

# GASTROINTESTINAL SYSTEM

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# TERMS

- **Dysphagia:** Difficulty in swallowing
- **Aphagia :**Inability to swallow
- **Odynophagia:** Painful swallowing
- **Anorexia:** Loss of appetite or lack of desire to eat

# TERMS

- **Nausea:** Feeling of imminent desire to vomit, usually referred to the throat or epigastrium
- **Vomiting:** Refers to the forceful oral expulsion (emesis) of gastric contents
- **Retching:** Denotes laboured rhythmic contraction of respiratory and abdominal musculatures that frequently precedes or accompanies vomiting

- **Diarrhoea:** An increase in daily stool weight more than 200 gm. Typically the patient may also describe **an increase in stool liquidity and frequency of more than 3 bowel movements per day**. If consistency is **liquid or semiformed** even **one episode** is considered as diarrhoea
- **Acute diarrhoea :** Diarrhoea lasts for 1-2 weeks

- **Persistent Diarrhoea:** lasts for 2-4 weeks diarrhoea
- **Chronic Diarrhoea :** lasts for more than 4 diarrhoea /weeks
- **Constipation :** Frequency of defecation **less than 3 times** a week or the stool is hard or difficult to pass
- **Haematemesis:** Vomiting of blood

- **Melaena :**

- Passage of stools rendered tarry and black by the presence of altered blood.
- **About 60 ml** of blood is necessary to cause melaena.
- After a single bout of bleeding, melaena **persists for about 1 week.**
- Blood must remain in the gut **for about 8 hours** to produce melaena

- **Haematochezia :**

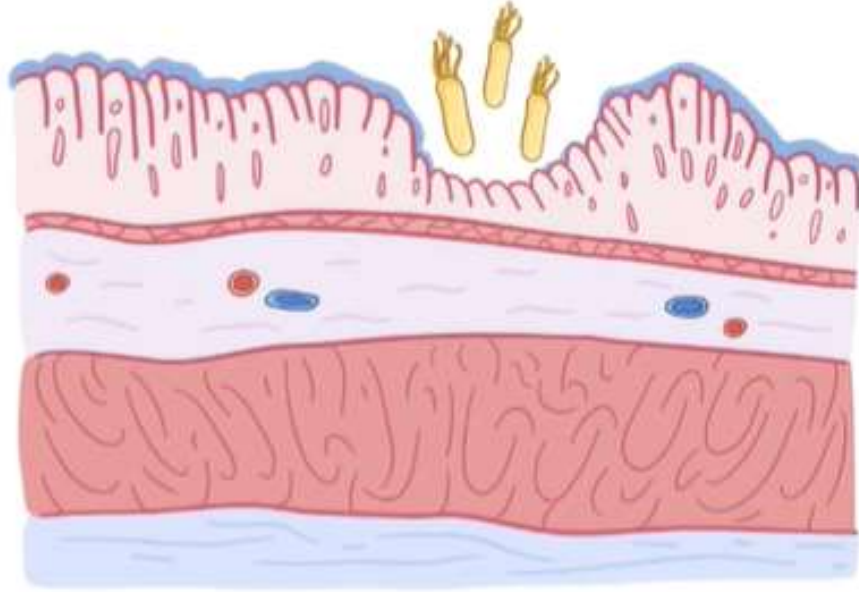
- Passage of frank blood per rectum.
- It signifies bleeding from a source distal to **ligament of Treitz.**

# GASTROESOPHAGEAL REFLUX DISEASE

- MC symptom: **retrosternal burning sensation**
- **Confirmatory** diagnosis by: **24-hr pH monitoring**
- **MC complication** : **barret's esophagus**
- **MC cause**: **incompetent lower esophageal sphincter**
- **MC nutritional deficiency in GERD**: **iron deficiency anemia**
- **DOC**: **H2-receptor blockers/PPI**

