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Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

WORK-RELATED BLOODBORNE PATHOGEN EXPOSURE: THE RISKS FOR HEALTH CARE WORKERS

Every day, health care workers are exposed to dangerous and deadly bloodborne pathogens through contaminated needlesticks, sharps, or splash exposures. It is one of the greatest risks faced by the frontline health care worker. Every percutaneous needlestick and sharps injury carries a risk of infection from bloodborne pathogens. Yet, these exposures often have been considered "part of the job." Health care workers primarily are exposed to these pathogens via contaminated needlestick and sharps injuries. You probably know at least one colleague who has sustained an injury, or perhaps you have been stuck yourself. It is important that you and your colleagues fully understand these risks.

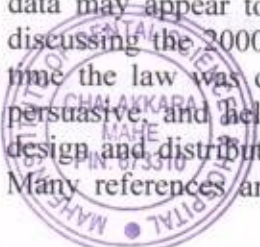
The Facts About Occupational Infection:

Registered nurses working at the bedside sustain an overwhelming majority of these injuries (Perry, Parker, & Jagger, 2003). These exposures carry the risk of infection with Hepatitis B (HBV), Hepatitis C (HCV), and Human Immunodeficiency Virus (HIV), the virus that causes AIDS. Each of these viruses poses a different risk if a health care worker is exposed. More than 20 other infections can be transmitted through needlesticks, including syphilis, malaria, and herpes (Centers for Disease Control and Prevention [CDC], 1998a). At least 1,000 health care workers are estimated to contract serious infections annually from needlestick and sharps injuries (International Health Care Worker Safety Center, 1999). According to the National Institute of Occupational Safety and Health (NIOSH), the design of the device can increase the risk of injury. Specific features make certain devices more dangerous.

These include: (National Institute for Occupational Safety and Health [NIOSH], 1999) :

- Devices with hollow bore needles.
- Needle devices that need to be taken apart or manipulated by the health care worker like blood drawing devices that need to be detached after use.
- Syringes that retain an exposed needle after use.
- Needles that are attached to tubing like butterflies that can be difficult to place in sharps disposal containers.

The highest risk of injury is from blood filled hollow bore needles. They accounted for 63% of the needlestick injuries from June 1995 July 1999 (NIOSH, 1999). Ninety percent of the Centers for Disease Control and Prevention (CDC) documented cases of health care workers who contracted HIV from needlestick injuries involved injuries with hollow bore, blood filled needles (CDC, 1998a). These data may appear to be "old", dating back five or six years. It continues to have relevance when discussing the 2000 Needlestick Safety and Prevention Act since it was the science available at the time the law was debated, and ultimately, passed in United States. These data proved to be very persuasive, and helped make the case for the law. Current data suggest that improvements in the design and distribution of equipment are making a positive impact on the incidence of needlesticks. Many references are provided that will direct the reader to data that is continuously updated and



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MAHE Institute of Dental Sciences & Hospital
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Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
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HIV/AIDS:

HIV Transmission From Infected Patients to Health Care Workers:

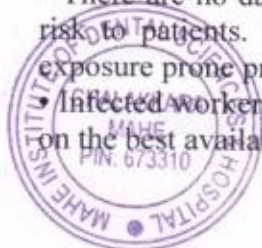
While the transmission rate of occupationally acquired HIV remains very low (.3%), AIDS is a debilitating and ultimately fatal disease. Many nurses throughout the world are living with occupationally acquired AIDS, and many have died from it. Concerns about HIV-contaminated blood led to the 1991 OSHA Bloodborne Pathogens Standard and CDC's Universal Precautions (Post-exposure prophylaxis (PEP) is essential to reduce the risk of transmission and should be started within two hours of exposure).

- The transmission rate of occupationally acquired HIV after an exposure is 0.3% (1 in 300). In other words, if a health care worker is stuck by a needle or cut by a sharp that is contaminated with the blood of an HIV patient, there is a 1 in 300 chance that she or he will be infected with HIV.
- The risk of transmission can increase up to 5% (1 in 20 chance) if the needle or sharp is contaminated by an HIV-infected patient with a high viral load (usually either with a new infection or during the terminal stages of the disease), the health care worker sustains a deep cut with lots of blood, and the procedure involved accessing the patient's vein or artery.
- As of June 2001, there were at least 57 CDC-documented cases of health care workers with occupationally acquired HIV and at least 137 cases of possible transmissions.
- Based on the prevalence of HIV, 35 new cases of occupationally acquired HIV are estimated to occur annually.
- Health care workers primarily have been infected with HIV after needlestick and sharps injuries or, rarely, after infected blood gets into a worker's open cut or a mucous membrane (for example, the eyes or inside the nose).
- The majority of infections have resulted from injuries from hollow-bore, blood-filled devices. Less frequently, workers have been infected via solid sharps (like suture needles or scalpels) and splash exposures.
- The body fluids of most concern for HIV transmission are: blood, semen, vaginal fluid, breast milk, and other body fluids containing blood.
- Other body fluids that may transmit the virus include: cerebrospinal fluid surrounding the brain and the spinal cord, synovial fluid surrounding bone joints, and amniotic fluid surrounding a fetus.

The Risk of Transmission of HIV From Infected Health Care Workers to Patients:

- There has been only one instance of patients being infected by a health care worker in the United States. Investigations have been completed involving more than 22,000 patients of 63 HIV-infected physicians, surgeons, and dentists, and no other cases of transmission have been identified
- There are no data to indicate that infected workers who do not perform invasive procedures pose a risk to patients. Thus, infected health care workers should modify their participation in invasive, exposure prone procedures, except in extreme emergency situations.

Infected workers should seek counsel from an expert panel to review and modify their practice based on the best available scientific information.



