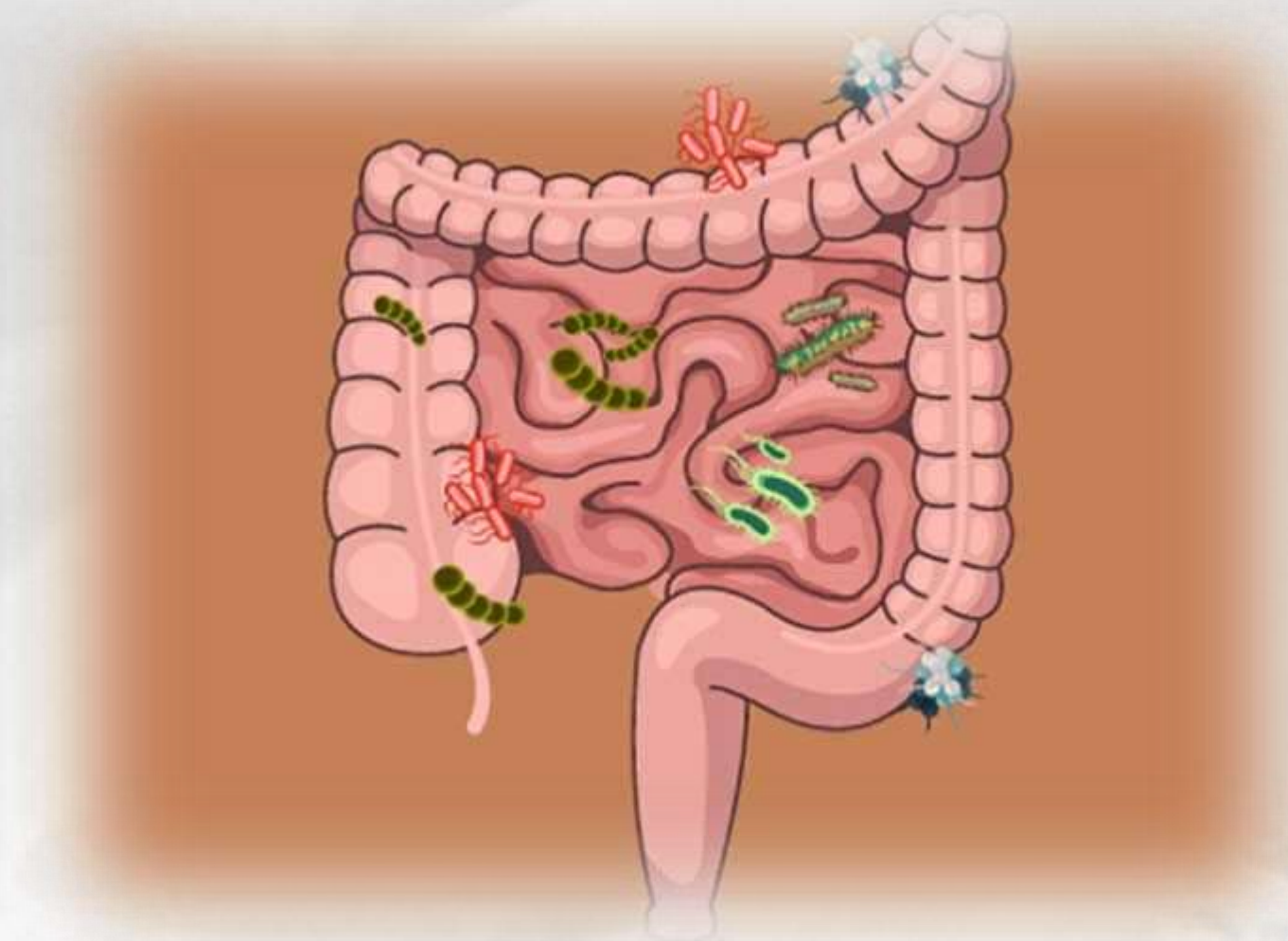
- 1- IBD (Crohn's and ulcerative colitis)
- 2- chronic infections (Amebiasis and C.difficile)



