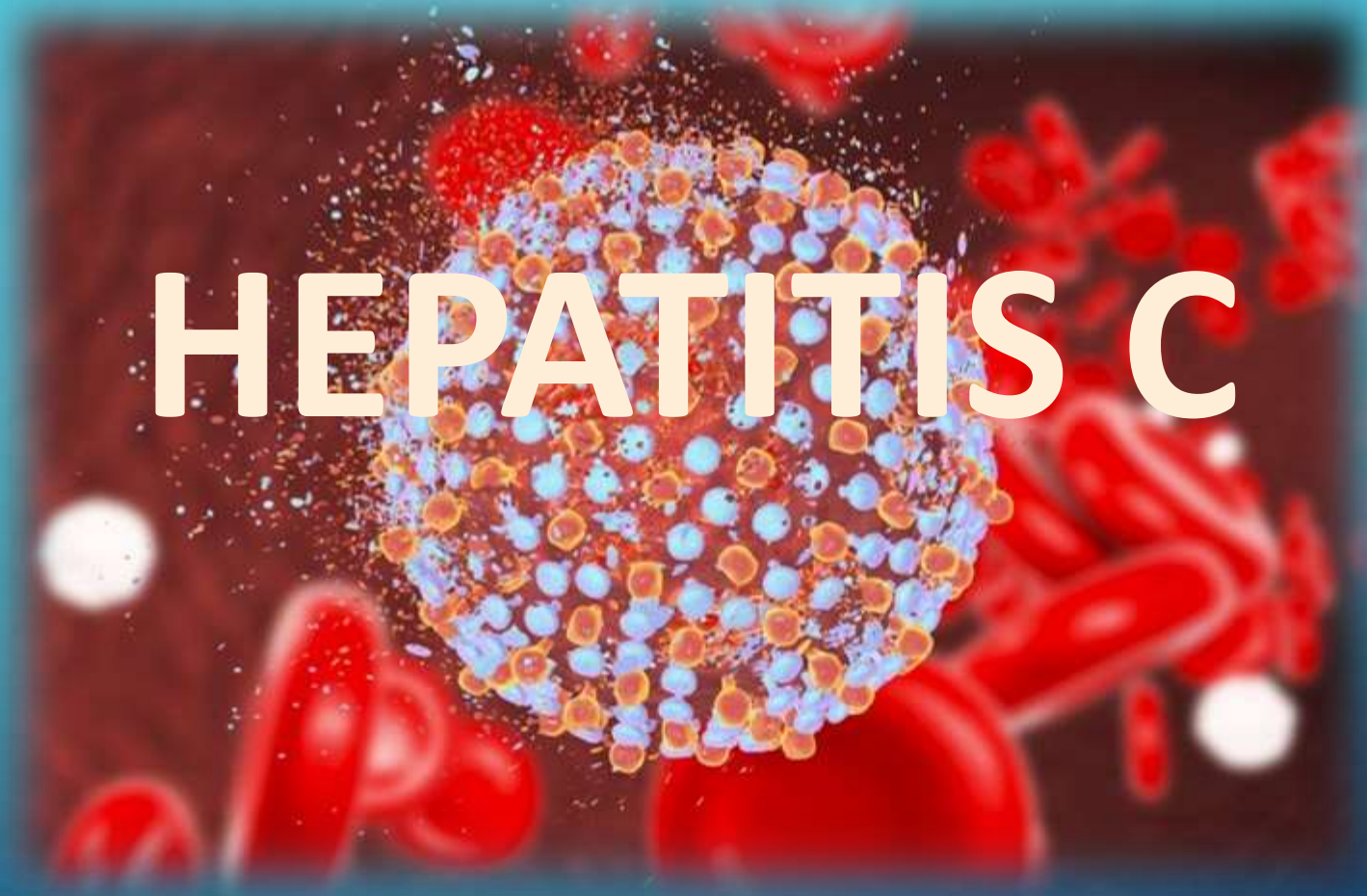
HEPATITIS C



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