Dr. Anil Melath, MDS
Mahe Institute of Dental Sciences & Hospital
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The Disease:

- HIV destroys CD4+ T cells, which are crucial to the normal function of the human immune system. Loss of CD4+ T cells in people with HIV is also a predictor of the development of AIDS.
- Most people infected with HIV carry the virus for years before enough damage is done to the immune system for AIDS to develop. However, recently developed sensitive tests have shown a strong connection between the amount of HIV in the blood and the decline in CD4+ T cell numbers and then development of AIDS. Reducing the amount of virus in the body with anti- HIV drugs can slow this immune system destruction.
- In addition to occupational exposure, HIV is spread by sexual contact with an infected person, by sharing needles and/or syringes (primarily for drug injection) with someone who is infected, or, less commonly (and now very rarely in countries where blood is screened for HIV antibodies), through transfusions of infected blood or blood clotting factors.
- Babies born to HIV-infected women may become infected before or during birth or through breast-feeding after birth.

Treatment:

- There is no HIV vaccine. While aggressive vaccine research continues, it is still years and probably decades away.
- New medications, including anti-retrovirals, can slow the development of HIV/AIDS. For the latest information on drug guidelines, contact the HIV/AIDS Treatment Information Service (ATIS) at www.hivatis.org.
- Post exposure prophylaxis(PEP) can greatly reduce the risk of transmission and should be started within 2 hours of exposure.

Hepatitis C

Lately, hepatitis C, caused by HCV, has become a great concern for nurses. Hepatitis C is a serious disease of the liver and can be fatal. HCV was not identified until 1989; before that it was referred to as non-A, non-B virus. The method to test for hepatitis C in blood products was not developed until 1992, meaning that people who received blood products before 1992 might have been exposed to HCV. Testing for hepatitis C after needlestick injuries was not recommended by the CDC until 1998. However, even after that, many health care workers were unaware of the need to be tested for hepatitis C, there could be thousands and thousands of nurses with occupationally acquired hepatitis C who simply do not know it. It is a silent epidemic.

The Disease:

- Hepatitis C can lead to liver failure and liver cancer. It is the leading cause for liver transplant.
- Hepatitis C is the most common chronic bloodborne infection. The CDC estimates that almost four million are infected with HCV, whereas less than one million are infected with HIV.
- Eighty percent of people infected with HCV are asymptomatic, but symptoms can include jaundice, fatigue, dark urine, abdominal pain, loss of appetite, and nausea.
- Seventy percent of chronically infected persons develop chronic liver disease.



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Principal
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Transmission:

- HCV is primarily spread by exposure to infected blood, primarily via IV drug use, occupational exposure like needlestick and sharps injuries, or having received a blood product prior to 1992. Transmission can also occur from an infected mother to her baby during birth.
- HCV also can be sexually transmitted, but this is rare.
- Hepatitis C is the most frequent infection resulting from needlestick and sharps injuries with a transmission rate of 2.7%-10%.

Treatment:

- There is no vaccine for hepatitis C.
- There is currently no approved PEP for HCV.
- Interferon monotherapy or combination therapy with ribavirin are the current treatments.
- Combination therapy is currently the preferred treatment and has been shown to be effective in 40% of infected persons.
- These drugs are expensive.
- Alcohol use can make the disease worse.

Hepatitis B


Hepatitis B, caused by HBV is now preventable due to the vaccine that must be offered to all health care workers and is given to children at birth. After the 1991 Bloodborne Pathogens Standard required that the vaccine be offered, cases of hepatitis B in health care workers dropped from 17,000 annually to 400 annually—and continue to drop. **It is strongly recommended that all health care workers be vaccinated since it is the best means of prevention.**

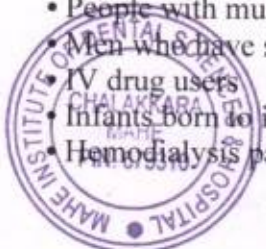
The Disease:

- About 30% of infected people demonstrate no symptoms. Symptoms can include jaundice, fatigue, abdominal pain, loss of appetite, nausea, vomiting, and joint pain.
- Death from liver disease can occur in 15-25% of chronically infected people.
- Transmission occurs via blood and body fluids and is spread via unprotected sex with an infected partner, IV drug use, and mother-child transmission.
- There are approximately 1.25 million chronically infected people, 20-30% of whom acquired their infection during childhood.
- The highest rate of disease occurs among 20-49-year-olds.

Who is at risk?

- Health care and public safety workers
- People with multiple sex partners
- Men who have sex with men
- IV drug users
- Infants born to infected mothers
- Hemodialysis patients


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Treatment:

- Alpha interferon and lamivudine are used to treat chronic hepatitis B. They are effective in up to 40% of patients.
- These drugs should not be used in pregnant women.
- Alcohol use can make liver disease worse.



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PROCEDURE TO FOLLOW AFTER A NEEDLESTICK OR SHARPS INJURY

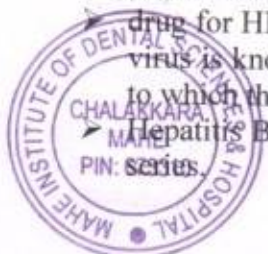
Now that you know the risk of infection from needlestick and sharps injuries, what should you do if you sustain an injury? Under the OSHA Bloodborne Pathogens Standard, employers must evaluate and treat health care workers in accordance with the latest post-exposure assessment, prophylaxis, and treatment guidelines published by the CDC. These guidelines and documents are available on the CDC's web site: <http://www.cdc.gov/ncidod/hip/guide/phs pep.htm>).

Before an exposure occurs, make sure your employer is able to provide:

- Immediate evaluation and risk assessment of needlestick injuries—e.g., a hospital hotline.
- Confidential testing for HIV, hepatitis B, and hepatitis C.
- Access to post-exposure treatment and prophylactic medications within two hours of exposure.
- Counseling, education, and follow-up testing for up to one year after exposure. If you sustain a needlestick injury.