Non-inflammatory diarrhoea

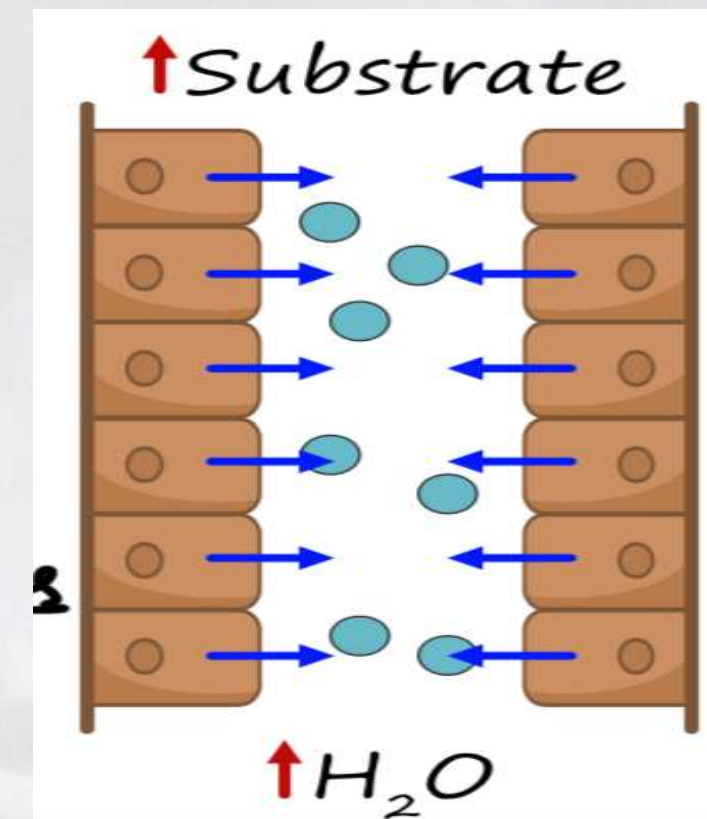
Classification of non-inflammatory causes depends upon the pathophysiology of diarrhea:

- 1-Osmotic diarrhea
- 2- Secretory diarrhea
- 3- Steatorrhea
- 4- Dysmotility diarrhea