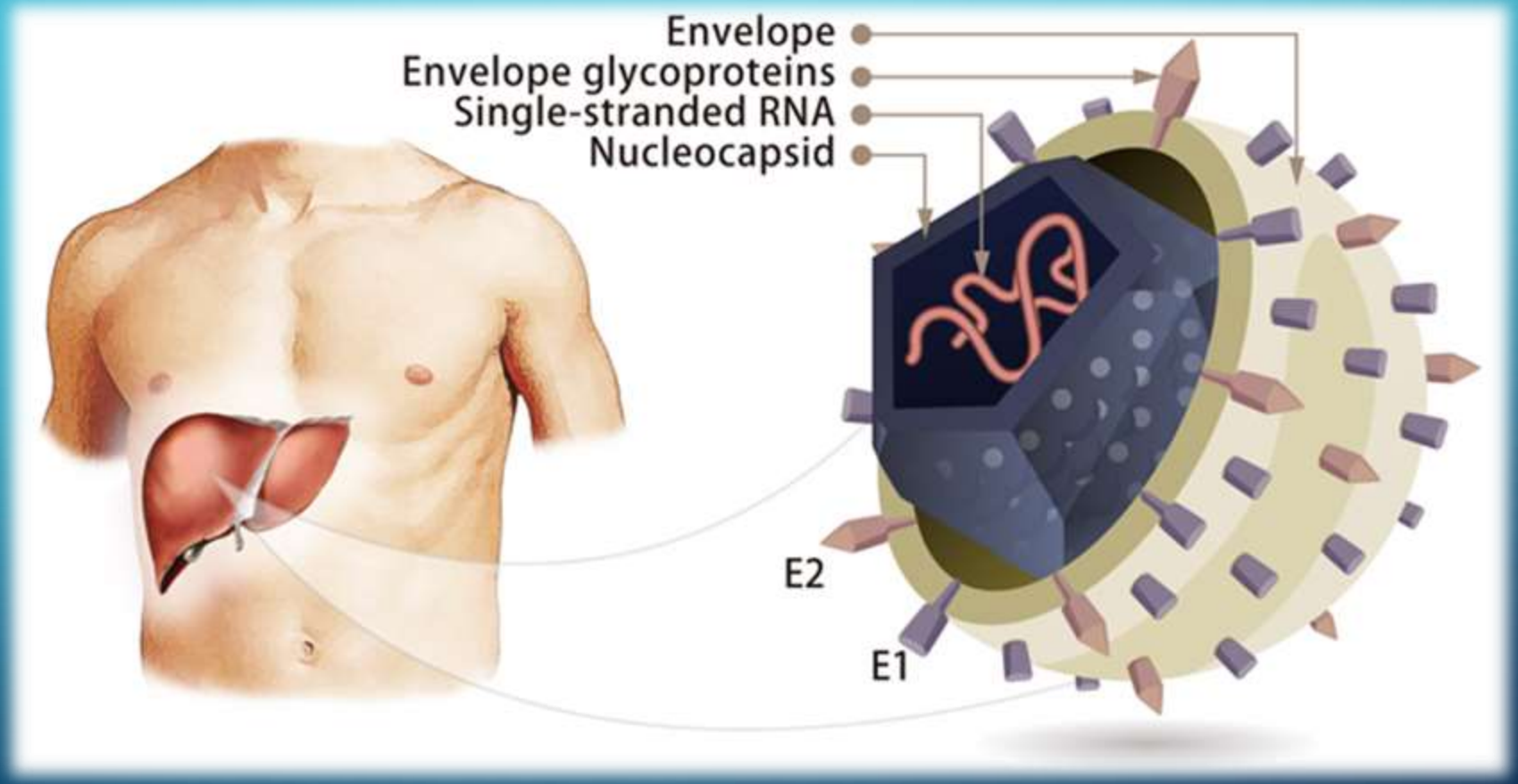
WHAT IS HEPATITIS C?