# RISK FACTORS

## \* H. PYLORI



**DISRUPTS PROTECTIVE MECHANISMS** in GASTRIC MUCOSA

## \* NSAID

~ **INHIBIT PROSTAGLANDIN SYNTHESIS**

↳ GASTRIC MUCOSA SUSCEPTIBLE to **DAMAGE & ULCERS**



# LIFESTYLE CHOICES

## \* SMOKING



~ ↓ BLOOD FLOW → GASTRIC MUCOSA  
↳ CELL DEATH & POOR HEALING

## \* ALCOHOL



~ ↑ CELL PERMEABILITY  
↳ WEAKENS PROTECTIVE MUCUS BARRIER

# OTHERS

\* AFRICAN AMERICAN  
or HISPANIC ETHNICITY



\* 1<sup>ST</sup> DEGREE RELATIVE w/ PUD

\* ZOLLINGER-ELLISON SYNDROME

~ GASTRIN SECRETING TUMOR → ↑ GASTRIC ACID

# DIAGNOSIS

\* HISTORY & PHYSICAL EXAM

\* EGD

~ LINING of STOMACH & DUODENUM

~ BIOPSY → H. PYLORI

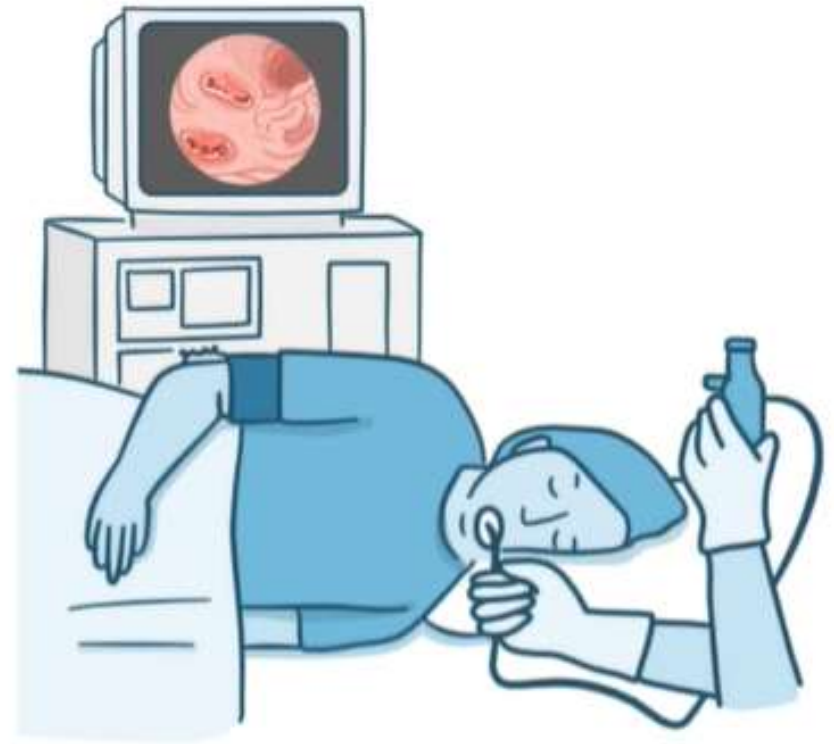
\* UREA BREATH TEST

~ H. PYLORI

\* LABS

~ CBC

~ TESTING for FECAL OCCULT BLOOD



# PEPTIC ULCER DISEASE

- MC site of peptic ulcer: **duodenum (2<sup>nd</sup> part) > stomach (gastric antrum)**
- **MC cause of PUD: H. pylori infection (spiral, gram negative, urease producing microorganism)**
- **MC drug causing PUD: NSAIDS**
- **MC lifestyle causing PUD: smoking**
- **Diagnosis of H.pylori PUD best done by: urease test of gastric biopsy**
- **TOC: TRIPLE THERAPY for 14 days**
  - **Omeprazole *plus* 20 mg BD**
  - **Clarithromycin *plus* 500 mg BD**
  - **Metronidazole or 400 mg TDS**
  - **Amoxicillin 1 gm BD**
- **MC complication of PUD: PUD perforation > UGI bleeding**

# UGI BLEEDING

- MC cause: **Duodenal ulcer perforation**

## Differentiation between Upper GI and Lower GI Bleed

<i>Features</i>	<i>Upper GI bleed</i>	<i>Lower GI bleed</i>
Site	Above the ligament of Treitz	Below the ligament of Treitz
Presentation	Haematemesis/ melaena	Haematochezia
Nasogastric aspiration	Blood	Clear fluid
BUN/creatinine ratio	Increased (> 25:1)	Normal (< 25:1)
Bowel sounds	Hyperactive	Normal

# DIARRHOEA

- MC cause of acute diarrhoea: **Infection**
- MC cause of acute diarrhoea: **ROTA VIRUS**
- **Traveller's diarrhea** is caused by **E. coli**.

