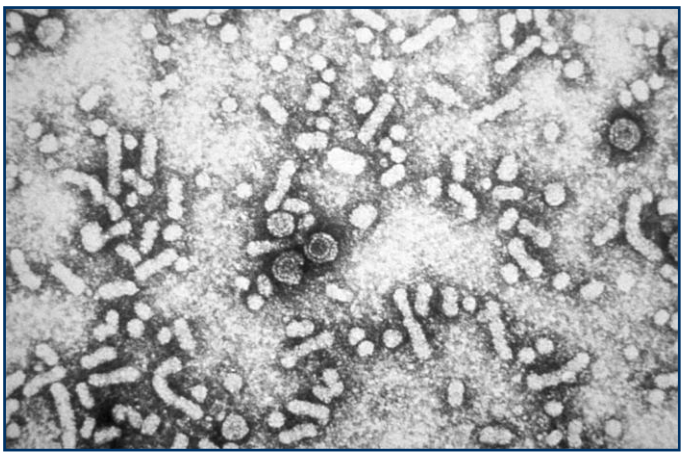


This electron micrograph reveals the presence of hepatitis-B virus HBV "Dane particles", or virions.

8. Hepatitis A, B, and C

Prevention:
The most effective means to prevent transmission of infectious diseases, including STDs, is through pre-exposure immunization. Vaccines are available for Hepatitis A and B, both of which can be transmitted sexually.

Every person seeking treatment for an STD should be considered a candidate for hepatitis B vaccination, and some persons (e.g., MSM and injection-drug users) should be considered for hepatitis A vaccination. Evaluation for vaccination is most effectively done through a screening and education process that both inquires about risk factors for infection (e.g., sex partners and use of illegal drugs), educates patients about the importance of vaccination, and excludes persons who are not candidates for vaccination (e.g., laboratory confirmed diagnosis of infection and previous vaccination).

Hepatitis A:
Hepatitis A, caused by infection with the hepatitis A virus (HAV), has an incubation period of approximately 4 weeks (range: 15--50 days) from time of exposure to onset of symptoms. HAV replicates in the liver and is shed in high concentrations in feces from 2 weeks before to 1 week after the onset of clinical illness. The fecal-oral route is the most common means of transmission. Bloodborne transmission of HAV is uncommon.

Hepatitis A infection does not result in chronic infection. Vaccination is the most effective means of preventing HAV transmission.