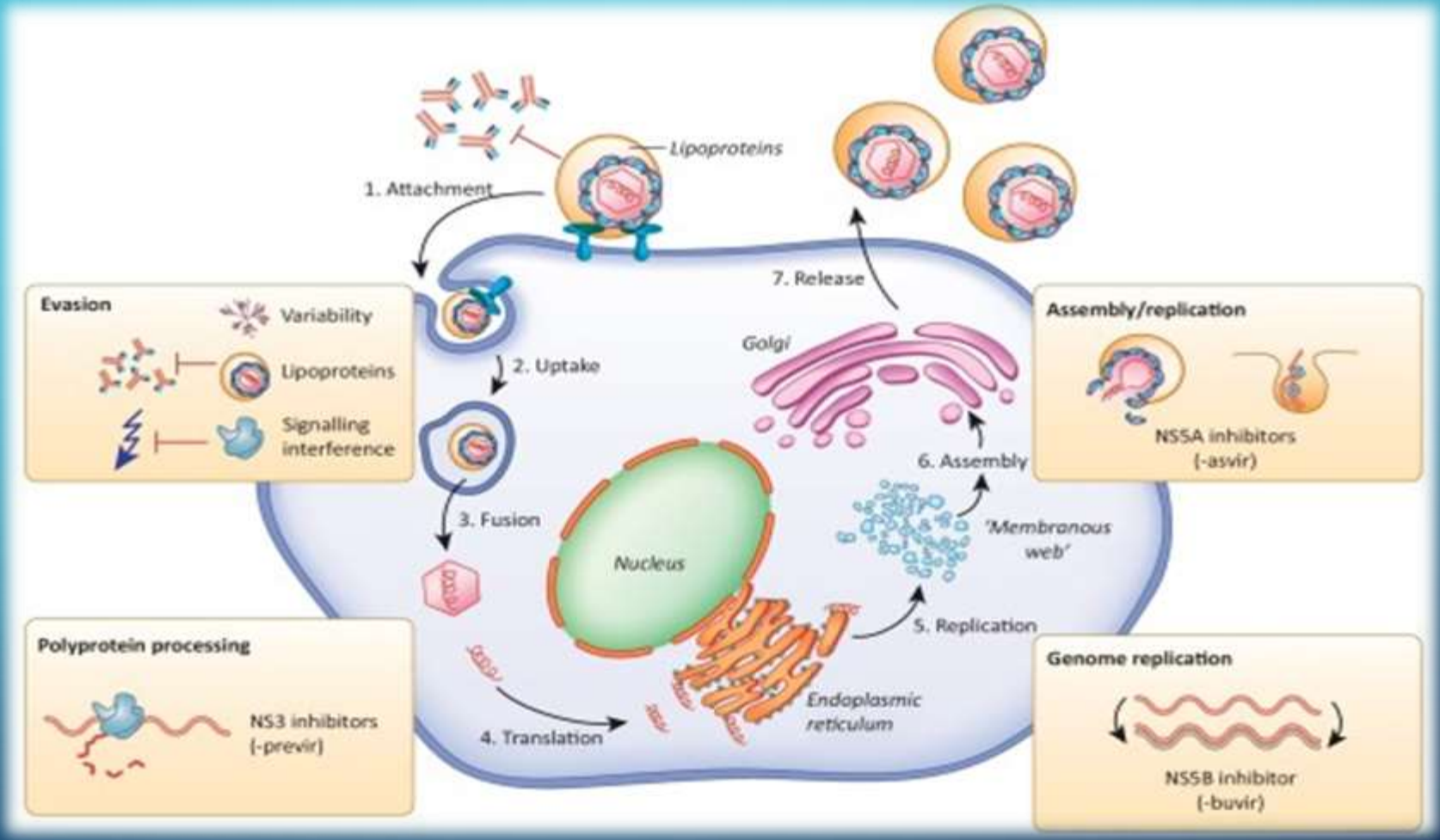
- Hepatitis C is caused by the Hepatitis C virus (HCV)
- It infects the human liver and causing inflammation, sometimes leading to serious liver damage
- Spread through contact with blood from an infected person
- Most people become infected with HCV by sharing needles or other equipment used to prepare and inject drugs
- There is no vaccine for Hepatitis C
- Getting tested is important because treatments can cure most people with Hepatitis C in 8 to 12 weeks

HEPATITIS C VIRUS STRUCTURE



Source : https://nordicbiosite.com/news/hepatitis-c-virus

MECHANISM OF ACTION



https://www.sciencedirect.com/science/article

ACUTE HEPATITIS C

- Short term infection
- Symptoms can last up to 6 months
- Sometimes the body is able to fight off the infection and the virus goes away.

