SEROLOGICAL VIRAL DETECTION IN BLOOD TRANSFUSION

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Outline

- Introduction to blood transfusion
- Screening for viral infections in blood transfusion
- HCV serological test

Objectives

- Get knowledge about blood transfusion
- Learn about serological viral detection in blood transfusion
- Get information about Hepatitis C Virus (HCV)
- Get knowledge about Anti-HCV antibody test

Blood transfusion

- **Blood transfusion** is a medical procedure in which blood or blood components are transferred from one person (the donor) into the bloodstream of another person (the recipient).
- The primary purpose of a blood transfusion is to replace lost or deficient blood components, such as red blood cells, plasma, platelets, or clotting factors, in order to treat various medical conditions and maintain adequate blood function.
- Blood transfusions are commonly used in a variety of situations, including

1. Surgery
2. Anemia

Serological viral detection in blood transfusion

- **Serological viral detection in blood transfusion** involves a set of laboratory tests to screen donated blood for the presence of certain viral infections.

- These serological tests are crucial for minimizing the risk of transmitting viral infections through blood transfusions.

- They help identify potentially contaminated blood and ensure that only **safe** and **infection-free blood products** are used for medical treatments, including transfusions.

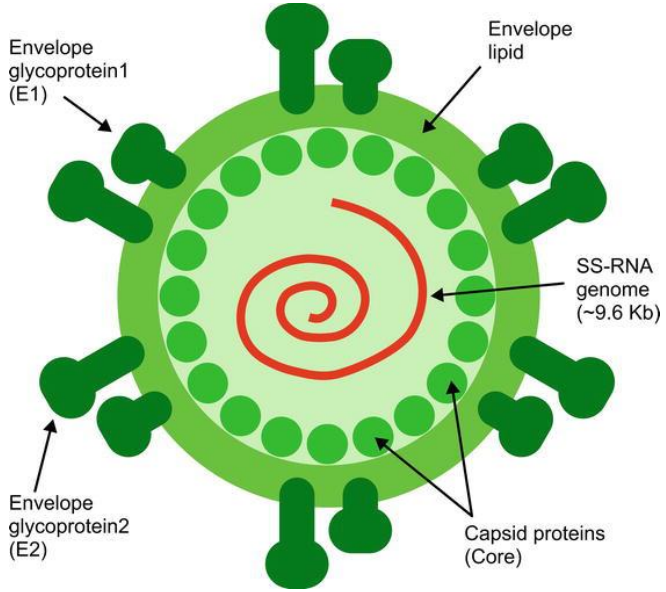
Serological tests for viral detection in blood transfusion

Serological tests for viral detection in blood transfusion include

1. Hepatitis C Virus (HCV) Antibody Test
2. Hepatitis B Surface Antigen (HBsAg) Test
3. HIV Antibody Test

Hepatitis C Virus (HCV)

- It is a small, enveloped, single-stranded RNA virus.
- It belongs to the Flaviviridae family
- HCV primarily infects the liver.
- HCV is a major cause of **viral hepatitis** and can lead to both **acute** and **chronic liver disease**.
- The chronic form of HCV infection can result in severe liver damage, cirrhosis, and an increased risk of liver cancer



Mode of HCV replication

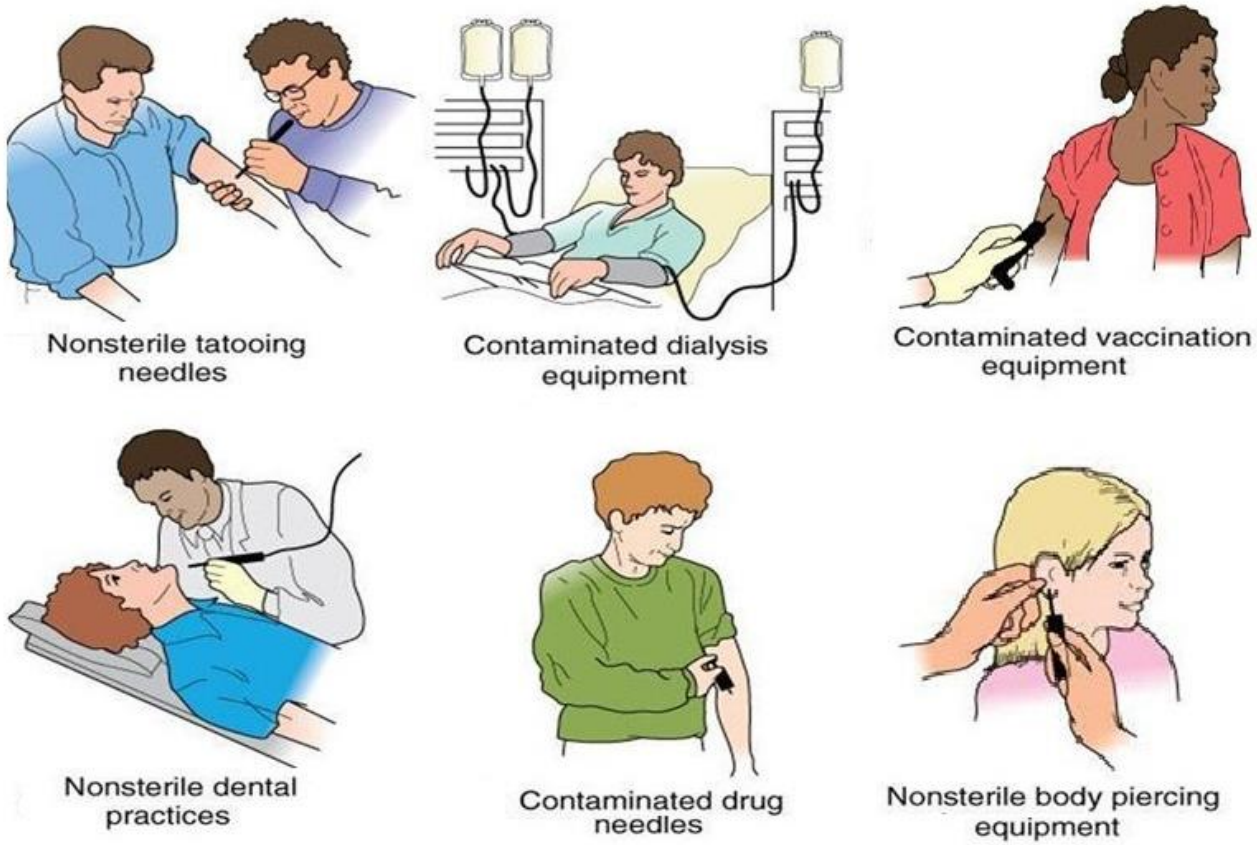
The replication of HCV includes the following steps

