

1 Seroprevalence

1/4 of the world's population have been infected with hepatitis B virus (HBV)

An estimated 250 million people are chronically infected putting them at risk for:

1. Progressive liver disease
2. Liver cirrhosis
3. Liver failure
4. Hepatocellular carcinoma (887,000 deaths per year)

HBV spread through sexual transmission, intravenous drug use, blood transfusion, or vertical transmission at birth

HBV not spread through breastfeeding, sharing utensils, kissing, coughing, or sneezing

1.1 Chronic Hepatitis B

The likelihood that hepatitis B will develop from an acute infection to a chronic infection depends on the age of the person infected

1. 90% of infected infants will develop chronic infection
2. 25-50% of children between 1 and 5 years old
3. 5% of adults will become chronically infected

1.1.1 Post-Exposure Prophylaxis

85-95% effectiveness when administered within 12 hours of birth

Prophylaxis consists of hepatitis B vaccine along with hepatitis B immune globulin (HBIG)

1.1.2 Liver Disease

Chronically infected individuals have a 15-40% lifetime risk of developing liver cancer

2 Hepatitis B Virus

HBV first seen in 1971 and was seen to adopt multiple shapes

3 distinct morphological forms:

1. Most abundant: Small, spherical, noninfectious particles containing HBsAg (Hepatitis B virus surface antigen)
2. Tubular filaments with a diameter comparable to that of the small particles (Also containing HBsAg)
3. Dane particle: Hepatitis B virion

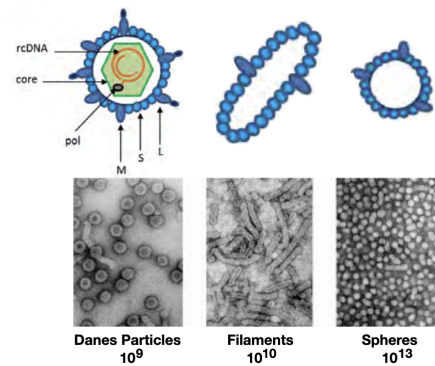


Figure 1: HBV particles

2.1 Vaccine

HBV vaccine was the first licensed vaccine produced by recombinant technology

HBV grown and extracted using yeast cells

Vaccine has a very good record of safety and impact on the disease

HBV prevalence has already been reduced from high to low in immunized cohorts of children

2.2 Therapies for Treatment of Chronic HBV Infection

Interferons:

Exact mechanisms aren't fully understood, but it is believed to have both direct antiviral and host immunomodulation effects

Nucleoside Analogs:

Inhibition of HBV polymerase activity resulting in decreased viral replication

Oral medicine with generally mild adverse effects

2.3 Cancers

Liver cancer is one the leading causes of cancer deaths worldwide (800,000 deaths annually)

Primary liver cancer is the 8th most common cancer in the world (>50% are attributed to HBV)

2.3.1 Treatment

Liver transplantation is the gold standard of treatment

Viral reactivation in the graft recipient can be detrimental

High-dose hepatitis B immunoglobulin and anti-viral drugs are remarkably successful at suppressing replication and improving long-term health outcomes