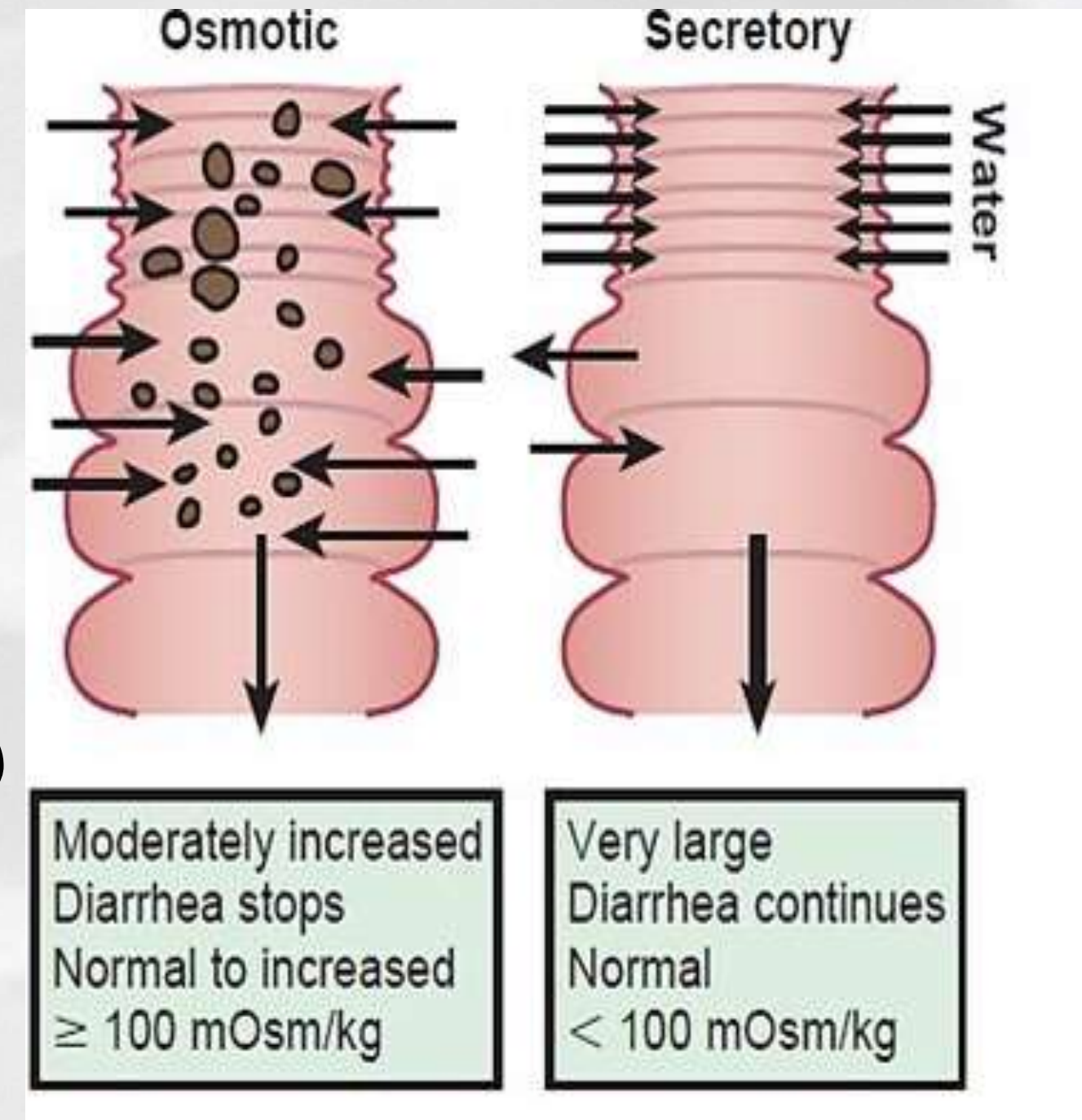
Osmotic diarrhea

- ❖ Food and electrolytes build up inside the intestinal lumen, increasing the osmolarity of lumen to absorb more water.
- ❖ Common with malabsorption or maldigestion diseases, also with osmotic laxatives.
- ❖ Causes are:
 - 1– Malabsorption diseases: celiac disease, lactose intolerance, tropical spruce and whippe's disease.
 - 2– Maldigestion : Exocrine pancreatic insufficiency.
 - 3– osmotic laxatives: lactulose, magnesium sulfate etc.



Secretory diarrhea

- ❖ Main pathophysiology is increased water and electrolytes secretion from enterocytes
- ❖ Stool becomes high in water content.
- ❖ Causes are :
 1. Stimulant laxatives (senna and Bisacodyl)
 2. Neuroendocrine tumour (Gastrinoma, VIPoma)