After Exposure take the following actions immediately:

- Wash the wound with soap and water.
- Alert your supervisor and initiate the injury reporting system used in your workplace.
- Identify the source patient, who should be tested for HIV, hepatitis B, and hepatitis C infections. Your workplace will begin the process to test the patient by seeking consent.
- Report to the nursing superintendent and emergency department at designated treatment facility.
- Get tested immediately and confidentially for HIV, hepatitis B, and hepatitis C infections.
- Get PEP in accordance with CDC guidelines when the source patient is unknown or tests positive for:
 - HIV: Start prophylaxis within two hours of exposure. HIV PEP should include a four-week regimen of two drugs (zidovudine [ZDV] and lamivudine [3TC]; 3TC and stavudine [d4T]; or didanosine [ddI] and d4T) for most exposures and an expanded regimen that includes a third drug for HIV exposures that pose an increased risk for transmission. When the source patient's virus is known or suspected to be resistant to or more of the PEP drugs, the selection of drugs to which the source patient's virus is unlikely to be resistant is recommended.
 - Hepatitis B: If vaccinated no treatment, but if unvaccinated get HBIG and initiate HB vaccine series.



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- Hepatitis C: No treatment is currently recommended, but you may want to consult a specialist about experimental PEP.
- Document the exposure in detail, for your own records as well as for the employer. Under the needlestick law in United States, employers must maintain a confidential sharps injury log that contains, at a minimum, the type and brand of device involved in the incident, the department or work area where the exposure incident occurred, and an explanation of how the incident occurred.

Follow-Up:

- ✓ Get confidential follow-up, post-exposure testing at six weeks, three months, and six months, and depending on the risk, at one year.
- ✓ Receive monitoring and follow-up of PEP.
- ✓ Take precautions (especially by practicing safe sex) to prevent exposing others until follow-up testing is complete.
- ✓ Don't be afraid to seek additional information or a referral to an infectious disease specialist if you have any questions. Also, consider counseling—a needlestick injury can be traumatic, regardless of the outcome.

PREVENTION

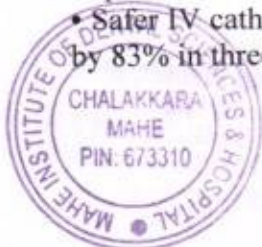
While exposure to bloodborne pathogens is one of the most deadly hazards that nurses face on a daily basis, it is also one of the most preventable. Over 80% of needlestick injuries can be prevented with the use of safe needle devices, which, in conjunction with worker education and work practice controls, can reduce injuries by over 90%.

The first safe needle designs were patented in the 1970s. In 1992, the FDA issued an alert to all health care facilities to use needleless IV systems wherever possible. That alert was merely a recommendation, and it took another eight years for it to be required by law.

With the rapid development of technology and engineering controls, prevention is becoming easier and easier. The cost of follow-up for a high-risk exposure is more expensive. A liver transplant due to hepatitis C costs hundreds of thousands of dollars. Other costs from needlestick and sharps injury include workers' compensation, overtime, and expenses related to recruitment and training of staff to replace a worker who becomes ill.

There is solid evidence that devices with safety features significantly reduce needlestick injuries:

- Needleless or protected-needle IV systems decreased needlestick injuries related to IV connectors by 62% to 88%.
- Phlebotomy injuries were reduced by 76% with a self-blunting needle, 66% with a hinged needle shield, and 23% with a sliding-shield, winged-steel (butterfly-type) needle.
- Phlebotomy injuries were reduced by 82% with a needle shield, but a recapping device had minimal impact.
- Safer IV catheters that encase the needle after use reduced needlestick injuries related to IV insertion by 83% in three hospitals.



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You can work with your health care facility to reduce preventable exposures by identifying the highest risk procedures and devices and implementing the most effective control measures. Methods to control hazards are usually discussed in terms of the hierarchy of controls. The box below demonstrates how to apply the hierarchy of controls framework to bloodborne pathogen hazards. In addition to eliminating sharps, using safe needle devices is one of the best ways to prevent injuries.

Hierarchy of Controls

Most Effective

- 
- **Elimination of hazard**—remove sharps and needles and eliminate all unnecessary injections. Jet injectors may substitute for syringes and needles. Other examples include the elimination of unnecessary sharps like towel clips, and using needleless IV systems.
 - **Engineering controls**—examples include needles that retract, sheathe or blunt immediately after use.
 - **Administrative controls**—policies aimed to limit exposure to the hazard. Examples include allocation of resources demonstrating a commitment to health care worker safety, a needlestick prevention committee, an exposure control plan, removing all unsafe devices, and consistent training on the use of safe devices.
 - **Work practice controls**—examples include no re-capping, placing sharps containers at eye-level and at arms reach, emptying sharps containers before they're full, and establishing the means for safe handling and disposing of sharps devices before beginning a procedure.
 - **Personal Protective Equipment (PPE)**—barriers and filters between the worker and the hazard. Examples include eye goggles, gloves, masks, and gowns.

Least Effective



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References:

Occupational Safety and Health Administration (OSHA) Sources:

- OSHA needlestick prevention Web site includes information on the Needlestick Safety and Prevention Act, the Bloodborne Pathogens Standard, and OSHA Compliance Directives: www.osha.gov/SLTC/needlestick/index.html
OSHA Needlestick Fact Sheet: www.osha.gov/needlesticks/needlefact.html
OSHA FAQs: www.osha.gov/needlesticks/needlefaq.html
OSHA Bloodborne Fact Sheets: www.oshaslc.gov/OshDoc/data_BloodborneFacts/
- Reporting Exposure Incidents
 - Protect Yourself When Handling Sharps
 - Hepatitis B Vaccination—Protection For You
 - Personal Protective Equipment Cuts Risk
 - Holding the Line on Contamination

National Institute of Occupational Safety and Health (NIOSH)

Sources:

- NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings. Publication No. 2000-108: www.cdc.gov/niosh/2000-108.html
NIOSH Guidelines for Selecting, Evaluating and Using Sharps Disposal Containers. Publication No. 97-111: www.cdc.gov/niosh/sharps1.html

Centers for Disease Control and Prevention (CDC) Sources:

- CDC needlestick prevention Web site: www.cdc.gov/health/needlesticks.htm
CDC HIV/AIDS Web site: www.cdc.gov/hiv/dhap.htm
CDC hepatitis C Web site: www.cdc.gov/ncidod/diseases/hepatitis/c/index.htm
CDC hepatitis B Web site: www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
CDC prophylaxis information: www.cdc.gov/ncidod/hip/guide/phssep.htm
CDC guidelines for infection control in health care personnel:
www.cdc.gov/ncidod/hip/GUIDE/infectcont98.htm



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CDC hepatitis C Web site: www.cdc.gov/ncidod/diseases/hepatitis/c/index.htm

CDC hepatitis B Web site: www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm

CDC prophylaxis information: www.cdc.gov/ncidod/hip/guide/phssep.htm

CDC guidelines for infection control in health care personnel:

www.cdc.gov/ncidod/hip/GUIDE/infectcont98.htm



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Needlestick Prevention Guide

Revised
(Health Care Providers)




Dr. Anil Melath, MDS
Principal
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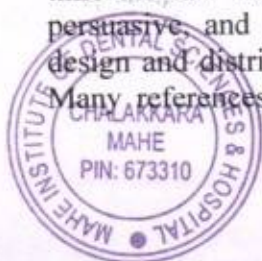
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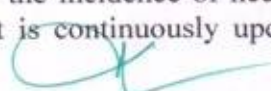
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- There are no data to indicate that infected workers who do not perform invasive procedures pose a risk to patients. Thus, infected health care workers should modify their participation in invasive, exposure-prone procedures, except in extreme emergency situations.
- Infected workers should seek counsel from an expert panel to review and modify their practice based on the best available scientific information.

Dr. Anil Mehta, M.S.
Principal
MAHE Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry



The Disease:

- HIV destroys CD4+ T cells, which are crucial to the normal function of the human immune system. Loss of CD4+ T cells in people with HIV is also a predictor of the development of AIDS.
- Most people infected with HIV carry the virus for years before enough damage is done to the immune system for AIDS to develop. However, recently developed sensitive tests have shown a strong connection between the amount of HIV in the blood and the decline in CD4+ T cell numbers and then development of AIDS. Reducing the amount of virus in the body with anti- HIV drugs can slow this immune system destruction.
- In addition to occupational exposure, HIV is spread by sexual contact with an infected person, by sharing needles and/or syringes (primarily for drug injection) with someone who is infected, or, less commonly (and now very rarely in countries where blood is screened for HIV antibodies), through transfusions of infected blood or blood clotting factors.
- Babies born to HIV-infected women may become infected before or during birth or through breast-feeding after birth.

Treatment:

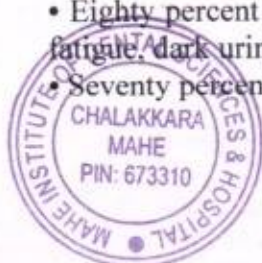
- There is no HIV vaccine. While aggressive vaccine research continues, it is still years and probably decades away.
- New medications, including anti-retrovirals, can slow the development of HIV/AIDS. For the latest information on drug guidelines, contact the HIV/AIDS Treatment Information Service (ATIS) at www.hivatis.org.
- Post exposure prophylaxis(PEP) can greatly reduce the risk of transmission and should be started within 2 hours of exposure.

Hepatitis C

Lately, hepatitis C, caused by HCV, has become a great concern for nurses. Hepatitis C is a serious disease of the liver and can be fatal. HCV was not identified until 1989; before that it was referred to as non-A, non-B virus. The method to test for hepatitis C in blood products was not developed until 1992, meaning that people who received blood products before 1992 might have been exposed to HCV. Testing for hepatitis C after needlestick injuries was not recommended by the CDC until 1998. However, even after that, many health care workers were unaware of the need to be tested for hepatitis C, there could be thousands and thousands of nurses with occupationally acquired hepatitis C who simply do not know it. It is a silent epidemic.

The Disease:

- Hepatitis C can lead to liver failure and liver cancer. It is the leading cause for liver transplant.
- Hepatitis C is the most common chronic bloodborne infection. The CDC estimates that almost four million are infected with HCV, whereas less than one million are infected with HIV.
- Eighty percent of people infected with HCV are asymptomatic, but symptoms can include jaundice, fatigue, dark urine, abdominal pain, loss of appetite, and nausea.
- Seventy percent of chronically infected persons develop chronic liver disease.



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Palloor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

Transmission:

- HCV is primarily spread by exposure to infected blood, primarily via IV drug use, occupational exposure like needlestick and sharps injuries, or having received a blood product prior to 1992. Transmission can also occur from an infected mother to her baby during birth.
- HCV also can be sexually transmitted, but this is rare.
- Hepatitis C is the most frequent infection resulting from needlestick and sharps injuries with a transmission rate of 2.7%-10%.

Treatment:

- There is no vaccine for hepatitis C.
- There is currently no approved PEP for HCV.
- Interferon monotherapy or combination therapy with ribavirin are the current treatments.
- Combination therapy is currently the preferred treatment and has been shown to be effective in 40% of infected persons.
- These drugs are expensive.
- Alcohol use can make the disease worse.