CHRONIC HEPATITIS C

- Long term infection
- Develop and worsen over a period of months or even years.
- Occurs when the body isn't able to fight off the virus.
- About 75-85% of people with acute Hepatitis C will develop chronic Hepatitis C
- Early diagnosis and treatment can prevent liver damage.
- Without treatment, chronic Hepatitis C can cause:
  - Chronic liver disease
  - Cirrhosis
  - Liver failure
  - Liver cancer

WHO IS AT RISK FOR HEPATITIS C INFECTION?

- People with HIV infection
- People who are using injection drugs (PWID)
- People with selected medical conditions, including those who received maintenance hemodialysis
- Recipients of blood transfusions or organ transplants
- Health care, emergency medical staff and public safety personnel after needlesticks, sharps, or mucosal exposures to HCV-positive blood
- Children born to mothers with HCV infection

HOW IS HCV TRANSMITTED?

- Transmitted primarily through parenteral exposures to infectious blood or body fluids that contain blood
  - Injection-drug use
  - Birth to HCV-infected mother
- Unprotected sex with HCV-infected person
- Sharing personal items contaminated with infectious blood (razors, toothbrush or nail clippers)
- Health care procedures that involve invasive procedures (injections)
- Reusing medical equipment that was not properly sterilized
- Unregulated piercing or tattooing
- Receipt of donated blood, blood products and organs
- Needlestick injuries in health care settings

WHAT ARE THE SYMPTOMS OF ACUTE HCV INFECTION?

- People with newly acquired HCV infection usually are asymptomatic or have mild symptoms
- However, when symptoms do occur, they can include:
  - Fever
  - Fatigue
  - Dark urine
  - Clay-coloured stool
  - Abdominal pain
  - Loss of appetite
  - Nausea
  - Weight loss
  - Joints pain
  - Jaundice
  - Bleeds and bruises easily
  - Fluid buildup in abdomen (ascites)

WHAT ARE THE SYMPTOMS OF CHRONIC HCV INFECTION?

- Most people with chronic HCV infection are asymptomatic or have non-specific symptoms such as:
  - Chronic fatigue
  - Depression
- Many eventually develop chronic liver disease complications:
  - Scarring of the liver (cirrhosis)
  - Liver cancer
  - Liver failure
- HCV infection is often not recognized until asymptomatic people are identified as HCV-positive when screened for blood donation or when elevated ALT (a liver enzyme) levels are detected during routine examinations.

WHAT ARE THE EXTRAHEPATIC MANIFESTATIONS OF CHRONIC HCV INFECTION?

- Diabetes mellitus
- Glomerulonephrtitis
- Essential mixed cryoglobulinemia
- Porphyria cutanea tarda
- Non-Hodgkin's lymphoma

WHO SHOULD BE TESTED FOR HCV INFECTION?

- All adults aged 18 years and above
- All pregnant women during each pregnancy
- People who ever injected drugs and shared needles, syringe or other drug preparation equipment
- People with HIV
- People who are receiving maintenance hemodialysis
- People with persistent abnormal ALT levels
- People who received clotting factor concentrates produced before 1987
- People who received a blood transfusion or blood components before July 1992
- People who received an organ transplant before July 1992
- People who were notified that they had received blood from a donor who later tested positive for HCV infection
- Health care, emergency medical staff and public safety personnel after needlesticks, sharps or mucosal exposures to HCV-positive blood
- Children born to mothers with HCV infection

WHAT BLOOD TEST ARE USED TO DETECT HCV INFECTION?

1) Screening tests for antibody to HCV (anti-HCV)
   - Enzyme immunoassay (EIA)
   - Enhanced chemiluminescence immunoassay (CLIA)
   - Chemiluminescence microparticle immunoassay (CMIA)
   - Microparticle immunoassay (MEIA)
   - Electrochemiluminescence immunoassay (ECLIA)
   - Immunochromatographic assay (rapid test)
2) Qualitative nucleic acid tests to detect presence of HCV RNA
3) Quantitative nucleic acid tests to detect level of HCV RNA

*Additional tests include:

- Transient elastography (a special ultrasound of the liver)
- Liver biopsy
- Genotype test