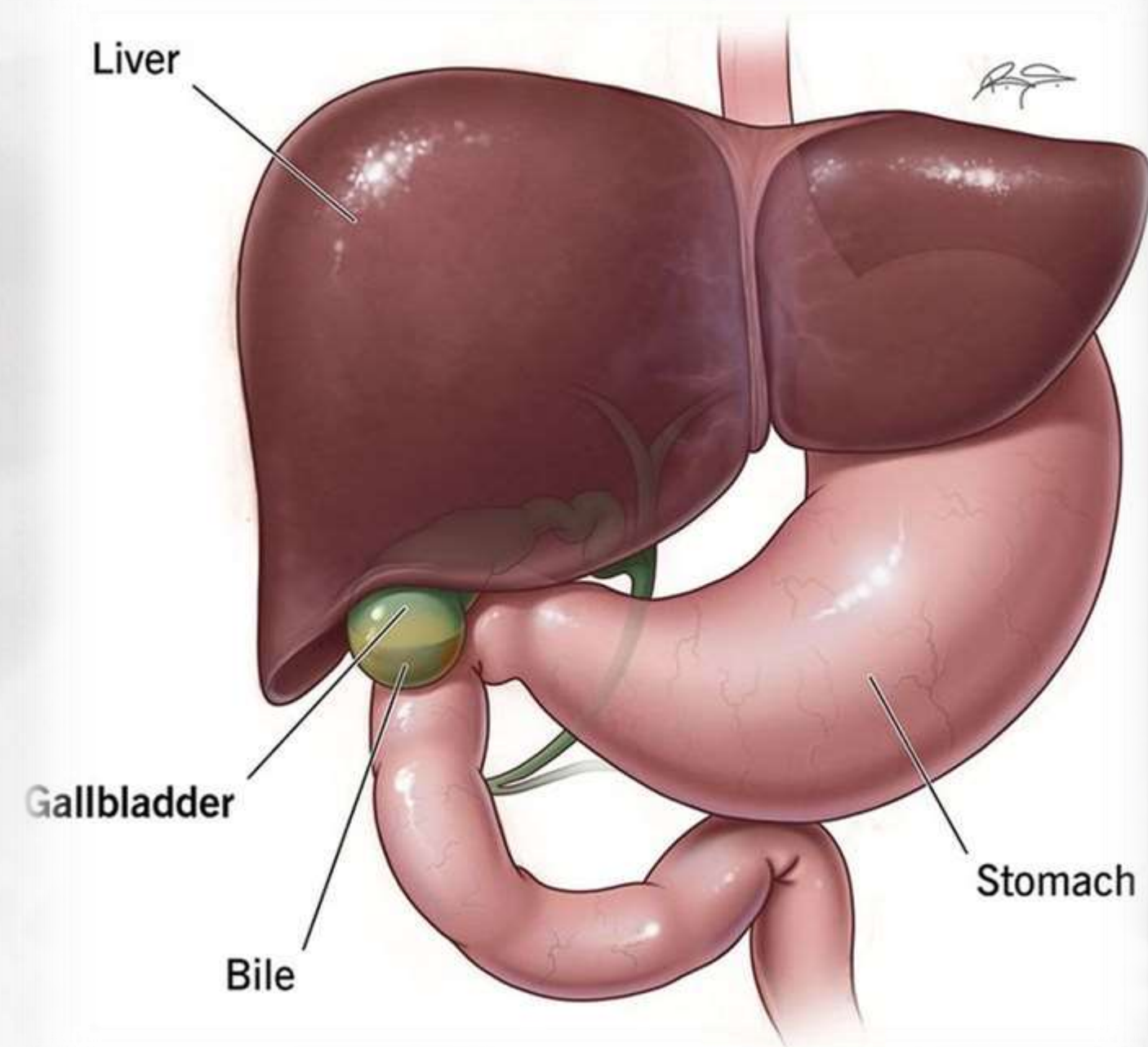


Steatorrhea

Passing stool containing fat usually 7g / day, caused by malabsorption of fat from intestinal mucosa, usually associated with defects in bile secretion.

Common causes are:

