



VIRAL HEPATITIS

Dean of Community Medicine & Public Health
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Learning Objectives

By the end of session, 3rd year MBBS students should be able to:

1. Explain, How Public Health works
2. Explain "Epidemiological Triad" model of disease causation
3. Describe epidemiological features of various types of Viral hepatitis
4. Elaborate mode of transmission of viral hepatitis
5. Enlist measures for prevention of viral hepatitis in the community

Community Medicine & Public Health

- It is an art & science of preventing disease, prolonging life and promoting physical, mental & social wellbeing of the people through organised community efforts
- Disease Occurrence & Disease causation
- Epidemiological triad
 - Agent
 - Host
 - Environment



❖ Hepatitis A

- ✓ Hepatitis A (formerly known as “infectious” hepatitis or epidemic jaundice) is an acute infectious disease caused by Hepatitis A virus (HAV).
- ✓ The disease is heralded by non-specific symptoms such as fever, chills, headache, fatigue, generalized weakness and aches and pains, followed by anorexia, nausea, vomiting, dark urine and jaundice.
- ✓ The disease is benign with complete recovery in several weeks.

❖ Epidemiological determinants

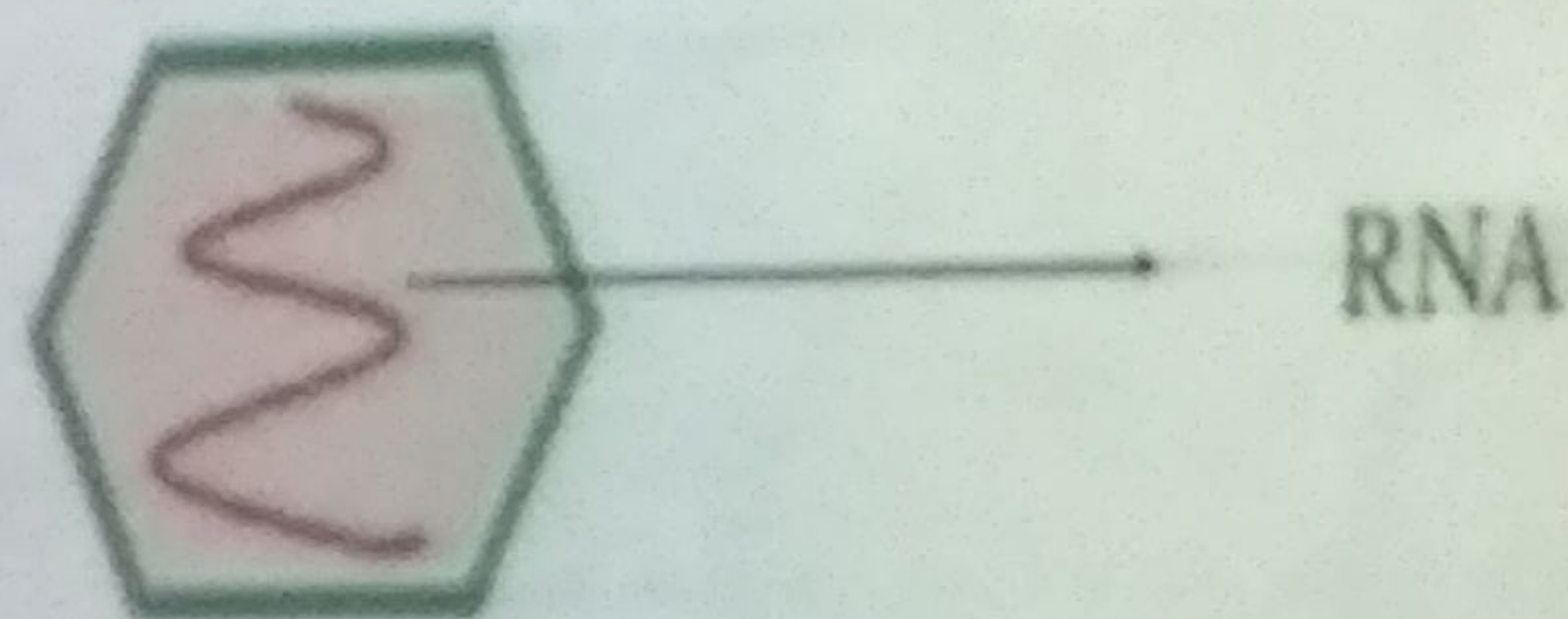
➤ Agent factors

a) AGENT: The causative agent, the hepatitis A virus, is an enterovirus of the Picornaviridae family. It multiplies only in hepatocytes.

b) RESISTANCE: The virus is fairly resistant to heat and chemicals.
-Withstands heating to 60°C for 1 hr. and is not affected by chlorine in doses usually employed for chlorination.