INTERPRETATION OF RESULTS

Test Outcome	Interpretation	Further Action
HCV antibody nonreactive	No HCV antibody detected	• Sample can be reported as nonreactive for HCV antibody. No further action required. • If recent HCV exposure in person tested is suspected, test for HCV RNA.*
HCV antibody reactive	Presumptive HCV infection	• A repeatedly reactive result is consistent with current HCV infection, or past HCV infection that has resolved, or biologic false positivity for HCV antibody. Test for HCV RNA to identify current infection.
HCV antibody reactive, HCV RNA detected	Current HCV infection	• Provide person tested with appropriate counseling and link person tested to medical care and treatment.†
HCV antibody reactive, HCV RNA not detected	No current HCV infection	• No further action required in most cases. • If distinction between true positivity and biologic false positivity for HCV antibody is desired, and if sample is repeatedly reactive in the initial test, test with another HCV antibody assay. • In certain situations§ follow up with HCV RNA testing and appropriate counseling.

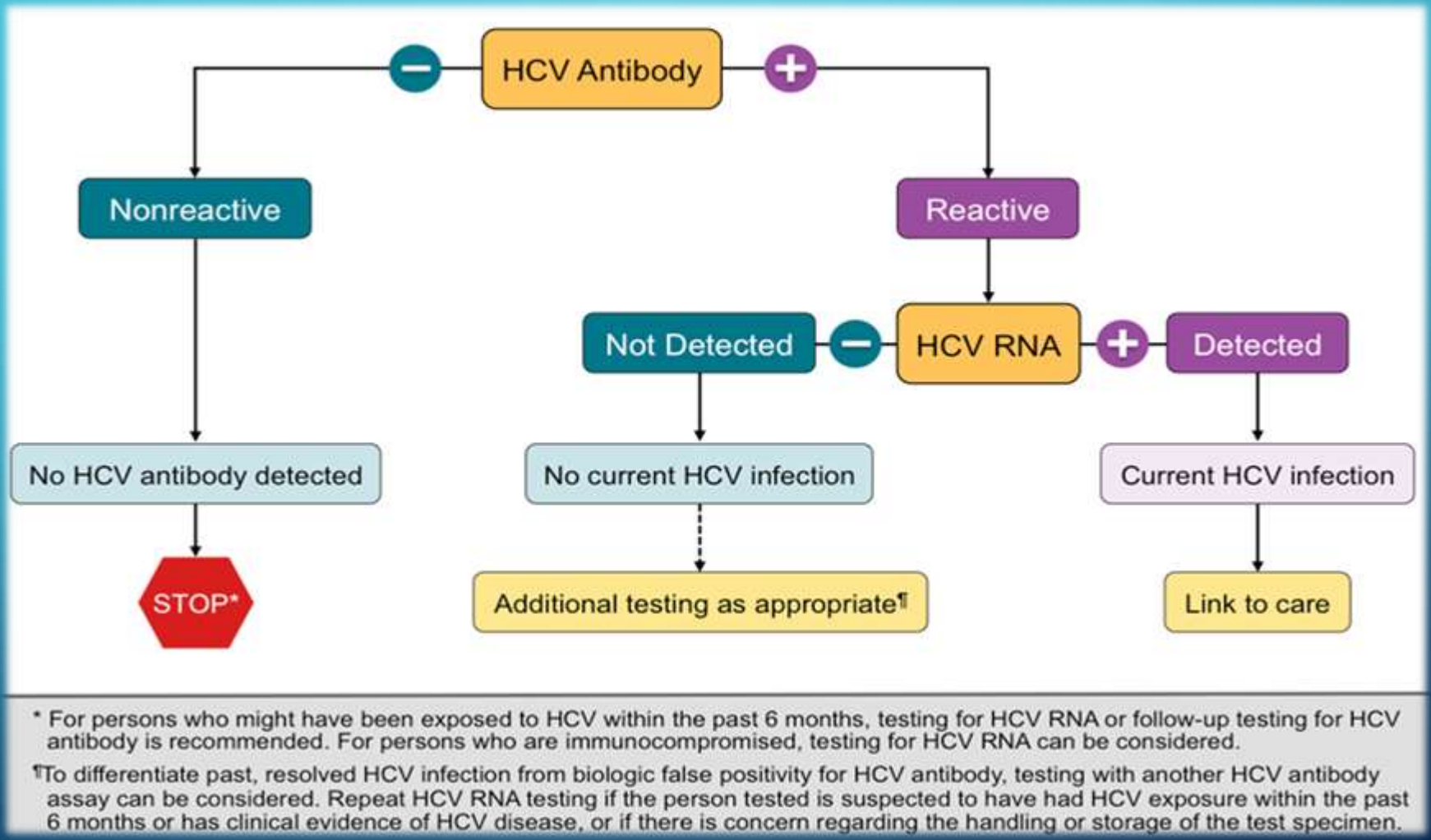
* If HCV RNA testing is not feasible and person tested is not immunocompromised, do follow-up testing for HCV antibody to demonstrate seroconversion. If the person tested is immunocompromised, consider testing for HCV RNA.