- 1- liver disease
- 2- Gallbladder stones
- 3- Crohn's disease

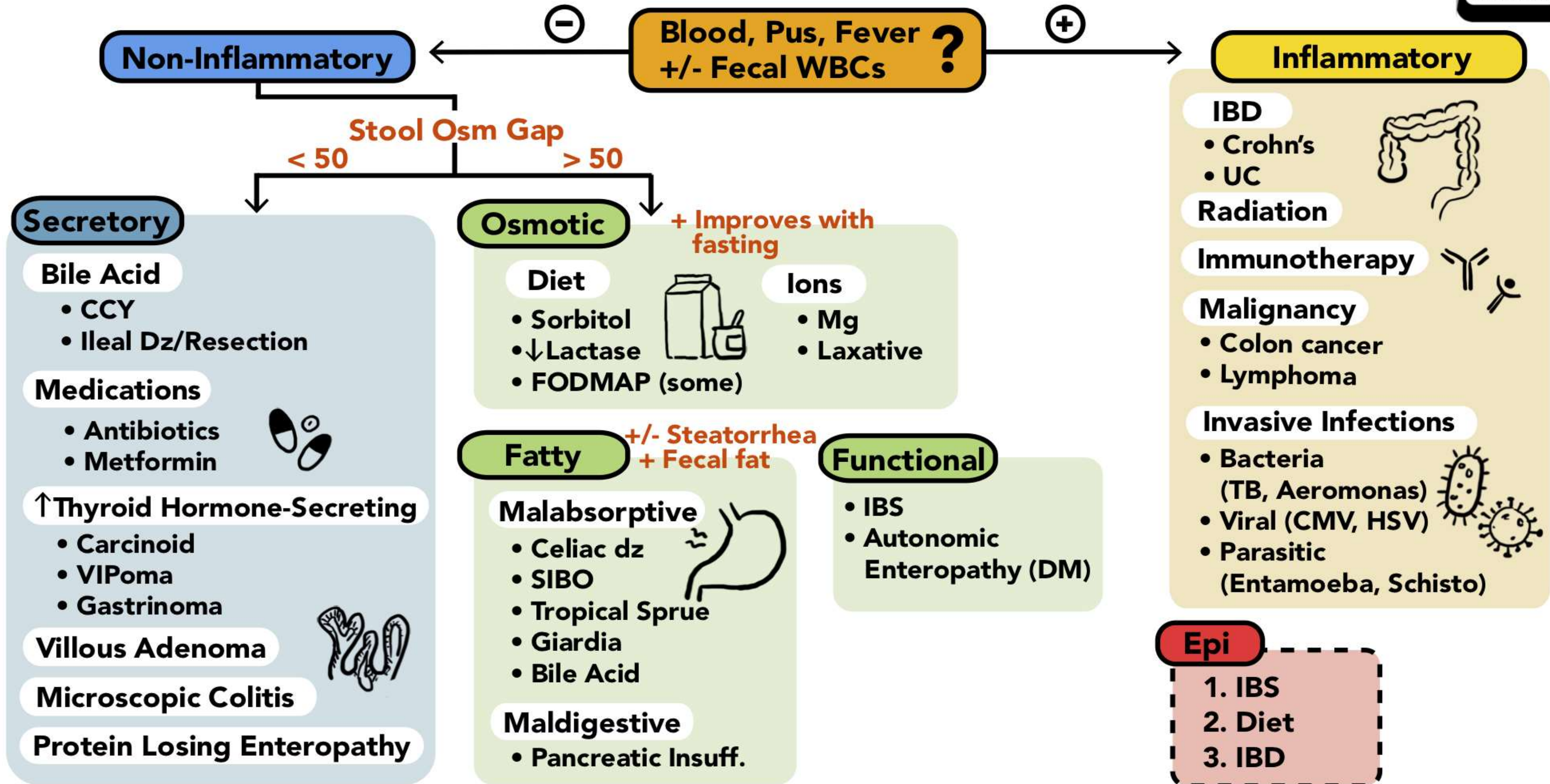


Dysmotility diarrhea

- ❖ Rapid transit time may accompany diarrhea as a secondary phenomenon
- ❖ primary dysmotility is unusual cause of true diarrhea
- ❖ Secondary cause by :
 - autonomic neuropathies (diabetic diarrhea)
 - drug (prostaglandin , prokinetic agent)
 - IBS
 - hyperthyroidism