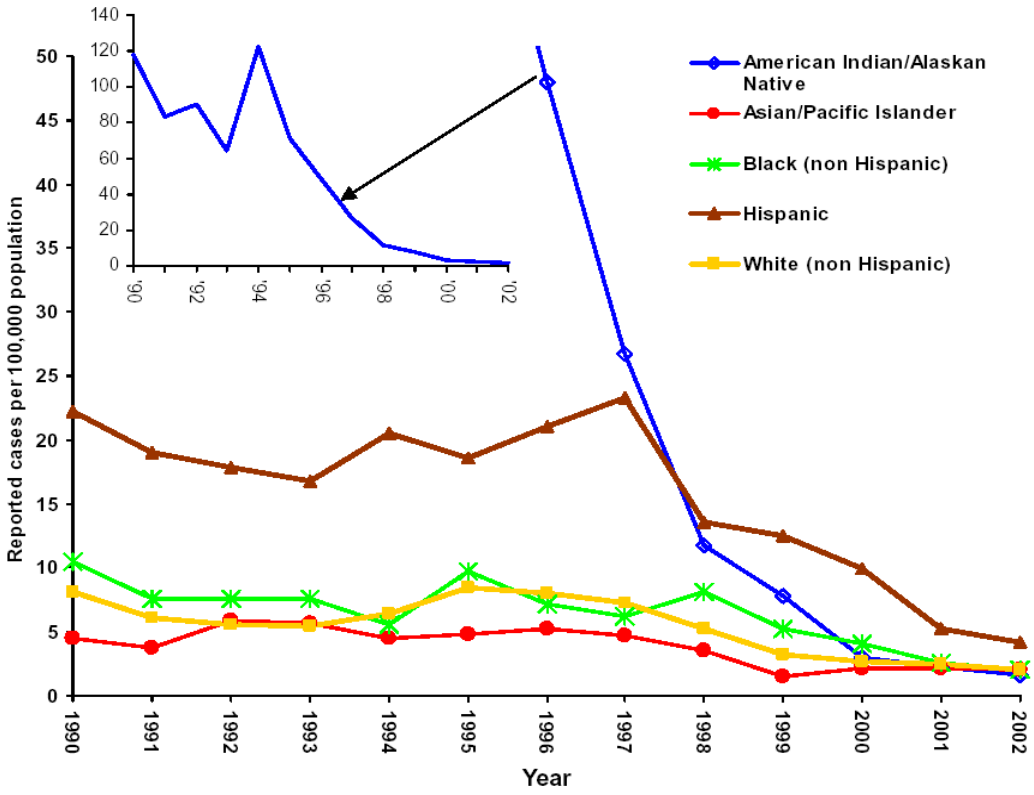
HAV infection produces a self-limited disease that does not result in chronic infection or chronic liver disease. However, 10%--15% of patients may experience a relapse of symptoms during the 6 months after acute illness. Acute liver failure from hepatitis A is rare (0.3% overall case-fatality rate), but occurs more frequently in older persons (1.8% case fatality rate in adults >50 years of age) and persons with underlying chronic liver disease.

Approximately 33% of the U.S. population has serologic evidence of prior HAV infection, which increases directly with age and reaches 75% among persons aged >70 years. Most cases of hepatitis A result from person-to-person transmission during community-wide outbreaks. The most frequently reported source of infection (12%--26%) is either household or sexual contact with a person who had hepatitis A.

In addition, outbreaks regularly occur among users of injection and non-injection drugs, and among MSM. Unlike most other STDs, HAV-infected persons are infectious for only a relatively brief period of time. However, many sexual practices facilitate fecal-oral transmission of HAV. Measures typically used to prevent the transmission of other STDs (e.g., use of condoms) do not prevent HAV transmission, and maintenance of "good personal hygiene" has not been successful in interrupting outbreaks of hepatitis A.

Vaccination is the most effective means of preventing HAV transmission among persons at risk for sexual transmission of this virus and among persons who use injection and non-injection illegal drugs, many of whom may seek services in STD clinics.

Incidence of Reported Hepatitis A, by Race and Ethnicity, United States, 1990-2002



Hepatitis A Trends among AI/ANs:

Historically, hepatitis A rates have differed by race, with the highest rates occurring among American Indians and Alaska Natives, and the lowest rates occurring among Asian/Pacific Islanders.

However, rates among AI/ANs, which were greater than 60 cases per 100,000 prior to 1995, have decreased dramatically following widespread vaccination in this group, and in 2002 were approximately the same or lower than those in other races. Rates among Hispanics have also decreased since 1997 but remain higher than those for Non-Hispanics.

In 1999, CDC recommended routine vaccination for children residing in 11 states (including Idaho, Oregon and Washington) where the average annual hepatitis A incidence during 1987--1997 was at least 20 cases per 100,000 population (twice the national average). In 2003, vaccination coverage levels for children aged 24--35 months were 43%, 33% and 27% for Idaho, Oregon and Washington respectively.

In the United States, most cases of Hepatitis B are transmitted sexually.