-Formalin is stated to be an effective disinfectant.

-The virus is inactivated by ultraviolet rays and by boiling for 5 minutes or autoclaving.



Naked RNA virus

- c) RESERVOIR OF INFECTION: The human cases are the only reservoir of infection.
- d) PERIOD OF INFECTIVITY : The risk of transmitting HAV is greatest from 2 weeks before to 1 week after the onset of jaundice.
- e) INFECTIVE MATERIAL : Mainly man's faeces.
- f) VIRUS EXCRETION: HAV is excreted in the faeces for about 2 weeks before onset of jaundice and for up to 2 weeks thereafter.

Epidemiological aspects of HAV

- Host Factors;
 - both sexes equally susceptible
 - all ages but relatively frequent in children
 - immunity
 - lower SOE conditions
- Environmental Factors
 - Safe water
 - sanitary conditions
 - kachibodies
 - Rainy Seasons, Floods, Overcrowding

❖ Incubation period

10-50 days (usually 25 to 30 days).

❖ Mode of Transmission

- a) *FAECAL-ORAL ROUTE*: Major route of transmission.
 - By contaminated water, food or milk.
- b) *PARENTERAL ROUTE (Rarely)*:
 - By blood and blood products or by skin penetration through contaminated needles.
- c) *SEXUAL TRANSMISSION*:
 - May occur mainly among homosexual men because of oral-anal contact.

❖ Prevention:-

- hygienic measures and sanitation

- passive immunization(Human Immunoglobulin Gamma globulin given before exposure to virus or early during the incubation period, will prevent or attenuate a clinical illness.

- active immunization

Several inactivated or live attenuated vaccines against hepatitis A have been developed.

❖ Treatment:

- nospecific, dietary food and long rest

❖ Hepatitis B

- ✓ Hepatitis B (formerly known as “serum” hepatitis) is an acute systemic infection with major pathology in the liver, caused by hepatitis B virus.
- ✓ Transmitted by the Parenteral route.
- ✓ The acute illness causes liver inflammation, vomiting, jaundice, and, rarely, death. Chronic hepatitis B may eventually cause cirrhosis and liver cancer.
- ✓ Hepatitis B is endemic throughout the world, especially in tropical & developing countries.

❖ Epidemiology Determinants

➤ Agent factor

a) AGENT: Hepatitis B Virus (HBV)

- It is a complex, 42 nm double-shelled DNA virus originally known as "Dane Particle".
- It replicates in liver cell.

HBV occurs in 3 morphology form in serum:

- Small spherical particles with an average Diameter of 22nm.
- Filamentous or Tubules of varying length & of 22 nm diameter.
- Dane particle.

Out of 3 morphology forms, only the Dane particle is considered infectious, other circulating morphology forms are not infectious.

b) RESERVOIR OF INFECTION:

-Man is the only reservoir of infection which can be spread either from carriers or from cases.

c) Infective material:

-Contaminated blood is the main source,

-Virus has been found in body secretion such as saliva, vaginal secretion & Semen in infected material.

d) Resistance:

-Readily destroyed by sodium hypochlorite, as is by heat sterilization in an autoclave for 30-60 min.

➤ Host factor

a) AGE:

-Acute hepatitis B

90% resolve by themselves; <1% develop fulminant hepatic failure.

-occurs in approx.:

Perinatal	-1%
Childhood	-10%(1-5 yr. age)
Late infection	-30%(>5 yr. age)

-Chronic hepatitis B

2-10% progress to chronic state.

-occur in approx.

Perinatal	-95%
Childhood	-80%
After 5 yr. of age	-5-10%

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-*Chronic hepatitis B*
2-10% progress to chronic state.
-occur in approx.
Perinatal -95%
Childhood -80%
After 5 yr. of age -5-10%

b) High Risk Group:

- ✓ People from endemic regions
- ✓ Babies of mothers with chronic HBV
- ✓ Intravenous drug abusers
- ✓ People with multiple sex partners
- ✓ Hemophiliacs and other patients requiring blood and blood product treatments
- ✓ Health care personnel who have contact with blood
- ✓ Patients who are immunocompromised.

