

**Tikrit University**  
**College of Nursing**

**Basic Nursing Sciences**



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**Microbiology**

**Virology part three**

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# **Virology**

## **(Part three)**

### **Diagnosis**

Is based on isolation of viruses from throat swab, nasopharynx , sputum.

Nucleoprotein or neuraminidase can be detected by PCR

the virion particles (RNA) are usually spherical or ovoid. Sometimes filamentous forms of the virus occur as well, and are more common among some influenza strains than others.

The influenza virion is an enveloped virus that derives its lipid bilayer from the plasma membrane of a host cell.

Two different varieties of glycoprotein spike are embedded in the envelope.

1- hemagglutinin (18 major types): attachment of the virus to a host cell.

2- neuraminidase (9major types) : involved in facilitating the release of newly produced virus particles from the host cell

The symptoms of the flu are similar to those of the common cold, but tend to be more severe.

The influenza virus is chiefly transmitted through airborne respiratory secretions released when an infected individual coughs or sneezes. Incubation typically is from one to two days from the time of infection, and most people begin to

naturally recover from symptoms within a week

## **Measles**

Is an infection of the respiratory system caused by enveloped, singlestranded, RNA viruses, specifically a paramyxovirus.

Symptoms include fever, cough, runny nose, red eyes and a generalized, maculopapular, erythematous rash.

Measles is spread through respiration (contact with fluids from an infected person's nose and mouth, either directly or through aerosol transmission), There is no specific treatment for measles. Most patients with uncomplicated measles will recover with rest and supportive treatment.

**laboratory diagnosis** of measles can be done with confirmation of positive measles IgM antibodies or isolation of measles virus RNA from respiratory specimens. saliva can be collected for salivary measles-specific IgA testing.

Vaccination rates have been high enough to make measles relatively uncommon

## **Human immunodeficiency virus infection / acquired**

### **immunodeficiency syndrome (HIV/AIDS)**

HIV is icosahedral RNA with external spikes bind to CD4 molecules on T cells surface.

During the initial infection, a person may experience a brief period of influenza-like illness.

This is typically followed by a prolonged period without symptoms. As the illness progresses, it interferes more and more with the immune system, making the person much more likely to get infections, including opportunistic infections and tumors that do not usually affect people who have working immune systems.

HIV is transmitted primarily via unprotected sexual intercourse, contaminated blood transfusions, hypodermic needles, from mother to child during pregnancy, delivery, or breastfeeding.

Some bodily fluids, such as saliva and tears, do not transmit HIV. There is no cure or vaccine for HIV or AIDS.

Diagnosis by Antibodies test and PCR test for HIV RNA or DNA

Viral hepatitis is liver inflammation due to a viral infection. The most common causes of viral hepatitis are Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D, and Hepatitis E. Hepatitis B virus (HBV), double-stranded DNA viruses Hepatitis C virus (HCV), is an enveloped single-stranded RNA virus Hepatitis D virus (HDV) is an unusual, single-stranded, circular RNA virus Hepatitis A virus (HAV) is a single-stranded, RNA virus Hepatitis A virus is transmitted through water and food contaminated with virus and sexual contact, B and C types of hepatitis viruses are transmitted through , blood transfusion, contact with blood products, though cuts and stick injuries and from mother to newborn child during delivery.

Hepatitis D virus exists in the presence hepatitis B virus

Hepatitis E virus is transmitted through contaminated water and food and it mainly effects young adults. The disease is severe in pregnant woman

Hepatitis A and B viruses can be prevented by vaccination.

Symptoms of acute viral hepatitis include fatigue, flu-like symptoms, dark urine, light-colored stools, fever, and jaundice; however, acute viral hepatitis may occur with minimal symptoms that go unrecognized. Rarely, acute viral hepatitis causes fulminant hepatic failure.

## **Diagnosing Hepatitis**

### Antibody Tests

IgM and IgG antibodies specific to hepatitis A or hepatitis B.

### Direct Viral Measures

PCR tests for HBV and HCV can be sent which are direct measures of the amount of virus in the blood

## **Advanced Tests**

computerized axial tomography (CT) scans or magnetic resonance imaging (MRI), or a liver biopsy