1. Bacterial infection

*Vibrio cholerae*  
*Toxigenic E. coli*  
*Salmonella*  
*Shigella*  
*Campylobacter*  
*Yersinia enterocolitica*  
*Invasive E. coli*

2. Viral infection

Rota virus  
Adenovirus  
Norwalk agent

3. Parasitic infection

*Giardia lamblia*  
*Cryptosporidium*  
*Entamoeba histolytica*

- Osmotic diarrhoea is d/to **highly active osmotic substances in gut (non-infective)**
- **TOC IN ALL TYPES OF DIARRHEA- ORS/IV FLUIDS**
- **Osmotic diarrhea stops on fasting**
- **In secretory diarrhea , stool volume is >1litre/day**
- **MC cause of large bowel diarrhea: Shigella> E. histolytica**
- **MC cause of small bowel diarrhea: Rota virus > V. cholera**
- ***Pathogens***
  - *Salmonella*
  - *Shigella*
  - *Yersinia*
  - *Campylobacter*
  - *Clostridium difficile*
  - *Giardia lamblia*
  - *E. histolytica*
- ***Antibiotic of choice***
  - Ampicillin*
  - Cotrimoxazole, Amoxycillin*
  - Tetracycline*
  - Erythromycin*
  - Vancomycin, Metronidazole*
  - Metronidazole, Tinidazole*
  - Metronidazole*

## Differentiation between Amoebic and Bacillary Dysentery

<i>Features</i>	<i>Amoebic dysentery</i>	<i>Bacillary dysentery</i>
Number of stools per day	6 to 8 motions per day	More than 10 per day
Amount	Relatively copious	Small quantity
Odour	Offensive	Odourless
Colour	Dark red	Bright red
Nature	Blood and mucus mixed with faeces	Blood and mucus (with minimal faecal matter)
Reaction	Acid	Alkaline
Consistency	Not adherent to the container	Adherent to the container
<i>Microscopic examination</i>		
a. RBC	In clumps	Discrete
b. Pus cells	Scanty	Numerous
c. Macrophage	Very few	Numerous
d. Eosinophils	Present	Absent
e. Parasite	Trophozoites of <i>E. histolytica</i>	Nil

# CIRRHOSIS OF LIVER

- **Cirrhosis of liver: diffuse hepatic fibrosis and nodule formation**
- **MC cause worldwide: chronic viral hepatitis > excessive alcohol consumption**
- **Cirrhosis is histological diagnosis. 2 types**
  - **Micronodular cirrhosis:** with nodules of  $\leq 1\text{mm}$  diameter ; seen in alcoholic cirrhosis
  - **Macronodular cirrhosis:** with nodules  $> 1\text{mm}$  diameter; seen in **chronic viral hepatitis**
- **MC cause of portal hypertension: Cirrhosis of liver**

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# CHRONIC LIVER INFLAMMATION

## NON-MODIFIABLE RISK FACTORS

\* VIRAL HEPATITIS

\* AUTOIMMUNE HEPATITIS

\* OTHER IMMUNE DISORDERS

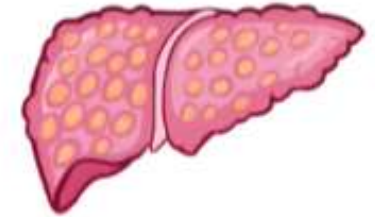
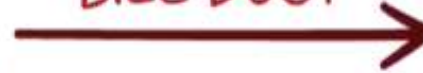