1. Attachment
2. Entry
3. Translation of Viral RNA
4. Replication
5. Assembly
6. Budding and release

Homework\ draw and label HCV replication cycle

Transmission of Hepatitis C Virus (HCV)

1. HCV is primarily transmitted through contact with infected blood, such as through the sharing of contaminated needles among drug users, unsafe medical procedures.
2. From an infected mother to her child during childbirth.
3. In some cases, it can also be transmitted through sexual contact.



Diagnosis of HCV

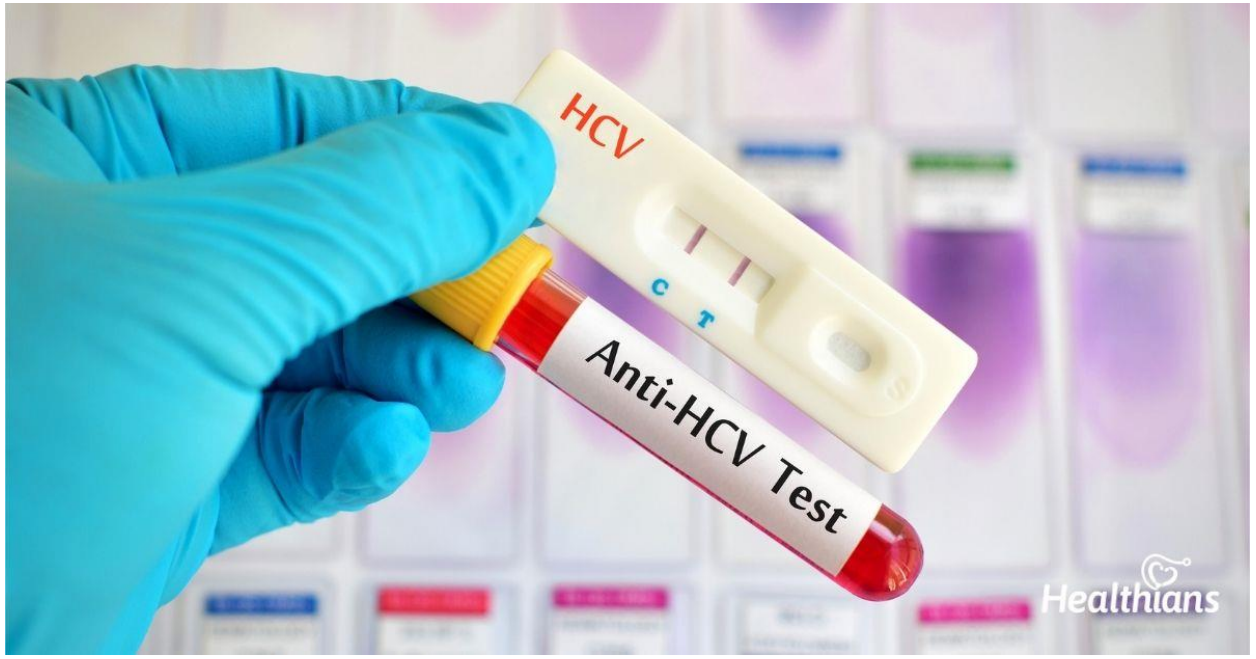
1. Serological tests

- HCV serological tests are diagnostic tests used **to detect the presence of antibodies** to the Hepatitis C Virus (HCV) in a person's blood.
- These tests are important for diagnosing HCV infection and determining whether a person has been exposed to the virus in the past.

2. Molecular tests

Serological tests - Anti-HCV Antibody Test

- The most common serological test for HCV is the **anti-HCV antibody test**.
- It detects antibodies (IgG, IgM Antibodies) that the immune system produces in response to an HCV infection.
- A positive result indicates exposure to HCV.



IgG, IgM, and IgA antibodies

IgM, IgG, and IgA antibodies are distinct classes of antibodies produced by the immune system in response to HCV (Hepatitis C Virus) infection.

1. **IgM Antibodies:** IgM antibodies are typically the first antibodies produced in response to an infection, including HCV. Their appearance indicates an early or acute HCV infection.
2. **IgG Antibodies:** IgG antibodies are produced later in the immune response, often several weeks after the initial infection. Their presence suggests a past or ongoing HCV infection.

Practical part - HCV Ab Rapid test

- Blood collection
- Centrifuge blood to make serum after clotting or use whole blood
- Run HCV Ab Rapid test

References (in APA style)

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