❖ Prevention

❑ Vaccination

- highly effective recombinant vaccines

❑ Hepatitis B Immunoglobulin (HBIG)

- exposed within 48 hours of the incident/ neonates whose mothers are HBsAg and HBeAg positive.

❑ Other measures

- screening of blood donors, blood and body fluid precautions.

❖ Prevention

❑ Vaccination

- highly effective recombinant vaccines

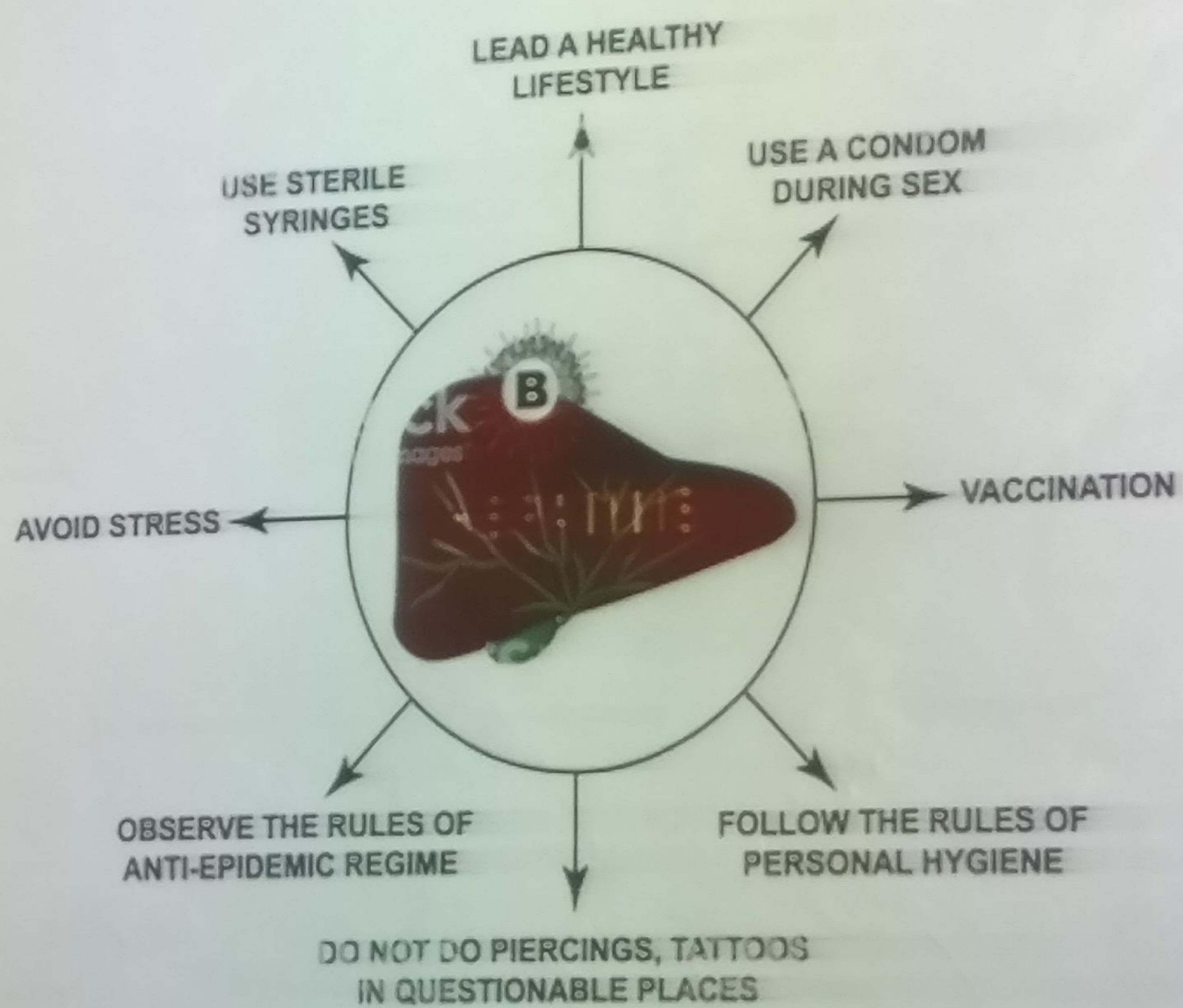
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Prevention of Hepatitis B