~ PRIMARY BILIARY CHOLANGITIS

~ PRIMARY SCLEROSING CHOLANGITIS



PROGRESSIVE  
SCARRING of  
BILE DUCT



LIVER INJURY

\* NON-ALCOHOLIC  
FATTY LIVER DISEASE

\* GENETIC DISORDERS



~ HEMOCHROMATOSIS → ↑ IRON in LIVER

~ WILSON'S DISEASE → ↑ COPPER in LIVER

~ ALPHA-1 ANTITRYPSIN DEFICIENCY → MALFORMED PROTEINS  
~ STUCK in LIVER



↓ LIVER FUNCTION → TOXINS & WASTE PRODUCTS  
DON'T GET METABOLIZED

↑ BILIRUBIN

AMMONIA & OTHER TOXINS ↑



HEPATIC ENCEPHALOPATHY



↳ CHANGES in MENTAL STATUS or BEHAVIOR



# ↓ LIVER FUNCTION → TOXINS & WASTE PRODUCTS DON'T GET METABOLIZED

ESTROGEN ↑



PALMAR  
ERYTHEMA



MALES

- \* TESTICULAR ATROPHY
- \* GYNECOMASTIA
- \* LOSS of SEX DRIVE



FEMALES

- \* PREMENOPAUSAL
  - ↳ ABSENCE of MENSTRUATION
- \* OLDER
  - ↳ VAGINAL BLEEDING



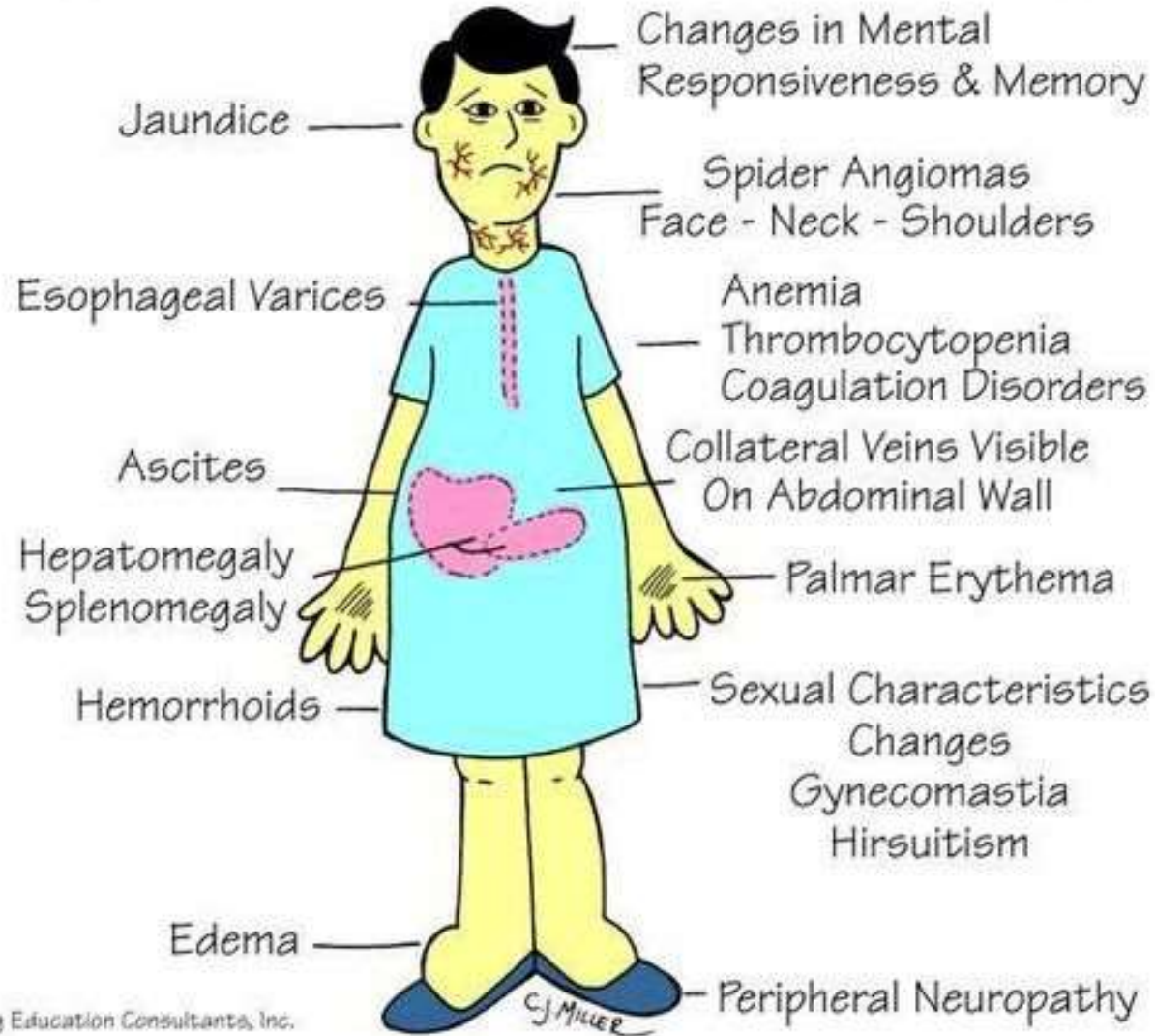
# SIGNS AND SYMPTOMS

- **Hepatomegaly (although liver may also be small)**
- **Jaundice**
- **Ascites**
- Circulatory changes: **spider nevi**, palmar erythema, cyanosis
- Endocrine changes: **loss of libido**, hair loss
  - Men: **gynaecomastia**, testicular atrophy, impotence
  - Women: breast atrophy, irregular menses, **amenorrhoea**

# SIGNS AND SYMPTOMS

- Haemorrhagic tendency: bruises, purpura, epistaxis
- Portal hypertension: **splenomegaly, collateral vessels, variceal bleeding**
- **Hepatic (portosystemic) encephalopathy**
- Other features: pigmentation, **digital clubbing, Dupuytren's contracture**

# CIRRHOSIS: LATER CLINICAL MANIFESTATIONS



- Management : supportive and symptomatic
- **Definitive treatment of cirrhosis: LIVER TRANSPLANTATION**
- Overall, **only 25% of patients survive 5 years from diagnosis**
- **CHILD-PUGH classification** is used for evaluating prognosis of cirrhosis of liver.

# ASCITES

- **accumulation of free fluid in the peritoneal cavity**
- **CAUSES: Common causes**
  - Malignant disease
  - Cardiac failure
  - Hepatic cirrhosis
- **Amniocentesis : removal of Ascitic fluid from peritoneal cavity**

