

Bloodborne Diseases

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In dental offices, the bloodborne diseases that workers are most at risk from exposure to are AIDS, Hepatitis B and Hepatitis C. In Canada, very few cases of probable occupational HIV and hepatitis infection have been reported, but it is possible to contract the virus whenever there is exposure to blood or certain other body fluids.

In order to reduce the risk of exposure to these diseases dental health professionals should follow universal precautions. Universal precautions help to protect dental health professionals from exposure to blood contaminated saliva. Universal precautions stress that all patients should be assumed to be infectious for AIDS and hepatitis B and C.

IMMUNIZATION

An effective vaccine against HBV infection exists that will reduce the incidence of transmission and disease in HCWs. Vaccines are not available to prevent HIV or HCV infection. Booster doses of hepatitis B vaccine are not routinely recommended. Pre-exposure prophylaxis with hepatitis B vaccine is recommended for those persons who are at increased risk of exposure to blood or fluids capable of transmitting bloodborne pathogens, or who may be at increased risk of sharps injuries (e.g. in occupational settings including health care, etc.). Students in these occupations should complete their vaccine series before possible occupational exposure to blood or sharps injuries.

AIDS

Acquired Immune Deficiency Syndrome is a condition caused by the human Immunodeficiency virus (HIV). The result is that the immune system (which controls infection) of the infected person's body weakens to the point that he/she is at high risk of being infected with a variety of diseases.

In a healthy immune system (one not affected by HIV) white blood cells (B-cells and T-cells) guard the body against germs responsible for most diseases. The B-cells produce antibodies, which try to neutralize the invading germs. After a person recovers from an infection, these antibodies continue to circulate in the blood stream, acting as part of the immune system's 'memory', if the same germ is encountered in the body again, the antibodies will recognize and neutralize it. This immune system memory is why a healthy person rarely becomes infected twice from an infectious disease (i.e. measles). T-cells attack the germs directly and try to kill them. Special white blood cells, called T-helper cells, activate the B and T-cells to fight off infection. When the AIDS virus enters the blood stream, these T-helper cells should activate the B and T-cells to fight it off like any other infection, but this does not happen. The AIDS virus penetrates the T-helper cells and, over time, multiplies. This eventually kills T-helper cells, and without the T-helper cells activation of B and T-cells does not occur. Without this activation the body's immune system cannot function properly. The result is that people with AIDS are unable to fight off even minor infections such as the common cold, and are vulnerable to virtually any virus that they come in contact with.

The AIDS virus can be transmitted from one person to another through:

- unprotected sexual intercourse with an infected person

- contaminated needles
- transfusion of infected blood or blood products
- organ transplant from an infected donor
- prenatal infection
- AIDS is transmitted from an infected person by the transfer of body fluids such as blood, semen or any other blood-containing secretions

As a result, anyone who is occupationally exposed to the body fluids or blood of a person infected with AIDS is at risk of contracting the disease.

The AIDS virus can only be transmitted when the virus enters the blood stream. This means that casual contact with a person infected with AIDS does not put others at risk. Current studies show that sharing toilets, swimming pools, telephones, and other facilities with infected people poses no risk of transmission of the AIDS virus. The virus is not transmitted through the preparation and serving of food and beverages, or through mosquitoes or other insects.

It is difficult to pin point how long it takes the disease to develop. There is no fixed period between the first contact with the AIDS virus and the development of the disease. The symptoms of infection with the AIDS virus develop in stages. Many people infected have no symptoms for several years, others develop symptoms within three years from the time of infection. Symptoms of AIDS are fever, swollen lymph glands in the neck and armpits, sweating, aches, fatigue, unexplained weight loss and diarrhea. Within seven years, about 50% of all infected people develop specific conditions categorized as AIDS, which are the symptoms that the general public has come to associate with victims of the AIDS virus. These conditions include pneumonia, skin lesions, and fungal and viral infections such as candidiasis and herpes. Some AIDS patients also suffer from dementia resulting in problems with thinking and memory. AIDS patients suffer from an unusually high number of cancers, bacterial and viral infections and various infections of the brain.