❖ Hepatitis C

- ✓ Hepatitis C is an infectious disease affecting primarily the liver, caused by the hepatitis C virus (HCV).
- ✓ The infection is often asymptomatic, but chronic infection can lead to scarring of the liver and ultimately to cirrhosis, which is generally apparent after many years.
- ✓ It is estimated that 150-200 million people, or ~3% of the world's population, are living with chronic hepatitis C.
- ✓ HCV infection is prevalent in India too, with an estimated 12.5 million cases.
- ✓ Overt jaundice is seen in about 5 % of patients only.
- ✓ The important part in type C hepatitis is the chronic illness.
- ✓ About 50 to 80 % of patients progress to chronic hepatitis.

Hep-C statistics

- Infectious Disease, primarily affecting liver, caused by Hep-C virus.
- 50-80% cases progress to chronic infection
- estimated that 130-150M population / 3% of world is living with Chronic Hep-C.
- estimated pool of chronic Hep-C or B is 12M with world highest prevalence (5%).
- estimated Prevalence of Hep-C in Punjab is 7%.
- 150,000 new are added each year
- estimated deaths are 23720 each year

❖ Prevention

- ✓ Only General Prophylaxis, such as blood, tissue, organ screening, is possible.
- ✓ No specific active or passive immunizing agent is available.

❖ Treatment

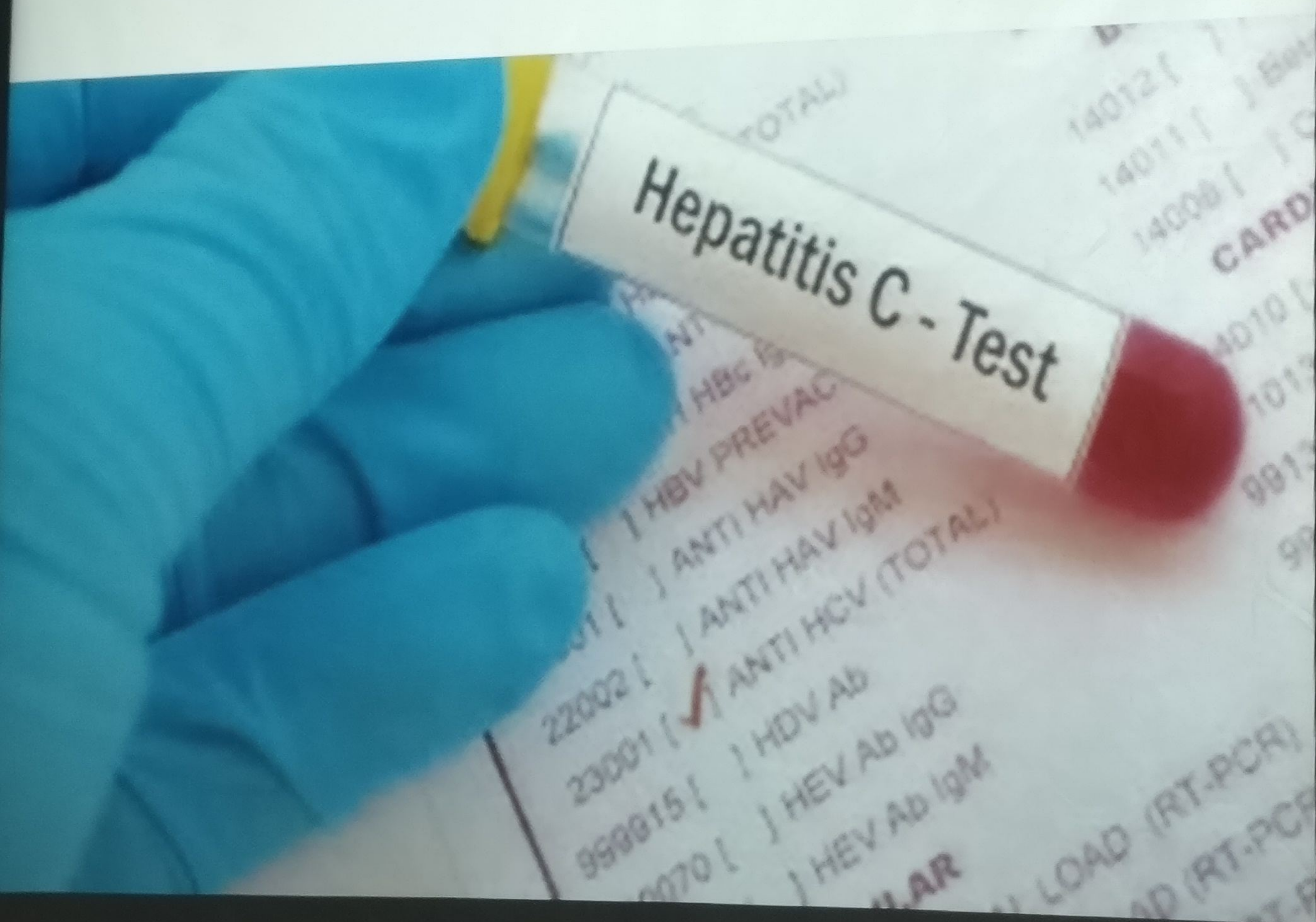
Interferon - may be considered for patients with chronic active hepatitis. The response rate is around 50% but 50% of responders will relapse upon withdrawal of treatment.