## **Other causes**

**Hypoproteinaemia**

**Nephrotic syndrome**

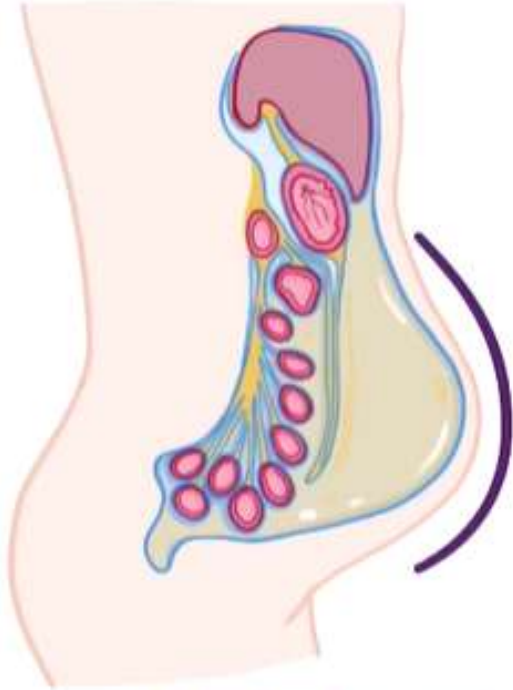
Malnutrition

Pancreatitis

Lymphatic obstruction

**Tuberculosis**

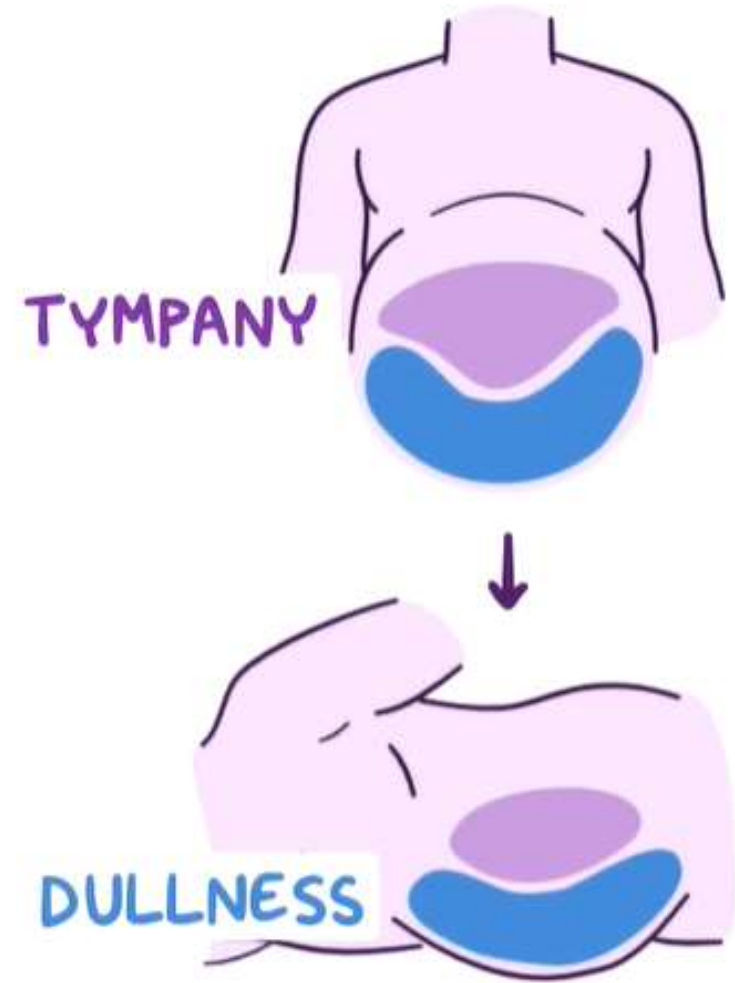
# ASCITES



**DISTENDED  
ABDOMEN**



**FLUID WAVE  
FREE FLUID in ABDOMEN**



**SHIFTING  
DULLNESS**

# SIGNS AND SYMPTOMS

- **abdominal distension,**
- fullness in the flanks,
- **shifting dullness** on percussion and,
- when the ascites is marked, **a fluid thrill**
- **eversion of the umbilicus,**
- **herniae,**
- abdominal striae,
- **scrotal oedema.**
- **Dilated superficial abdominal veins**

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# VIRAL HEPATITIS

 23.37 Causes of viral hepatitis	
<b>Common</b>	
<ul style="list-style-type: none"><li>• Hepatitis A</li><li>• Hepatitis B ± hepatitis D</li></ul>	<ul style="list-style-type: none"><li>• Hepatitis C</li><li>• Hepatitis E</li></ul>
<b>Less common</b>	
<ul style="list-style-type: none"><li>• Cytomegalovirus</li></ul>	<ul style="list-style-type: none"><li>• Epstein–Barr virus</li></ul>
<b>Rare</b>	
<ul style="list-style-type: none"><li>• Herpes simplex</li></ul>	<ul style="list-style-type: none"><li>• Yellow fever</li></ul>



## 23.38 Features of the main hepatitis viruses

	Hepatitis A	Hepatitis B	Hepatitis C	Hepatitis D	Hepatitis E
<b>Virus</b>					
Group	Enterovirus	Hepadna virus	Flavivirus	Incomplete virus	Calicivirus
Nucleic acid	RNA	DNA	RNA	RNA	RNA
Size (diameter)	27 nm	42 nm	30–38 nm	35 nm	27 nm
<b>Incubation (wks)</b>	2–4	4–20	2–26	6–9	3–8
<b>Spread</b>					
Faeces	Yes	No	No	No	Yes
Blood	Uncommon	Yes	Yes	Yes	No
Saliva	Yes	Yes	Yes	Unknown	Unknown
Sexual	Uncommon	Yes	Uncommon	Yes	Unknown
Vertical	No	Yes	Uncommon	Yes	No
Chronic infection	No	Yes	Yes	Yes	No (rarely in immune-compromised)
<b>Prevention</b>					
Active	Vaccine	Vaccine	No	Prevented by hepatitis B vaccination	No
Passive	Immune serum globulin	Hyperimmune serum globulin	No		No