† It is recommended before initiating antiviral therapy to retest for HCV RNA in a subsequent blood sample to confirm HCV RNA positivity.

§ If the person tested is suspected of having HCV exposure within the past 6 months, or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

Source : Centers for Disease Control and Prevention (CDC). Testing for HCV infection: an update of guidance for clinicians and laboratorians. MMWR Morb Mortal Wkly Rep. 2013;62:362-5

ALGORITHM FOR HCV INFECTION DIAGNOSIS



Source : Centers for Disease Control and Prevention (CDC). Testing for HCV infection: an update of guidance for clinicians and laboratorians. MMWR Morb Mortal Wkly Rep. 2013;62:362-5

- After exposure to HCV, **how soon** can HCV antibodies be detected?
  - Anti-HCV seroconversion occurs an average of 8-11 weeks after exposure
- After exposure to HCV, **how soon** can HCV RNA be detected?
  - People with recently acquired acute infection typically have detectable HCV RNA levels as early as 1-2 weeks after exposure
- What should a medical provider do for a patient with confirmed HCV infection?
  - Medical evaluation for chronic liver disease, including treatment and monitoring
  - Hepatitis A and Hepatitis B vaccination
  - Screening and brief intervention for alcohol consumption
  - HIV risk assessment and testing

HOW IS HEPATITIS C TREATED?

- Hepatitis C is commonly treated with direct-acting antiviral medicines include:
  - Daclatasvir (Daklinza)
  - Elbasvir/grazoprevir (Zepatier)
  - Glecaprevir and pibrentasvir (Mavyret)
  - Iedipasvir/sofosbuvir (Harvoni)
  - Ombitasvir/paritaprevir/ritonavir (Technivie)
  - Simeprevir (Olysio)
  - Sofosbuvir (Sovaldi)
  - Ribavirin

PREVENTIONS

- Stop using illicit drugs, especially if taken by injection
  - Seek help from medical practitioners
- Be cautious about body piercing and tattooing
  - Look for reputable premises
  - Ask question beforehand about how the equipment is cleaned and sterilized
  - Ensure the employees follow standard operating procedures (SOP)
- Practice safer sex
  - Do not engage in unprotected sex with multiple partners or with any partner whose health status is uncertain
- Not sharing personal items such as toothbrushes, razors or nail clippers

SUMMARY

- Hepatitis C is an inflammation of the liver caused by the hepatitis C virus.
- The virus can cause both acute and chronic hepatitis, ranging in severity from a mild illness to a serious, lifelong illness including liver cirrhosis and cancer.
- Most Hepatitis C infection occur through exposure to blood from unsafe injection practices, unsafe health care, unscreened blood transfusions, injection drug use and unprotected sexual practices.
- Globally, an estimated 58 million people have chronic hepatitis C virus infection, with about 1.5 million new infections occurring per year.
- Antiviral medicines can cure more than 95% of persons with hepatitis C infection, but access to diagnosis and treatment is low.
- There is currently no effective vaccine against hepatitis C.

REFERENCES

1. Centers for Disease Control and Prevention : Viral Hepatitis
2. Centers for Disease Control and Prevention (CDC). Testing for HCV infection: an update of guidance for clinicians and laboratorians. MMWR Morb Mortal Wkly Rep. 2013;62:362-5
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4. Hepatitis C : Mayo Foundation for Medical Education and Research
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6. National Institutes of Health, Medline : Hepatitis C
7. https://www.webmd.com
8. World Health Organization (WHO)

THANK YOU