Ribavirin - there is less experience with ribavirin than interferon. However, recent studies suggest that a combination of interferon and ribavirin is more effective than interferon alone.

Hep-C Treatment opportunities

- curative treatment is available at affordable cost or free
- sofosbuvir (antiviral drug)
- Hepatitis C is treated using direct acting antiviral (DAA) tablets. DAA tablets are the safest and most effective medicines for treating hepatitis C. They're highly effective at clearing the infection in more than 90% of people. The tablets are taken for 8 to 12 weeks.

Screening for Hepatitis C



Hepatitis D

❖ Prevention

- HBV-HDV Coinfection

Pre or post exposure prophylaxis to prevent HBV infection. Screening of blood donor for HBsAg.

- HBV-HDV Superinfection

Education to reduce risk behaviors among persons with chronic HBV infection.

❖ Mode of Transmission

It is spread mainly by the fecal-oral route due to fecal contamination of water supplies or food; person-to-person transmission is uncommon.

❖Diagnosis

ELISA kits are available for IgG and IgM antibodies, using recombinant and synthetic peptide antigens.

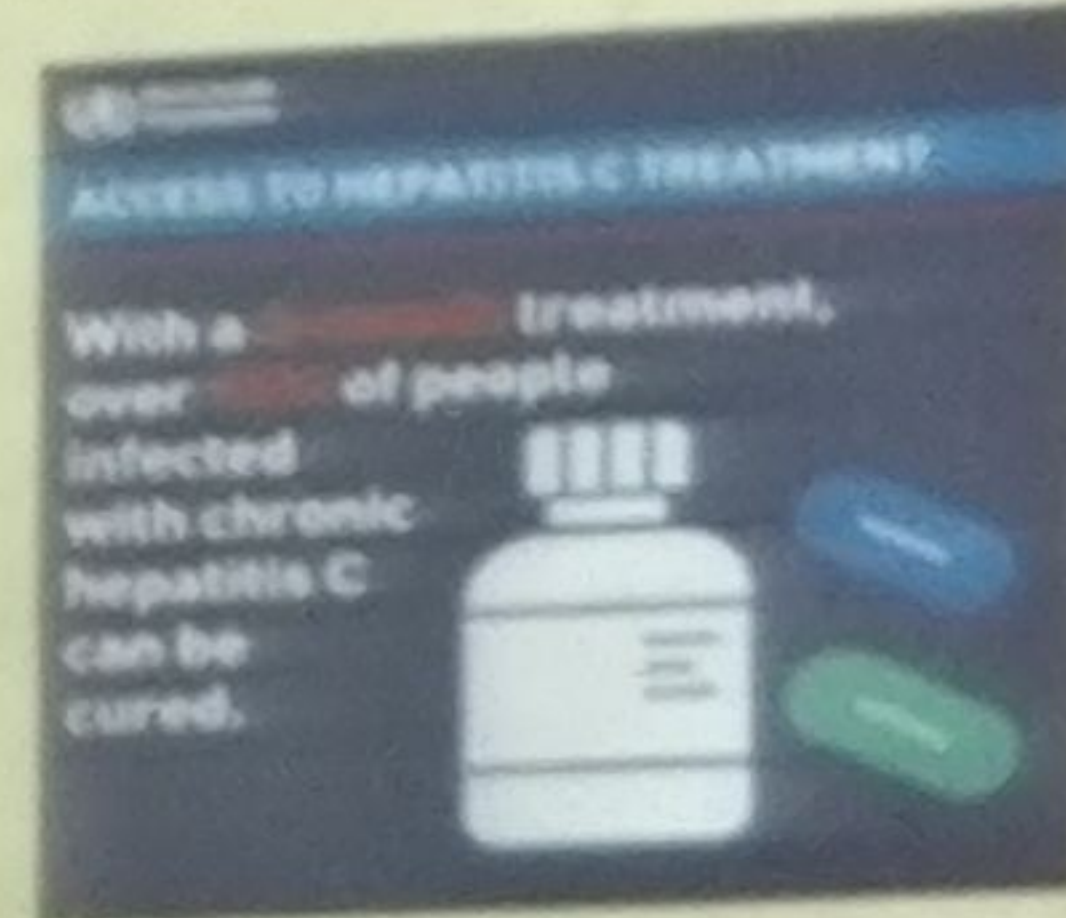
❖Prevention

Sanitation:

Avoid drinking water of unknown purity, uncooked shellfish, and uncooked fruit/vegetables not peeled or prepared by traveler.

تشخیص :-

اس بیماری کی تشخیص کیلئے ٹیسٹ لینا ضروری ہے جس سے اگلے بیماری کے ہونے نہ ہونے کی تصدیق اور انتہائی مرحلے کی تشخیص ہو سکتی ہے