CHRONIC DIARRRHEA

> 4 weeks





Approach of the patient with diarrhea



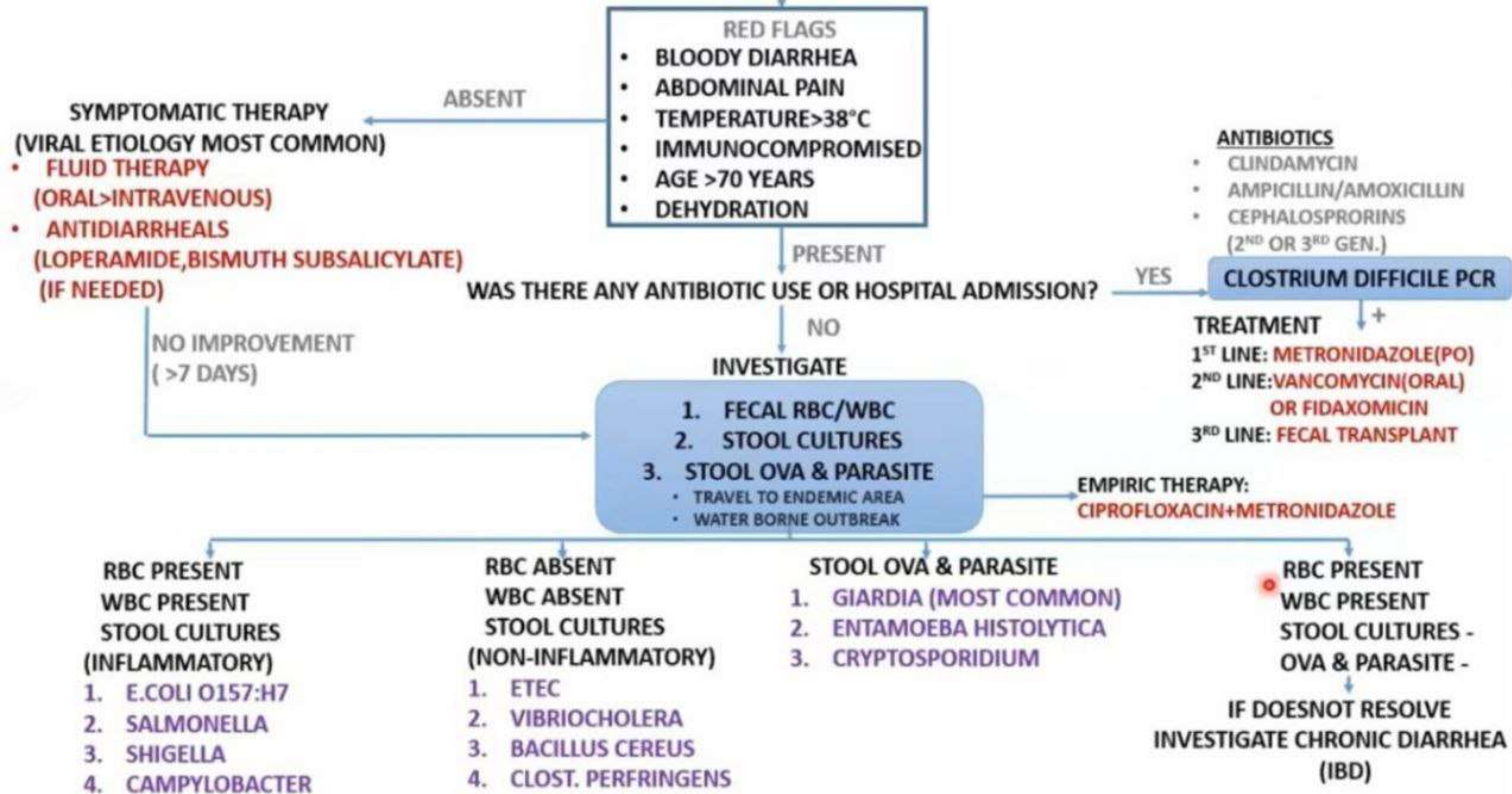
Approach

History

- *Duration (acute , chronic ,intermittent)*
- *Nature and amount*
- *Course (increase or decrease or constant)*
- *Color and special odor*
- *Frequency*
- *day and night variability*
- *Associated factor (fever ,vomiting , tenesmus , abdominal pain ,blood in stool and weight loss,urgency, faecal incontinence)*
- *precipitating factor (drug ,special food ,stress)*
- *Relieving factor : (self limiting ,fasting , drug)*
- *Recent travel and where to and recent medication (antibiotic)*
- *Systemic disease : uncontrolled diabetic , hyperthyroidism .*
- *Previous GIT surgery (stomach surgery , small intestine surgery , gallbladder surgery .*



ACUTE DIARRHEA (<2 WEEKS DURATION)



• FECAL ELASTASE FOR
PANCREATIC INSUFFICIENCY

CHRONIC DIARRRHEA (>4 WEEKS DURATION)

RULE OUT:

- ACUTE DIARRRHEA
- MEDICATION
- LACTOSE INTOLERANCE
- Hx OF GASTRIC SURGERY
- SYSTEMIC DISEASE

FECAL FAT

BLOODY DIARRRHEA (INFLAMMATORY DIARRRHEA)