Hepatitis B

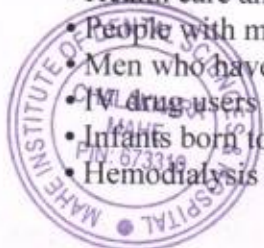
Hepatitis B, caused by HBV is now preventable due to the vaccine that must be offered to all health care workers and is given to children at birth. After the 1991 Bloodborne Pathogens Standard required that the vaccine be offered, cases of hepatitis B in health care workers dropped from 17,000 annually to 400 annually—and continue to drop. **It is strongly recommended that all health care workers be vaccinated since it is the best means of prevention.**

The Disease:

- About 30% of infected people demonstrate no symptoms. Symptoms can include jaundice, fatigue, abdominal pain, loss of appetite, nausea, vomiting, and joint pain.
- Death from liver disease can occur in 15-25% of chronically infected people.
- Transmission occurs via blood and body fluids and is spread via unprotected sex with an infected partner, IV drug use, and mother-child transmission.
- There are approximately 1.25 million chronically infected people, 20-30% of whom acquired their infection during childhood.
- The highest rate of disease occurs among 20-49-year-olds.

Who is at risk?

- Health care and public safety workers
- People with multiple sex partners
- Men who have sex with men
- IV drug users
- Infants born to infected mothers
- Hemodialysis patients



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



Treatment:

- Alpha interferon and lamivudine are used to treat chronic hepatitis B. They are effective in up to 40% of patients.
- These drugs should not be used in pregnant women.
- Alcohol use can make liver disease worse.

PROCEDURE TO FOLLOW AFTER A NEEDLESTICK OR SHARPS INJURY

Now that you know the risk of infection from needlestick and sharps injuries, what should you do if you sustain an injury? Under the OSHA Bloodborne Pathogens Standard, employers must evaluate and treat health care workers in accordance with the latest post-exposure assessment, prophylaxis, and treatment guidelines published by the CDC. These guidelines and documents are available on the CDC's web site: <http://www.cdc.gov/ncidod/hip/guide/phs pep.htm>).

Before an exposure occurs, make sure your employer is able to provide:

- Immediate evaluation and risk assessment of needlestick injuries—e.g., a hospital hotline.
- Confidential testing for HIV, hepatitis B, and hepatitis C.
- Access to post-exposure treatment and prophylactic medications within two hours of exposure.
- Counseling, education, and follow-up testing for up to one year after exposure. If you sustain a needlestick injury.

After Exposure take the following actions immediately:

- Wash the wound with soap and water.
- Alert your supervisor and initiate the injury reporting system used in your workplace.
- Identify the source patient, who should be tested for HIV, hepatitis B, and hepatitis C infections. Your workplace will begin the process to test the patient by seeking consent.
- Report to the nursing superintendent and emergency department at designated treatment facility.
- Get tested immediately and confidentially for HIV, hepatitis B, and hepatitis C infections.
- Get PEP in accordance with CDC guidelines when the source patient is unknown or tests positive for:
 - HIV: Start prophylaxis within two hours of exposure. HIV PEP should include a four-week regimen of two drugs (zidovudine [ZDV] and lamivudine [3TC]; 3TC and stavudine [d4T]; or didanosine [ddI] and d4T) for most exposures and an expanded regimen that includes a third



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

- drug for HIV exposures that pose an increased risk for transmission. When the source patient's virus is known or suspected to be resistant to or more of the PEP drugs, the selection of drugs to which the source patient's virus is unlikely to be resistant is recommended.
- Hepatitis B: If vaccinated no treatment, but if unvaccinated get HBIG and initiate HB vaccine series.
- Hepatitis C: No treatment is currently recommended, but you may want to consult a specialist about experimental PEP.
- Document the exposure in detail, for your own records as well as for the employer. Under the needlestick law in United States, employers must maintain a confidential sharps injury log that contains, at a minimum, the type and brand of device involved in the incident, the department or work area where the exposure incident occurred, and an explanation of how the incident occurred.

Follow-Up:

- ✓ Get confidential follow-up, post-exposure testing at six weeks, three months, and six months, and depending on the risk, at one year.
- ✓ Receive monitoring and follow-up of PEP.
- ✓ Take precautions (especially by practicing safe sex) to prevent exposing others until follow-up testing is complete.
- ✓ Don't be afraid to seek additional information or a referral to an infectious disease specialist if you have any questions. Also, consider counseling—a needlestick injury can be traumatic, regardless of the outcome.

PREVENTION

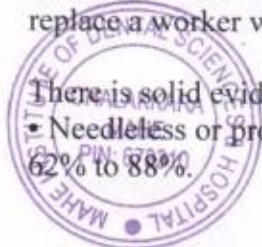
While exposure to bloodborne pathogens is one of the most deadly hazards that nurses face on a daily basis, it is also one of the most preventable. Over 80% of needlestick injuries can be prevented with the use of safe needle devices, which, in conjunction with worker education and work practice controls, can reduce injuries by over 90%.

The first safe needle designs were patented in the 1970s. In 1992, the FDA issued an alert to all health care facilities to use needleless IV systems wherever possible. That alert was merely a recommendation, and it took another eight years for it to be required by law.

With the rapid development of technology and engineering controls, prevention is becoming easier and easier. The cost of follow-up for a high-risk exposure is more expensive. A liver transplant due to hepatitis C costs hundreds of thousands of dollars. Other costs from needlestick and sharps injury include workers' compensation, overtime, and expenses related to recruitment and training of staff to replace a worker who becomes ill.

There is solid evidence that devices with safety features significantly reduce needlestick injuries:

- Needleless or protected-needle IV systems decreased needlestick injuries related to IV connectors by 62% to 88%.



Dr. Ajith Menon, MSc
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry




- Phlebotomy injuries were reduced by 76% with a self-blunting needle, 66% with a hinged needle shield, and 23% with a sliding-shield, winged-steel (butterfly-type) needle.
- Phlebotomy injuries were reduced by 82% with a needle shield, but a recapping device had minimal impact.
- Safer IV catheters that encase the needle after use reduced needlestick injuries related to IV insertion by 83% in three hospitals.