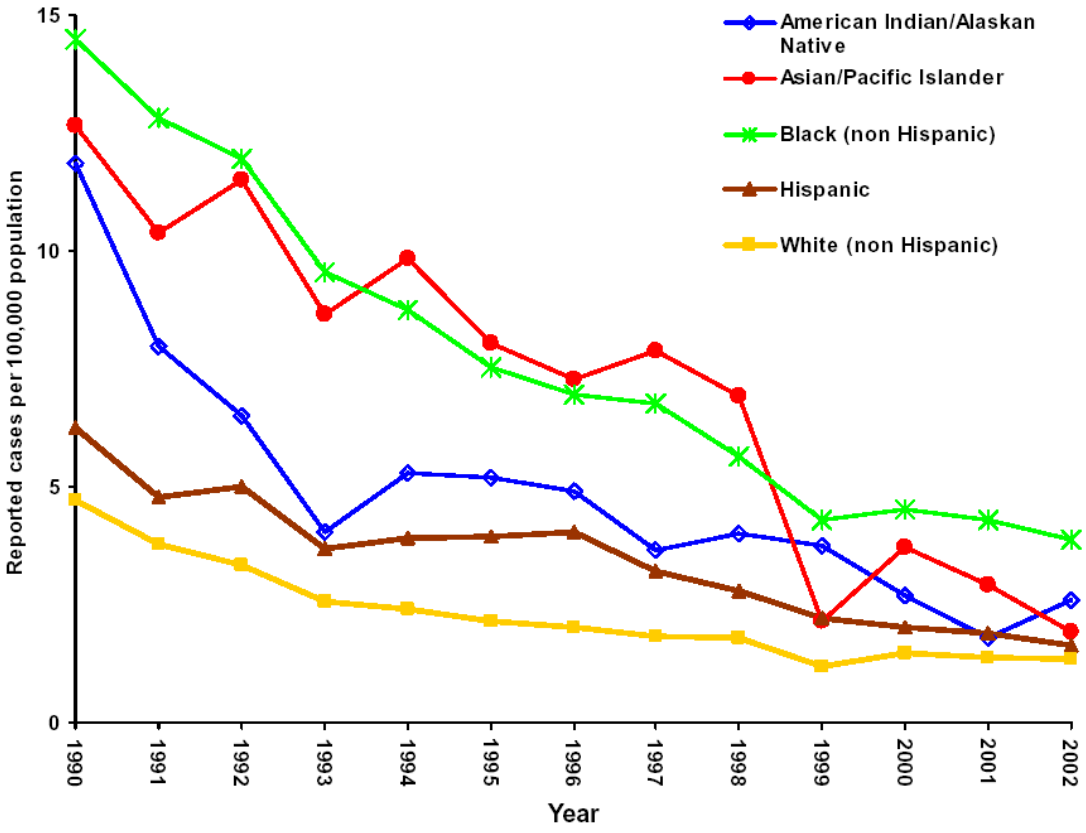
Hepatitis B:
Hepatitis B is caused by infection with hepatitis B virus (HBV). The incubation period from time of exposure to onset of symptoms is from 6 weeks to 6 months. HBV is found in highest concentrations in the blood, and is found in lower concentrations in other body fluids (e.g., semen, vaginal secretions, and wound exudates). HBV infection can be self-limited or chronic. In adults, only 50% of acute HBV infections are symptomatic, and about 1% of cases result in acute liver failure and death.

In the United States, an estimated 181,000 persons were infected with HBV in 1998, and about 5,000 deaths occurred from HBV-related cirrhosis or hepatocellular carcinoma. An estimated 1.25 million people are chronically infected with HBV, which makes them a reservoir for infection and at increased risk for death from chronic liver disease.

HBV is efficiently transmitted by percutaneous or mucous membrane exposure to infectious body fluids. Sexual transmission among adults accounts for most HBV infections in the United States. In the 1990s, transmission among hetero-sexual partners accounted for about 40% of infections, and transmission among MSM accounted for another 15% of infections. The most common risk factors for heterosexual transmission include having multiple sex partners (i.e., more than one partner in a 6-month period) or a recent history of an STD. Risk factors for infection among MSM include having multiple sex partners, engaging in unprotected receptive anal intercourse, and having a history of other STDs.