**Note** All body fluids are potentially infectious, although some (e.g. urine) are less infectious than others.

- Chronic carrier stage occurs in **Hepatitis B**
- **Hepatitis B virus** is k/as **dane particle**
- **Surface antigen** present in Hepatitis B virus is: **HbsAg**
- **MC cause of hepatocellular carcinoma (liver cancer) : Chronic hepatitis B infection**
- **MC cause of hepatitis B infection: vertical transmission (90%)(mother to child)**
- **HbsAg is the marker of Active hepatitis B infection.**
- **HbsAg is the marker of carrier stage of hepatitis B infection.**

- **Anti-HBs is the marker of immunization against Hepatitis B infection.**
- **Antiviral drug of choice in hepatitis B infection: Oral entecavir>tenofovir**
- **Hepatitis D infection comes always with Hepatitis B infection (never solely)**
- **Non-A-Non-B hepatitis is hepatitis C infection**
- **MC viral hepatitis: Hepatitis A>Hepatitis E**
- **MC viral hepatitis in pregnancy: Hepatitis A>Hepatitis E**
- **viral hepatitis in pregnancy with high mortality : Hepatitis E**

1. Hematemesis is :

- a. Vomiting out of blood
- b. Coughing out of blood
- c. Vomiting out of gastric contents
- d. regurgitating blood

1. a

2. Minimum amount of blood required for malena:

a. 50 ml

b. 60 ml

c. 100 ml

d. 1000 ml

2. b

3. MC symptom of GERD:

a. Dysphagia

b. Water brash

c. Epigastric discomfort

d. Epigastric pain

3. c

4. Salivary enzyme is:

- a. Ptylin
- b. Pancerozymin
- c. Gastrin
- d. Secretin

4. a

5. Ascites is:

- a. Collection of blood in peritoneum
- b. Collection of fluid in peritoneum
- c. Collection of blood in GI tract
- d. Collection of fluid in GI tract

## 5. B

6. Shigella dysentery affects:

- a. Stomach
- b. Small intestine
- c. Large intestine
- d. Appendix

## 6. C

7. The primary function of appendix is:

- a. Immunity
- b. Digestion
- c. Is a vestigeal organ (no function)
- d. Absorption of fats

## 7. A

8. Insulin is secreted by:

- a. Delta cells
- b. Beta cells
- c. Gamma cells
- d. Alpha cells

## 8. B

9. Hepatitis B is :

- a. DNA virus
- b. RNA virus
- c. Mixture of DNA and RNA virus
- d. Ribosomal virus

## 9.A

10. Fulminant hepatitis in pregnancy is:

- a. Hep A
- b. Hep B
- c. Hep C
- d. Hep E

## 10. D

11. Hepatocellular carcinoma is the result of:

- a. Acute Hep B infection
- b. Chronic Hepatitis B infection
- c. Acute Hep A infection
- d. Chronic Hepatitis A infection

# 11 B

12. MC cause of portal hypertension:

- a. Ascites
- b. Hepatocellular Carcinoma
- c. Cirrhosis of liver
- d. Gastric cancer

12. C

13. MC cause of upper GI bleeding:

- a. GERD
- b. Peptic ulcer
- c. Peptic ulcer perforation
- d. Oesophageal varices

13. C

14. Triple therapy is:

- a. 2 antibiotics + 1 PPI
- b. 1 antibiotics + 2 PPI
- c. 2 antibiotics + 1 Bismuth salt
- d. None of the above

14. A

15. Traveller's diarrhea is caused by:

- a. Entamoeba Coli
- b. Escherechia Coli
- c. Both
- d. None

15. B

**THANK YOU !!**