You can work with your health care facility to reduce preventable exposures by identifying the highest risk procedures and devices and implementing the most effective control measures. Methods to control hazards are usually discussed in terms of the hierarchy of controls. The box below demonstrates how to apply the hierarchy of controls framework to bloodborne pathogen hazards. In addition to eliminating sharps, using safe needle devices is one of the best ways to prevent injuries.

Hierarchy of Controls

Most Effective

- 
- **Elimination of hazard**—remove sharps and needles and eliminate all unnecessary injections. Jet injectors may substitute for syringes and needles. Other examples include the elimination of unnecessary sharps like towel clips, and using needleless IV systems.
 - **Engineering controls**—examples include needles that retract, sheathe or blunt immediately after use.
 - **Administrative controls**—policies aimed to limit exposure to the hazard. Examples include allocation of resources demonstrating a commitment to health care worker safety, a needlestick prevention committee, an exposure control plan, removing all unsafe devices, and consistent training on the use of safe devices.
 - **Work practice controls**—examples include no re-capping, placing sharps containers at eye-level and at arms reach, emptying sharps containers before they're full, and establishing the means for safe handling and disposing of sharps devices before beginning a procedure.
 - **Personal Protective Equipment (PPE)**—barriers and filters between the worker and the hazard. Examples include eye goggles, gloves, masks, and gowns.

Least Effective



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

NEEDLESTICK PREVENTION COMMITTEE

Key Players in Committee Formation:

The first step toward a comprehensive exposure control program is the creation of a needlestick prevention committee. After gaining support and commitment to prevention from top level administrators, establish a multidisciplinary needlestick and sharps injury prevention committee, required in some states, to bring together various departments, such as nursing, purchasing, housekeeping, infection control, employee health, ask management, and employee education and training. For the committee to be effective it must have power—the decision-makers in your institution should be represented. It is essential to be aware of the roles and levels of authority of all the related committees. Frontline health care workers—those most at risk for injury and with the most experience using needles and sharps—are equally represented on that committee.

With frontline staff nurses involved, the most appropriate devices are more likely to be selected, and staff are more likely to accept and use the new devices and practices.

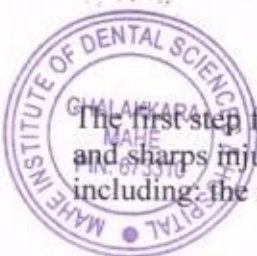
Role of the Committee:

The needlestick prevention committee should seek training on the principles of the industrial hygiene hierarchy of controls, product design features, and applying criteria for device evaluation to ensure a consistent knowledge level among device evaluators and for an effective selection process. The training should not be conducted by or in the presence of product representatives. Once a device is selected, the manufacturer can provide useful in-service education on the use of that device prior to implementation. This committee's primary goals are to prevent needlestick and sharps injuries and to ensure that the hospital is adhering to standards. The committee's responsibilities should include

- Defining bloodborne pathogen exposure problems.
- Developing strategies for improved needlestick injury reporting procedures.
- Overseeing the exposure control plan as mandated by OSHA, including post exposure follow-up.
- Monitoring the post-exposure treatment program.
- Developing surveillance systems to monitor needlestick injuries.
- Reviewing the sharps injury log.
- Obtaining and disseminating information about new devices as they develop.
- Evaluating, selecting, and implementing safe devices.
- Ensuring health care workers' input into product selection.
- Training on new safety devices.
- Documenting the committee's work in meeting minutes.
- Hospitals to comply with applicable local, state regulation standards.

IDENTIFY AND DOCUMENT NEEDLESTICK AND SHARPS HAZARDS

The first step for the needlestick committee is to identify and document where and why needlestick and sharps injuries are occurring. There are various tools you can use to assist you in this task including: the needlestick and sharps injury log.



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry



Document! Document! Document!

All nurses have a responsibility to document. Documentation is always the first step, and it is essential that you and your colleagues report and document every needlestick and sharps injury to:

- Ensure timely post-exposure follow-up, including testing and treatment.
- Collect data to evaluate the health and safety of your workplace.

The importance of documenting cannot be overstated and will improve their own health and safety. Promptly reporting a needlestick and starting PEP can protect you in the future. It is in your best interest—no matter how busy you are—to document illnesses and injuries. Attempt documenting all injuries and illnesses, not just sharps injuries.

Sharps Injury Log:

The newly revised Bloodborne Pathogens Standard requires to “maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps.” The log must contain, at a minimum, the following information:

- Date of the injury
- Type and brand of the device involved
- Department or work area where the incident occurred
- Explanation of how the incident occurred

You can use the data contained in the log to:

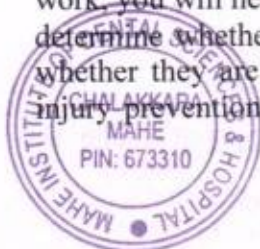
- Analyze injury frequencies by specific attributes like work units, devices, and procedures.
- Identify high-risk devices and procedures.
- Identify injuries that could be prevented.
- Evaluate the efficacy of newly implemented safe devices.
- Share and compare information and successes with other institutions.

Your needlestick committee should regularly review the sharps injury log. You will find crucial information there. By learning which types of devices are involved in injuries, you will be able to determine which devices are not safe and must be replaced. While reviewing the log, you also might notice that certain departments or units seem to have a high number of injuries. Armed with that information, you can work with that unit to determine why they are sustaining so many injuries.

Adequate staffing might help prevent needlestick injuries. The information contained in the log will help you develop the answers to prevent more injuries. You will know if you need to increase training, stock more safe devices, and/or increase staffing. As you analyze the log data, the committee should identify high priorities for action, especially to eliminate the highest risk devices and prevent the highest risk and most frequently occurring injuries.