Laboratory testing should be used to confirm suspected acute or chronic HBV infection, and infected persons should be referred for medical follow-up and possible treatment of chronic infection. In addition, contacts should be vaccinated and receive post-exposure prophylaxis. No specific therapy is available for persons with acute HBV infection; treatment is supportive.

Incidence of Reported Acute Hepatitis B, by Race and Ethnicity, United States, 1990-2002



Hepatitis B Trends among AI/ANs:

Rates of hepatitis B continue to decline among all racial and ethnic groups. However, rates of hepatitis B remain highest among non-Hispanic blacks (3.9/100,000) and lowest (1.4/100,000) among non-Hispanic whites.

In 2002, the Hepatitis B rate among AI/ANs was second only to non-Hispanic blacks.

The downward trend in the rate among Asians/Pacific Islanders continues, and in 2002, was approaching the rate among non-Hispanic whites. In contrast, the rate among non-Hispanic blacks has remained unchanged since 1999.

Hepatitis C infection is the most common chronic blood borne infection in the United States

Hepatitis C:
Hepatitis C virus (HCV) infection is the most common chronic bloodborne infection in the United States; an estimated 2.7 million persons are chronically infected. More than two thirds of all infected persons are less than 50 years of age. Persons with acute HCV infection typically are either asymptomatic or have a mild clinical illness. The average time from exposure to seroconversion is 8--9 weeks, and antibodies to HCV (anti-HCV) can be detected in >97% of persons by 6 months after exposure.

Chronic HCV infection develops in most persons (75%--85%) after acute infection; 60%--70% have evidence of active liver disease. Most infected persons may not be aware of their infection because they are not clinically ill. However, infected persons serve as a source of transmission to others and are at risk for chronic liver disease or other HCV-related chronic diseases for at least 2 decades after infection.

HCV is most efficiently transmitted by direct percutaneous exposure to infected blood (e.g., by receipt of blood transfusion from an infected donor or through use of injection drugs). Although less efficient, occupational, perinatal, and sexual exposures also can result in transmission of HCV.

Sexual Activity:
Although the role of sexual activity in the transmission of HCV remains controversial, results from several studies indicate that sexual activity is associated with HCV transmission. These studies reported independent associations between HCV infection and:
a) exposure to an infected sex partner,
b) increasing numbers of partners,
c) failure to use a condom,
d) history of STD,
e) heterosexual sex with a male IDU, and
f) sexual activities involving trauma.

Although inconsistencies exist between studies, data indicate overall that sexual transmission of HCV can occur and accounts for up to 20% of HCV infections.

Patients who use illegal drugs or have multiple sex partners should be provided with information about how to reduce their risk for acquiring sexually transmitted infections.

Prevention of Hepatitis C:
No vaccine for hepatitis C is available, and prophylaxis with immune globulin is not effective in preventing HCV infection after exposure. Reducing the burden of HCV infection and disease in the United States requires implementation of both primary and secondary prevention activities.

Primary prevention reduces or eliminates HCV transmission; secondary prevention activities reduce liver and other chronic diseases in HCV-infected persons by identifying them and providing appropriate medical management and antiviral therapy, if necessary.

