Acute viral Hepatitis: Types, Symptoms, Treatment

Acute Viral Hepatitis (AVH) is a systemic infection that predominantly affects the liver, caused by hepatotropic viruses including **hepatitis A, B, C, D, and E** . These viruses trigger liver inflammation and hepatocellular injury. The clinical course may be self-limiting or progress to chronic liver disease, cirrhosis, hepatic failure, or hepatocellular carcinoma.

Etiological Agents

Virus	Genome Type	Transmission	Chronicity	Vaccine Available
HAV	RNA	Fecal-oral	No	Yes
HBV	DNA	Parenteral, sexual, perinatal	Yes	Yes
HCV	RNA	Parenteral	Yes	No
HDV	RNA (requires HBV)	Parenteral	Yes	No (preventable with HBV vaccine)
HEV	RNA	Fecal-oral	Rare (mainly in immunocompromised)	Limited use

? **High-Yield:** Only HBV is a DNA virus; the others are RNA viruses.

Other Viral Causes of Hepatitis

- **Cytomegalovirus (CMV)**
- **Herpes Simplex Virus (HSV)**
- **Epstein-Barr Virus (EBV)**
- **Adenovirus**
- **Coxsackievirus**

These are more common in immunocompromised hosts.

Pathophysiology

All hepatitis viruses are non-cytopathic; liver injury is primarily immune-mediated. CD8+ T cells recognize infected hepatocytes and trigger inflammation and hepatocyte apoptosis.

Transmission Routes

- **HAV & HEV** : Fecal-oral route (contaminated food/water)
- **HBV, HCV & HDV** : Parenteral, sexual contact, perinatal
- **Common Risks** :

- Unsafe injections or medical procedures
- Blood transfusion (especially pre-1992 for HCV)
- IV drug use
- High-risk sexual behaviors
- Travel to endemic regions

?? **High-Yield:** HDV requires co-infection or superinfection with HBV for replication.

Individual Virus Overviews

Hepatitis A Virus (HAV)

- **Family** : Picornaviridae
- **Genome** : ssRNA, non-enveloped
- **Incubation** : ~28 days
- **Course** : Self-limited; no chronic infection
- **Serology** :
  - **Anti-HAV IgM** ? acute infection
  - **Anti-HAV IgG** ? past infection/immunity

Risk Factors : Poor sanitation, travel to endemic areas, MSM, IV drug users.

? **Vaccine** : Available and effective

Hepatitis B Virus (HBV)

- **Family** : Hepadnaviridae
- **Genome** : dsDNA, enveloped
- **Incubation** : 60–150 days
- **Course** : Can become chronic (especially in neonates)

Key Serologic Markers :

Marker	Interpretation
HBsAg	Active infection
anti-HBs	Immunity (vaccine or recovery)
HBeAg	High infectivity
anti-HBe	Lower infectivity
anti-HBc IgM	Recent infection
anti-HBc IgG	Past/chronic infection

Chronic Complications : Cirrhosis, hepatocellular carcinoma (HCC)

? **Vaccine** : Highly effective; given at birth and during infancy

Hepatitis C Virus (HCV)

- **Family** : Flaviviridae
- **Genome** : ssRNA, enveloped
- **Incubation** : 2–12 weeks
- **Course** : High rate of chronicity (60–85%)
- **Transmission** : Blood exposure, IV drug use

No vaccine available. Direct-acting antivirals (DAAs) achieve >95% cure.

Hepatitis D Virus (HDV)

- **Genus** : Deltavirus
- **Genome** : Circular ssRNA
- **Dependent on** : HBV for replication
- **Forms** :
  - **Coinfection** (with HBV): Usually self-limited
  - **Superinfection** (in chronic HBV): High risk of fulminant hepatitis and chronicity

Hepatitis E Virus (HEV)

- **Family** : Hepeviridae
- **Genome** : ssRNA
- **Transmission** : Fecal-oral (contaminated water)
- **Severity** : More severe in pregnant women (especially 3rd trimester)

? **Vaccine** : Available in some countries (e.g., China)

Clinical Phases of AVH

1. **Prodromal Phase (1–2 weeks)**
   - Flu-like symptoms: Fever, malaise, anorexia, nausea, vomiting
   - Arthralgia, myalgia, pharyngitis, headache
   - Dark urine, pale stools
2. **Icteric Phase**
   - Jaundice (scleral/skin), hepatomegaly, RUQ tenderness
   - Constitutional symptoms often improve
   - Cholestatic picture in some cases
3. **Convalescent Phase**
   - Gradual resolution
   - Residual hepatomegaly, biochemical abnormalities

Complications

- **Fulminant hepatic failure** (more with HDV, HBV)
- **Chronic hepatitis** (especially with HBV, HCV, HDV)
- **Cirrhosis**

- **Hepatocellular carcinoma**

Diagnosis

1. **Liver Function Tests (LFTs)** :
    - ? ALT, AST (ALT > AST typically)
    - ? Bilirubin
    - ? ALP (if cholestatic pattern)
2. **Serologic Tests** : Based on specific virus
3. **Molecular Tests** : PCR for viral RNA/DNA quantification

? **High-Yield:** Jaundice becomes clinically evident when serum bilirubin >2.5 mg/dL (>43 ?mol/L)

Management

- **Supportive care** for acute hepatitis (hydration, rest, avoid hepatotoxins)
- **Hospitalization** for fulminant hepatitis or complications
- **Antivirals** :
    - Chronic HBV: Entecavir, Tenofovir
    - Chronic HCV: DAAs (e.g., Sofosbuvir + Ledipasvir)

? Avoid **acetaminophen** and **alcohol**

Prevention

- **Vaccination** : HAV, HBV
- **Safe practices** : Clean water, food hygiene, safe sex, sterile medical equipment
- **Screening** : Pregnant women for HBV, blood donors for HBV/HCV

Prognosis

- **HAV & HEV** : Excellent in most; full recovery expected
- **HBV & HCV** : Risk of chronic disease; prognosis depends on early detection and treatment
- **HDV** : Worse prognosis when superimposed on chronic HBV

High-Yield Summary Table

Feature	HAV	HBV	HCV	HDV	HEV
Genome	RNA	DNA	RNA	RNA	RNA
Chronic?	No	Yes	Yes	Yes	Rare
Vaccine	Yes	Yes	No	No (HBV prevention)	Limited
Transmission	Fecal-oral	Blood, sex, perinatal	Blood	Blood (needs HBV)	Fecal-oral

Feature	HAV	HBV	HCV	HDV	HEV
Risk in Pregnancy	Low	Moderate	Moderate	High if co-infected	Very high (3rd trimester)