Survey

While every needlestick and sharps injury should be documented, many people do not report them. In addition, many health care workers simply are unaware of the laws that protect them or the policies already in place at their health care facility. When your needlestick prevention committee begins its work, you will need to assess the situation in your workplace. In addition to the logs, a survey can help determine whether needlestick injuries are being reported, whether staff are using safe devices, and whether they are aware of the laws and policies in place. Often, increased attention to needlestick injury prevention will result in an increase in the number of reported injuries. If used for an initial



Dr. Anil Melath, MDS

Principal

Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

assessment and follow-up annually, this survey will help the needlestick prevention committee determine whether a change in the number of needlestick injuries recorded is, for example, really an increase in the number of injuries occurring or an improvement in the reporting of existing injuries.

Workplace Walk-Through

A walk-through, which is a workplace inspection, is a crucial way to identify workplace hazards. Walk-throughs should be regularly planned and conducted by the needlestick prevention committee. They should be conducted during work hours and during different shifts. Walk through all units and speak with supervisors and frontline health care workers. You can use the following checklist to help you gather information.

Checklist:

- What kinds of sharps are available on the unit?
- What procedures require needles and sharps?
- What type of patients are involved in these procedures?
- Where is the procedure done?
- Who does the procedure?
- Are there alternative methods to perform the procedure that can eliminate the sharp? For example: oral versus injectable administration of medication or needleless IV connectors.
- Are safe devices for all categories of sharps available on the unit?
- Are they used? Why or why not?
- Are there legitimate uses of conventional devices, and are there procedures that cannot use safe devices?
- Are unsafe devices still on the unit?
- If so, why and how can use and access to these devices be monitored and controlled?
- What equipment is available in the supply closets?
- Are the sharps boxes available within arm's reach, in sight and routinely replaced when full?



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



References:

Occupational Safety and Health Administration (OSHA) Sources:

- OSHA needlestick prevention Web site includes information on the Needlestick Safety and Prevention Act, the Bloodborne Pathogens Standard, and OSHA Compliance Directives: www.osha.gov/SLTC/needlestick/index.html
OSHA Needlestick Fact Sheet: www.osha.gov/needlesticks/needlefact.html
OSHA FAQs: www.osha.gov/needlesticks/needlefaq.html
OSHA Bloodborne Fact Sheets: www.oshaslc.gov/OshDoc/data_BloodborneFacts/
- Reporting Exposure Incidents
 - Protect Yourself When Handling Sharps
 - Hepatitis B Vaccination—Protection For You
 - Personal Protective Equipment Cuts Risk
 - Holding the Line on Contamination

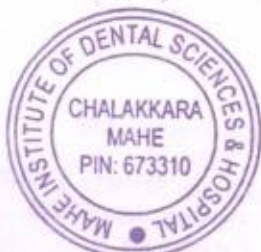
National Institute of Occupational Safety and Health (NIOSH)

Sources:

- NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings. Publication No. 2000-108: www.cdc.gov/niosh/2000-108.html
NIOSH Guidelines for Selecting, Evaluating and Using Sharps Disposal Containers. Publication No. 97-111: www.cdc.gov/niosh/sharps1.html

Centers for Disease Control and Prevention (CDC) Sources:

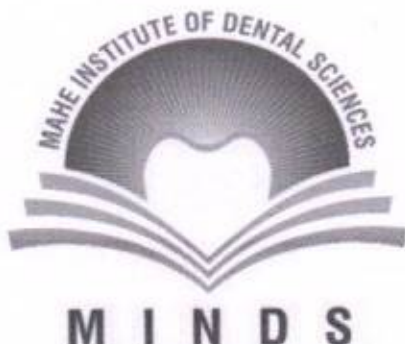
- CDC needlestick prevention Web site: www.cdc.gov/health/needlesticks.htm
CDC HIV/AIDS Web site: www.cdc.gov/hiv/dhap.htm
CDC hepatitis C Web site: www.cdc.gov/ncidod/diseases/hepatitis/c/index.htm
CDC hepatitis B Web site: www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
CDC prophylaxis information: www.cdc.gov/ncidod/hip/guide/phssep.htm
CDC guidelines for infection control in health care personnel:
www.cdc.gov/ncidod/hip/GUIDE/infectcont98.htm



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765



MAHE INSTITUTE OF DENTAL SCIENCE & HOSPITAL
CHALAKKARA-671212

Needlestick Prevention Guide

(Health Care Providers)

Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

WORK-RELATED BLOODBORNE PATHOGEN EXPOSURE: THE RISKS FOR HEALTH CARE WORKERS

Every day, health care workers are exposed to dangerous and deadly bloodborne pathogens through contaminated needlesticks, sharps, or splash exposures. It is one of the greatest risks faced by the frontline health care worker. Every percutaneous needlestick and sharps injury carries a risk of infection from bloodborne pathogens. Yet, these exposures often have been considered "part of the job." Health care workers primarily are exposed to these pathogens via contaminated needlestick and sharps injuries. You probably know at least one colleague who has sustained an injury, or perhaps you have been stuck yourself. It is important that you and your colleagues fully understand these risks.

The Facts About Occupational Infection:

Registered nurses working at the bedside sustain an overwhelming majority of these injuries (Perry, Parker, & Jagger, 2003). These exposures carry the risk of infection with Hepatitis B (HBV), Hepatitis C (HCV), and Human Immunodeficiency Virus (HIV), the virus that causes AIDS.

Each of these viruses poses a different risk if a health care worker is exposed. More than 20 other infections can be transmitted through needlesticks, including syphilis, malaria, and herpes (Centers for Disease Control and Prevention [CDC], 1998a). At least 1,000 health care workers are estimated to contract serious infections annually from needlestick and sharps injuries (International Health Care Worker Safety Center, 1999). According to the National Institute of Occupational Safety and Health (NIOSH), the design of the device can increase the risk of injury. Specific features make certain devices more dangerous. These include: (National Institute for Occupational Safety and Health [NIOSH], 1999).