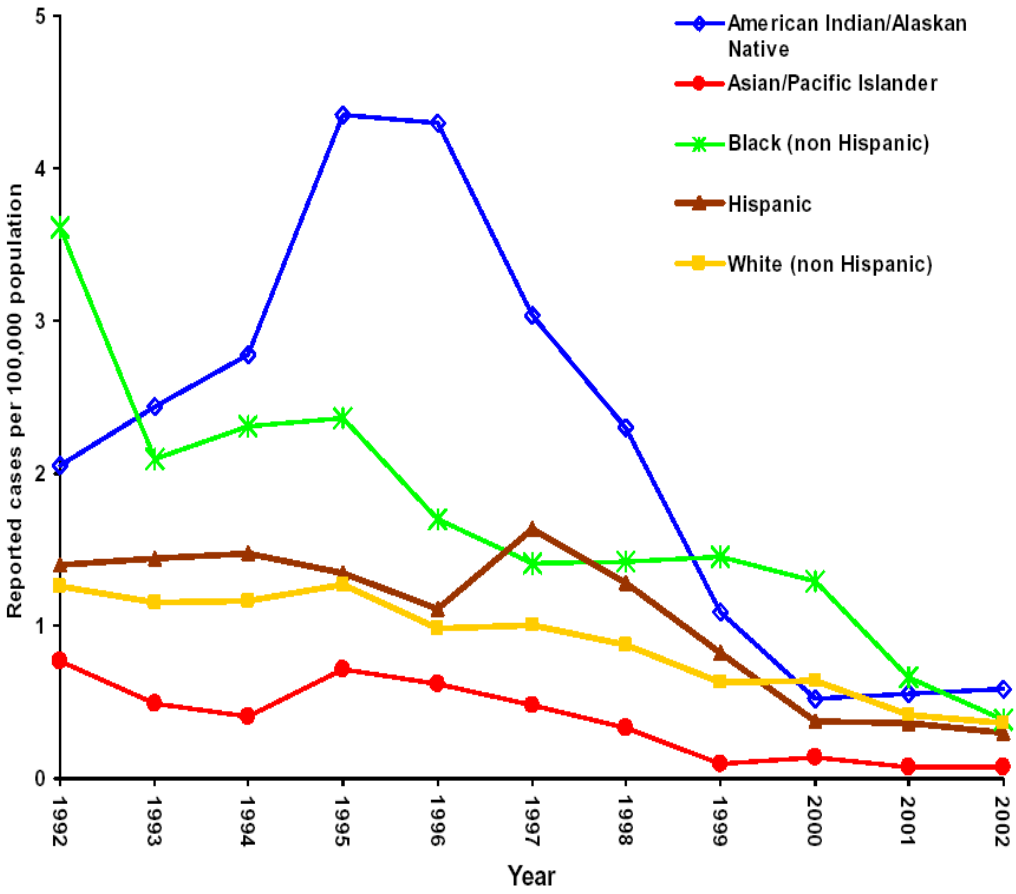
Persons seeking care in STD clinics or other primary-care settings should be screened for risk factors for HCV infection, and those with the following risk factors should be offered counseling and testing:

- illegal injection drug use, even once or twice many years ago;
- blood transfusion or solid organ transplant before July 1992;
- receipt of clotting factor concentrates produced before 1987; and
- long-term hemodialysis.

Regardless of test results, persons who use illegal drugs or have multiple sex partners should be provided with information regarding how to reduce their risk for acquiring bloodborne and sexually transmitted infections, and how to avoid transmitting infectious agents to others (e.g., through vaccination against hepatitis B and, if appropriate, hepatitis A).

Persons who inject drugs should be counseled to stop and obtain treatment. If they continue the use of these drugs, they should be counseled on how to inject safely (i.e., use of sterile, single-use equipment, including needles, syringes, cookers, cottons, and water each and every time they inject). Persons with multiple sex partners should be counseled regarding how to reduce the transmission of STDs (e.g., through abstinence or by decreasing the number of sex partners).

Incidence of Reported Acute Hepatitis C/NANB, by Race and Ethnicity, United States, 1992-2002



Hepatitis C Trends among AI/ANs:

The incidence of hepatitis C varies by race and ethnicity. Rates have declined in all racial groups since 1995 but non-Hispanic blacks and ***American Indians and Alaska Natives continue to have higher incidence rates than other racial/ethnic groups.***

Rates among Hispanics have historically been higher than among non-Hispanic whites (but lower than for non-Hispanic blacks) but since 2000 have been lower than any other racial/ethnic group except Asian or Pacific Islanders (APIs). Each year, APIs have had the lowest incidence of hepatitis C since 1992.