Viral Hepatitis

A and E — Fecal

C + B + D — Parenteral, Sexual, Perinatal

→ structural & functional proteins.

Hep. A :- ssRNA / 14 – 50 days (↳ can spread the virus in this period.)

Feco-oral, usually from feces (close contact, food and water).

Doesn't cause chronic infection

* **Symptoms** : ① Jaundice → According to the Age group:
↑ age : ↑ appearance of jaundice

② Complications : Acute fulminant Hep.
Cholestatic Hepatitis.
Relapsing Hep (6-9months) + mostly in cholestatic.

Serology : the patient is infected before he/she become symptomatic.

Symptoms : fever, Malaise, loss of appetite, Diarrhea, nausea. Ab. pain
Dark urine, jaundice.

then ↑ ALT ↑ IgM anti HAV which will Decline
then ↑ IgG anti-HAV.

↑ IgM and/without IgG → Acute infection of HAV.
+ IgG without IgM → Immunity.
immunity from preinfection OR vaccination.

Treatment + prevention

TX → Symptomatic treatment.

Prevention → sanitation of food / pre-exposure HAV vaccination for travellers in high Risk group.

OR Post-exposure HAV vaccine or Immunoglobulins within 2 weeks of exposure

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Hep. B dsDNA

S gene → Surface Ag C gene → Core Ag.
X gene P gene.

Incubation period. 60 – 90 days in average. (45 – 180)

If the younger is got infected with the disease the more chance of developing chronic illness and less chance for developing Symptomatic clinical features like Jaundice.

you can find Hep B in Blood/Serum / Semen, vaginal fluids, Saliva
transmitted Sexually, Parenteral, Perinatal

Hep B Serology — Acute

incubation range 60–90 days

Acute

- HBsAg 6 months to decline
- HBcAg
- IgM anti-HBc

chronic

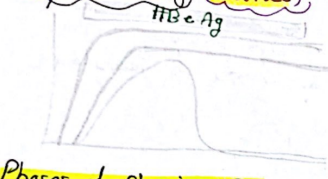
- Anti HBs appear after 4–8 weeks after window
- Anti-HBe
- Total Anti-HBc

window

only HBc IgM is detectable.

indicates Post-infection

Hep B Serology — Chronic



HBsAg detectable > 6 months.

Phases of Chronic HBV

① Immune Tolerant → ② Immune Activation → ③ Inactive carrier → ④ Reactivation.

① Immune Tolerant
HBeAg⊕ / HB DNA ⊕high
LFT Normal
Biopsy → Normal

② Immune Activation
HBeAg⊕ / HBV DNA high initially
↑ALT (LFTs)
Liver biopsy: chronic inf. + fibrosis

③ Inactive carrier
HBeAg⊖ HBV DNA ⊖
HBe Antibodies ⊕
Normal LFTs
Biopsy → Mild Inf. + fibrosis

④ Reactivation
Elevated LFTs
HBeAg + Ab + or −
Moderate DNA HBV
Biopsy: Active inflammation

So ⊕ HBsAg and ⊕ Total HBc → chronic Hep B.
⊕ Anti-HBc and ⊕ Anti-HBs → past HBV infection (resolved)
ONLY ⊕ Anti-HBc → past HBV infection resolved or false positive
ONLY ⊕ Anti-HBs → Immune vaccine.
All Negative → uninfected and not immune.

TX → no specific treatment. Chronic HBV → interferon, {Entecavir, Tenofovir} ⊛

Prevention → vaccination / Hep B Immunoglobulins
↳ if neonates ⊕ HBV vaccine

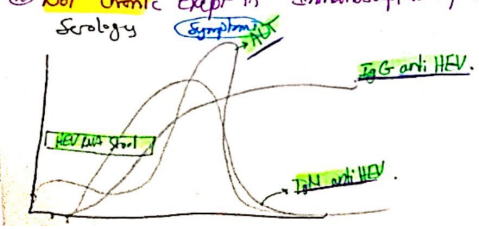
Hep E

RNA feco-oral transmission, spares children, High Mortality rate in pregnancy up to 25%.

incubation: Ave. 40 days (15–60 days)
Fatality 1–3% if pregnant → 15–25% / illness severity ↑ with Age.

⊛ Not chronic except in Immunosuppressed patients.

Serology



- Self limited
- Supportive Care

Avoid drinking water (ICE) uncooked fruits, Vegs, Shellfish

there's vaccine in the news

Hep - D Needs the HBsAg so either → Coinfection / Superinfection with Hep B

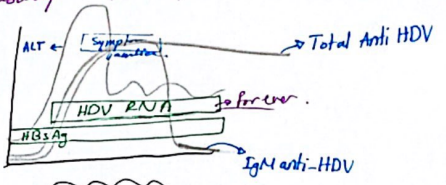
RNA + δ antigen

Modes of transmission similar to HBV : percutaneous + permucosal (injectio / sexual)

→ Clinical Features : ① Coinfection : severe acute disease that is Self limited + low risk of chronic infection HDV

② Superinfection : present as Acute Hepatitis, ↑ risk of decompensated chronic Liver disease

** usually develop Hep D virus Chronic infection



double peak in ALT

Coinfection

Resolution in most cases

← to DDX → IgM anti HBc

Superinfection

progress to liver cirrhosis -

	HBsAg	HBV DNA	IgM anti-HBc	IgM anti-HDV
HDV → Super (previously + HBsAg)	+	+	−	+
HDV → Co (⊖ HBsAg Positivity)	+	+	+	+

(TX) → interferon ∝ (pegylated > conventional) 48 - 72 weeks.

Preventing → Co prevent HBV (pre or post exposure prophylaxis)

Supra educate + ↓ risk behaviors

Hep C Now totaly curable SSRNA, 6 genotypes in which treatment was directed upon them.

Modes of transmission → percutaneous, Sexual, Perinatal

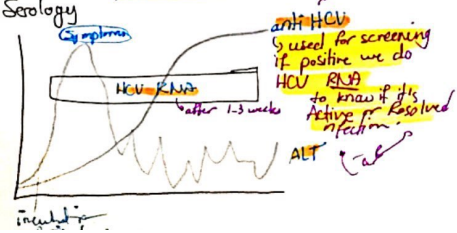
Ask about : Drug use, Transfusions, transplant, Hemodialysis, Multiple sexual partners, needle sticks.

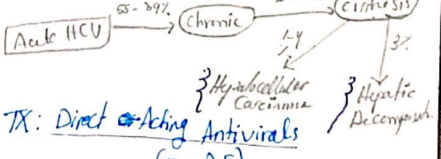
Incubation period → 2-26 weeks avar. 6-7 weeks. / ONLY 30% will have clinical symptoms, So there's 70% chance to develop Chronic Hep and 85-100% ① chance to develop Persistant infection.

NO Vaccine.

So to DX : Anti HCV and HCV RNA.

Serology





TX : Direct Acting Antivirals (DAAS)

3 group ; we compare each 2