PATHOGEN SCREEN

COLONOSCOPY+BIOPSY

ULCERATIVE COLITIS
CROHN'S DISEASE
DIVERTICULITIS
ISCHEMIC COLITIS

WATERY DIARRRHEA

STOOL OSMOLAR GAP
RESPONSE TO FASTING

NORMAL STOOL OSMOLAR GAP
DOESNOT IMPROVES WITH FASTING

SECRETORY DIARRRHEA

PATHOGEN SCREEN
ENDOSCOPY
COLONOSCOPY
HORMONE LEVELS

C.DIFFICILE
CARCINOID
VIPOMA
GASTRINOMA
HYPERTHYROIDISM

INCREASED STOOL OSMOLAR GAP
IMPROVES WITH FASTING

OSMOTIC DIARRRHEA

PATHOGEN SCREEN
ENDOSCOPY+BIOPSY
HYDROGEN BREATH
TEST(LACTOSE)

LACTOSE
INTOLERANCE
LAXATIVES/ ANTACIDS
(CONTAINING Mg)
CELIAC DISEASE

FATTY DIARRRHEA

FAT LOADING(100g/day) :72hr

<14g/day
NIL

>14g/day

FAT MALABSORPTION

D-XYLOSE TEST

NOT ABSORBED

ABSORBED

ABSORPTIVE
INSUFFICIENCY

ENDOSCOPY+BIOPSY

CELIAC DISEASE
TROPICAL SPRUE
WHIPPLES DISEASE

PANCREATIC
INSUFFICIENCY

CYSTIC FIBROSIS
CHRONIC
PANCREATITIS

Physical Examination

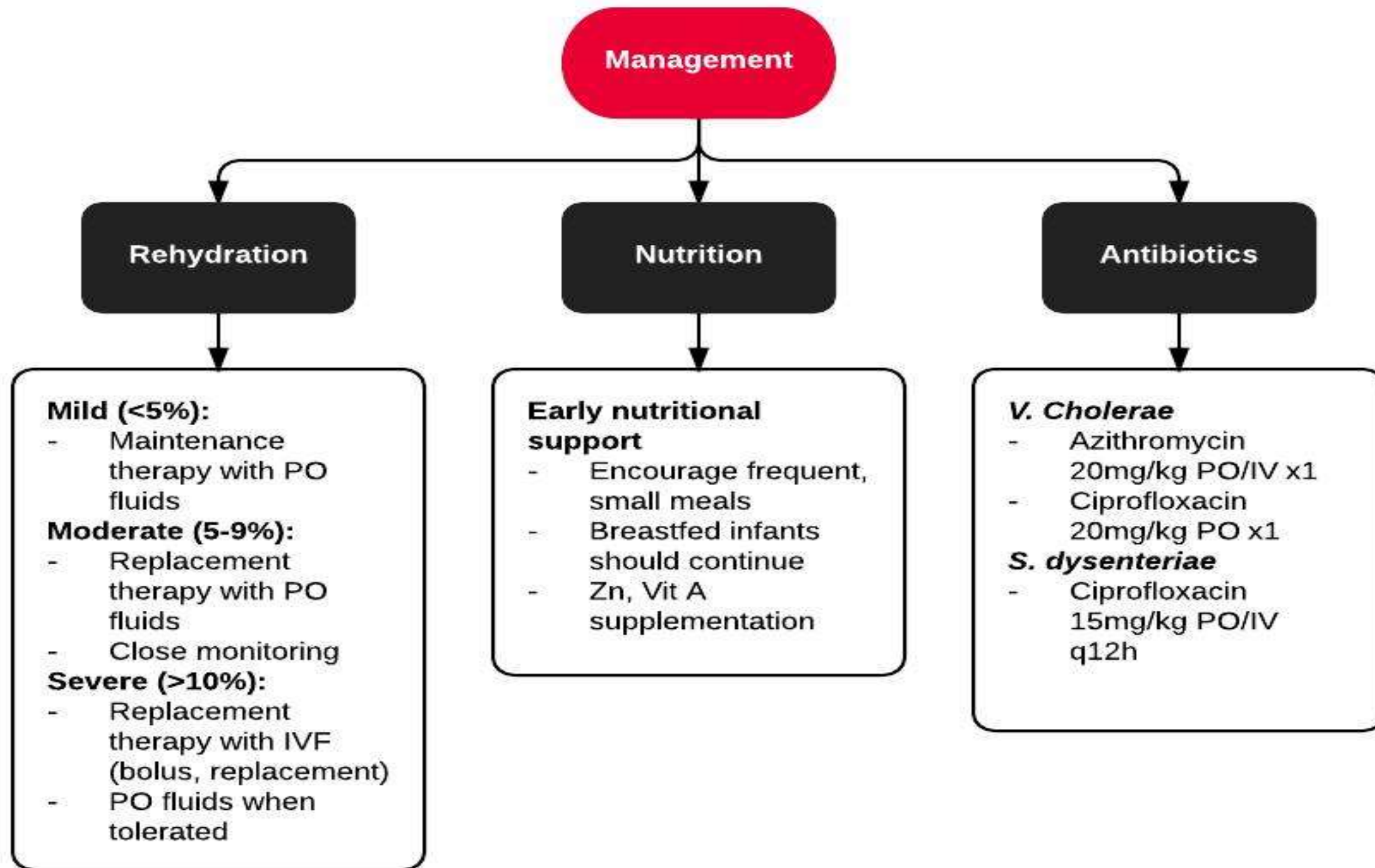
- 1-vital sign (BP,RR,PR , temperature)
- 2- general look and check for signs of dehydration
- 3-abdominal exam (ascites ,organomegaly and palpable masses)
- 4-rectal exam(Perianal fistulas, abscess and anal sphincter tone)
- 5-thyroid exam