Presently, there is no cure for AIDS. Recent advances in care and treatment can successfully delay the onset of AIDS by slowing the progression of HIV infection to AIDS in many cases. Several drugs and drug combinations have been shown to extend the life expectancies of people with AIDS.

HEPATITIS B

Hepatitis B is an infectious liver disease, caused by the hepatitis B virus (HBV). Infection occurs only when the virus is able to enter the blood stream and reach the liver. Once in the liver, the virus reproduces and releases large numbers of new viruses into the blood stream.

The body has several defenses against the hepatitis B infection. White blood cells, which protect the body from infections, attack and destroy the infected liver cells, and the antibodies circulating in the blood to destroy the virus and protect against future infections of hepatitis B. During the infection and recovery process, the patient's liver may not function normally, causing illness that can affect the entire body.

Approximately 10% of people who develop hepatitis B become carriers of the disease. Their blood remains infected for months, years or sometimes, even life. 70% of carriers develop chronic, persistent hepatitis B, though most do not appear to be ill. The remaining 30% of carriers experience continuous liver disease which can progress to liver cancer. Presently there is no cure for carriers of the disease.

The time between the initial contact with the virus and the onset of the disease ranges from 45 days to 180 days with an average of 60 to 90 days.

Blood tests indicate that about 5% of people in Canada have had hepatitis B at some point in their lives.

In mild cases of hepatitis B infection, the signs and symptoms are like those of a minor infection. In severe cases, they are extreme reactions resulting from liver failure. Most cases occur and pass without noticeable symptoms. Sometimes only mild symptoms such as general discomfort occur. Only rarely is medical attention required. Often the infection goes away without treatment. When symptoms do develop, they include fatigue, lack of appetite, skin rash, nausea or vomiting, and occasionally jaundice.

Presently there is no specific treatment for patients with hepatitis B. Bed rest, limited physical activity, drinking clear liquids and avoiding alcohol is recommended for those infected.

Hepatitis B is found in semen, vaginal secretions, breast milk, blood, saliva, synovial fluid, amniotic fluid, cerebrospinal fluid, and peritoneal fluid. The virus can be transmitted through:

- unprotected sexual intercourse
- birth and breast feeding
- punctures of the skin with blood contaminated needles, and sharps
- splashes to skin bearing scratches, abrasions, burns or rashes
- splashes to mucus membranes in the mouth, nose or eyes

Hepatitis B is not transmitted through casual contact; however it can be transmitted through intimate contact with carriers in a household setting. Somehow, the virus can find its way into the blood stream of fellow family members possibly through frequent physical contact with small cuts or skin rashes. The virus can be spread through biting that breaks the skin and possibly through sharing toothbrushes and razors.

HEPATITIS C

Hepatitis C is a liver disease caused by the hepatitis C virus. Often the disease presents no noticeable symptoms, however, people infected with the disease are at serious risk of developing cirrhosis (scarring of the liver) and liver failure. If symptoms do occur, they do so at an average of six to eight weeks after exposure but may occur two weeks to six months after exposure.

Symptoms of hepatitis C include jaundice (yellow skin and eyes), nausea, and a general feeling of being unwell. Individuals infected with the virus may go on to clear the virus from their body, become a healthy carrier of the virus, or eventually develop chronic hepatitis C which can cause liver damage.

Like other bloodborne pathogens this virus is a serious risk to all health care workers, including dental assistants. The hepatitis C virus is spread by direct contact with the blood or sexual fluids of an infected person. It can be spread through blood transfusions and organ transplants (unlikely after 1990), intravenous drug use, and tattooing. Hepatitis C is not spread by sneezing, coughing, hugging, sharing eating utensils or drinking glasses, it is not spread through food or water.

There is no vaccine for hepatitis C because the virus changes easily, making it very difficult to develop an effective vaccine. There is no guaranteed cure for the disease, there are antiviral medications that are successful at treating some infected persons, but not all infected people respond to the drugs.

You should be tested for hepatitis C if you were exposed to needle sticks, sharps or the mucus or blood of individuals infected with hepatitis C.

The best protection from the virus is to follow universal precautions. Assume that anyone could be infected and avoid all exposure to bodily fluids.