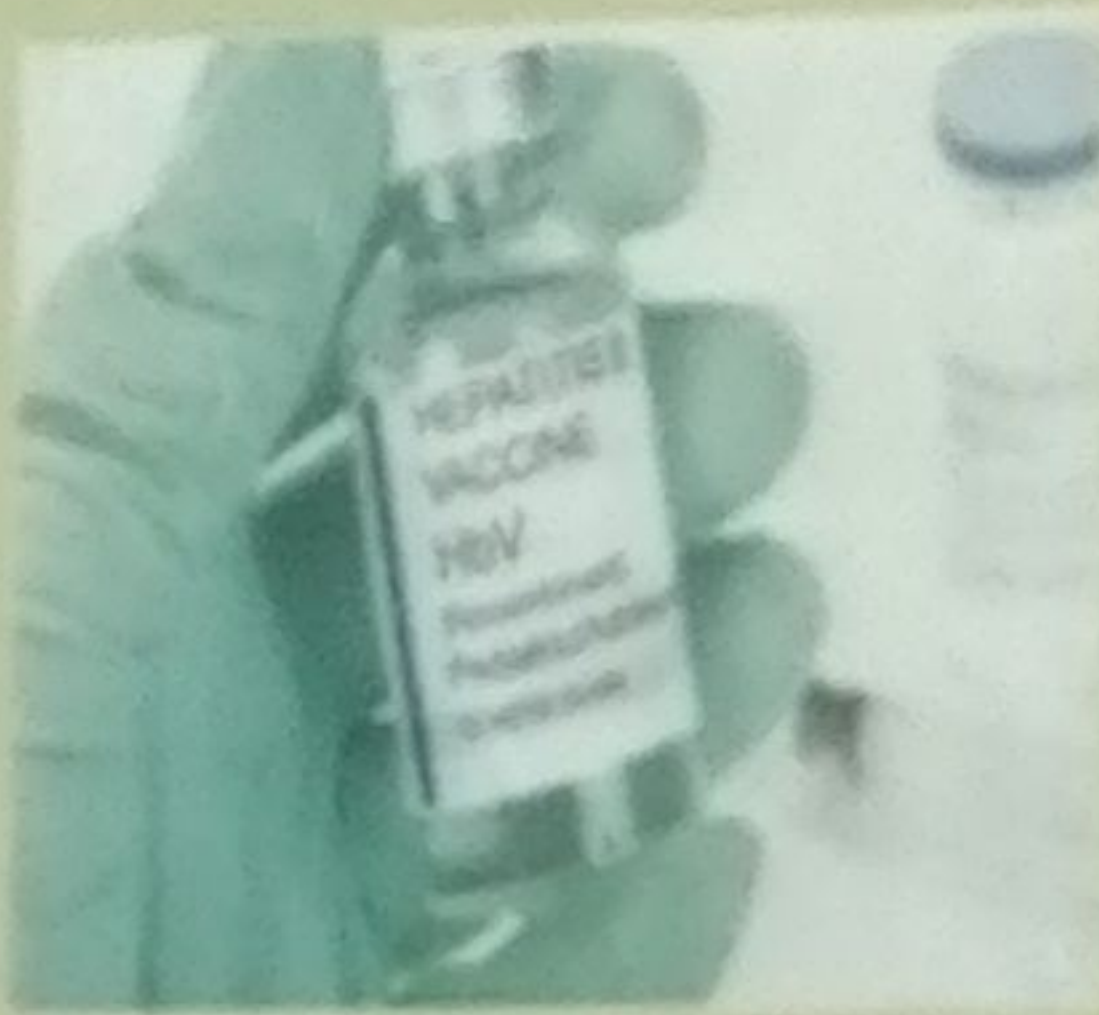


انتہائی اہم معلومات :-

جراثیمیں ہی اور ہی کے برائے خود بخود ہمارے باہر سے خاندان، معاشرے کے دیگر افراد میں موجود ہو سکتے ہیں لیکن انتہائی خوراک، موٹائی، عورت تکہ مرض کی کوئی انتہائی خطرہ نہیں ہوتی۔ تاہم دیگر بیماری کا حامل ہونا اور جان لیوا حملے اختیار کرنے اور اس صورت میں ایسے افراد اچانک میں یہ مرض اور اسے کوئی کوئی حملہ کر سکتے ہیں۔

درست لاکھ بھل :-

ایسے افراد کو متاثر نہ ہونے والے ان کو کے طور سے اس بیماری کا انتہائی تشخیص ٹیسٹ کا ٹیسٹ (Screening Test) کرنا چاہیے۔ خاندان اور دوستوں میں مرض پانا جاننے کی صورت میں فوری سمجھنا اور کھانا کھانے کے انتہائی میں اسکا علاج کرنا چاہیے۔ کوئی قسمی سے کھانا کھانا Hep. C ٹیسٹ لاکھ بھل جان کر پتہ نہ ہو چکا ہے اور اسے ہلکا سا دیکھنا نہیں ہے۔ جراثیمیں ہی سے پیدا کیلئے برے ہو سکتے ہیں لیکن اسکا علاج لگے جاتے ہیں کہ اس کا کوئی کرنا انتہائی ضروری ہے۔ جراثیمیں ہی سے پتہ کے لیے کی باتیں ہیں