Symptom/Signs	Mild (A)	Moderate (B)	Severe (C)
General condition	Alert, active	Restless, irritable	Lethargic, unresponsive
Eyes	Normal	Slightly sunken	Very sunken
Tears	Normal	Decreased	Absent
Thirst	Normal or increased thirst	Eagerly drinking	Not able to drink
Skin pinch	Instant recoil	Recoil in <2 sec	Recoil in >2 sec
Pulse volume	Normal	Normal or decreased	Weak/impalpable

Investigations

- Laboratory test are unusually unnecessary in acute diarrhea
- **CBC**—look for anemia, WBC elevation
- **Stool sample**—for presence of **fecal leukocytes**
 - If fecal leukocytes are absent, there is no need to order stool cultures
 - If fecal leukocytes are present and the patient has moderate to severe diarrhea consider sending stool for culture
- **Stool sample**
 - test three samples for presence of ova and parasites
 - measure for C. difficile toxin if the patient has been treated with antibiotics recently
- **Bacterial stool culture** (This has low sensitivity and is an expensive test)
- **Colonoscopy/flexible sigmoidoscopy**—may be considered for patients with blood in the stool or for patients with chronic diarrhea for which a cause cannot be identified
- **CT scan** may be helpful if IBD or diverticulitis is suspected





3. Antibiotic

not routinely used in adults with acute diarrhoea (risk of *C. difficile*, eradication of normal flora, bacterial resistance) unless:

Severe disease (>6 motions per day, high fever, hospitalization for volume repletion)

Invasive bacterial infection (bloody diarrhea) Age >70, immunocompromised patients.

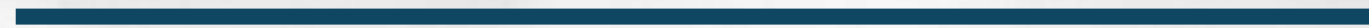
- It is not necessary in simple gastroenteritis as most cases are viral in origin.
- Chemotherapy is necessary in specific types of enteritis e.g.

C. difficile colitis <i>Clostridium difficile</i>	Metronidazole 400 mg/8h orally for 10 days (1 st choice). <i>If no response to metronidazole: vancomycin</i> 250 mg/6h.
<i>Campylobacter jejuni</i>	Azithromycin 500 mg/day orally for 3 days.
<i>E. coli</i> (enterotoxigenic and enteropathogenic)	Ciprofloxacin 500 mg/12h for 1-3 days
<i>Non-typhoid Salmonella spp.</i>	Ciprofloxacin 500 mg/12h for 5-7 days or ceftriaxone 1g IV/24h.
<i>Shigella spp.</i>	Ciprofloxacin 500 mg/12h for 3-5 days or co-trimoxazole 2 tab (80/400)/12h.
<i>V. cholerae</i>	Doxycycline 300 mg orally single dose or ciprofloxacin 500 mg/12h orally for 3 days.

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Thank you



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