صحت مند رہیے۔ صحت مند زندگی
بھاری بھاری کے ساتھ زندگی

راولپنڈی میڈیکل یونیورسٹی
Rawalpindi Medical University
"Communication for Health Awareness Program"



"کالائیرقان"

(HEPATITIS B & C)

ایک اور نئے مرض ہے جو جان لیوا بھی ہو سکتا ہے

اس سے بچنا ضروری ہے



کھانا کھانا کے ساتھ ساتھ

انتہائی جان لیوا مرض ہے اور اسے بچنا ضروری ہے

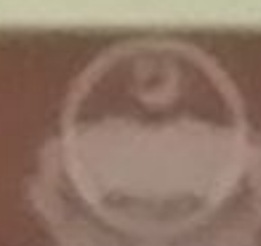
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راولپنڈی میڈیکل یونیورسٹی

انتہائی جان لیوا مرض ہے اور اسے بچنا ضروری ہے

راولپنڈی میڈیکل یونیورسٹی

صحت مند رہیے



EPI Schedule

Vaccine	When to Give	Dose	Route	Site
Hepatitis B	At birth or as soon as possible within 24 hours.	0.5 ml	IM	Antero lateral side of mid thigh
Hepatitis B 1,2,3	At 6, 10, 14 weeks	0.5 ml	IM	Antero lateral side of mid thigh