- Devices with hollow bore needles.
- Needle devices that need to be taken apart or manipulated by the health care worker like blood drawing devices that need to be detached after use.
- Syringes that retain an exposed needle after use.
- Needles that are attached to tubing like butterflies that can be difficult to place in sharps disposal containers.

The highest risk of injury is from blood filled hollow bore needles. They accounted for 63% of the needlestick injuries from June 1995 July 1999 (NIOSH, 1999). Ninety percent of the Centers for Disease Control and Prevention (CDC) documented cases of health care workers who contracted HIV from needlestick injuries involved injuries with hollow bore, blood filled needles (CDC, 1998a).

These data may appear to be "old", dating back five or six years. It continues to have relevance when discussing the 2000 Needlestick Safety and Prevention Act since it was the science available at the time the law was debated, and ultimately, passed in United States. These data proved to be very persuasive, and helped make the case for the law. Current data suggest that improvements in the design and distribution of equipment are making a positive impact on the incidence of needlesticks. Many references are provided that will direct the reader to data that is continuously updated and reflects current science. Some of the websites cited are continuously monitoring the epidemiology of these injuries and should be used in current discussions of the subject.

Dr. Anil Mehta, MSc
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



HIV/AIDS

HIV Transmission From Infected Patients to Health Care Workers

While the transmission rate of occupationally acquired HIV remains very low (.3%), AIDS is a debilitating and ultimately fatal disease. Many nurses throughout the world are living with occupationally acquired AIDS, and many have died from it. Concerns about HIV-contaminated blood led to the 1991 OSHA Bloodborne Pathogens Standard and CDC's Universal Precautions (Post-exposure prophylaxis (PEP) is essential to reduce the risk of transmission and should be started within two hours of exposure).

- The transmission rate of occupationally acquired HIV after an exposure is 0.3% (1 in 300). In other words, if a health care worker is stuck by a needle or cut by a sharp that is contaminated with the blood of an HIV patient, there is a 1 in 300 chance that she or he will be infected with HIV.
- The risk of transmission can increase up to 5% (a 1 in 20 chance) if the needle or sharp is contaminated by an HIV-infected patient with a high viral load (usually either with a new infection or during the terminal stages of the disease), the health care worker sustains a deep cut with lots of blood, and the procedure involved accessing the patient's vein or artery.
- As of June 2001, there were at least 57 CDC-documented cases of health care workers with occupationally acquired HIV and at least 137 cases of possible transmissions.
- Based on the prevalence of HIV, 35 new cases of occupationally acquired HIV are estimated to occur annually.
- Health care workers primarily have been infected with HIV after needlestick and sharps injuries or, rarely, after infected blood gets into a worker's open cut or a mucous membrane (for example, the eyes or inside the nose).
- The majority of infections have resulted from injuries from hollow-bore, blood-filled devices. Less frequently, workers have been infected via solid sharps (like suture needles or scalpels) and splash exposures.
- The body fluids of most concern for HIV transmission are: blood, semen, vaginal fluid, breast milk, and other body fluids containing blood.
- Other body fluids that may transmit the virus include: cerebrospinal fluid surrounding the brain and the spinal cord, synovial fluid surrounding bone joints, and amniotic fluid surrounding a fetus.

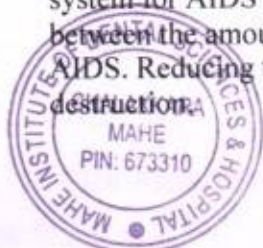
The Risk of Transmission of HIV From Infected Health Care

Workers to Patients:

- There has been only one instance of patients being infected by a health care worker in the United States. Investigations have been completed involving more than 22,000 patients of 63 HIV-infected physicians, surgeons, and dentists, and no other cases of transmission have been identified
- There are no data to indicate that infected workers who do not perform invasive procedures pose a risk to patients. Thus, infected health care workers should modify their participation in invasive, exposure prone procedures, except in extreme emergency situations.¹⁸
- Infected workers should seek counsel from an expert panel to review and modify their practice based on the best available scientific information.

The Disease:

- HIV destroys CD4+ T cells, which are crucial to the normal function of the human immune system. Loss of CD4+ T cells in people with HIV is also a predictor of the development of AIDS.
- Most people infected with HIV carry the virus for years before enough damage is done to the immune system for AIDS to develop. However, recently developed sensitive tests have shown a strong connection between the amount of HIV in the blood and the decline in CD4+ T cell numbers and then development of AIDS. Reducing the amount of virus in the body with anti-HIV drugs can slow this immune system



Dr. Anil Melath, MDS
Principal

Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
U.T. of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

• In addition to occupational exposure, HIV is spread by sexual contact with an infected person, by sharing needles and/or syringes (primarily for drug injection) with someone who is infected, or, less commonly (and now very rarely in countries where blood is screened for HIV antibodies), through transfusions of infected blood or blood clotting factors.

• Babies born to HIV-infected women may become infected before or during birth or through breast-feeding after birth.

Treatment:

• There is no HIV vaccine. While aggressive vaccine research continues, it is still years and probably decades away.

• New medications, including antiretrovirals, can slow the development of HIV/AIDS. For the latest information on drug guidelines, contact the HIV/AIDS Treatment Information Service (ATIS) at www.hivatis.org.

• PEP can greatly reduce the risk of transmission and should be started within 2 hours of exposure.

Hepatitis C

Lately, hepatitis C, caused by HCV, has become a great concern for nurses. Hepatitis C is a serious disease of the liver and can be fatal. HCV was not identified until 1989; before that it was referred to as non-A, non-B virus. The method to test for hepatitis C in blood products was not developed until 1992, meaning that people who received blood products before 1992 might have been exposed to HCV. Testing for hepatitis C after needlestick injuries was not recommended by the CDC until 1998. However, even after that, many health care workers were unaware of the need to be tested for hepatitis C. There could be thousands and thousands of nurses with occupationally acquired hepatitis C who simply do not know it. It is a silent epidemic.

The Disease:

• Hepatitis C can lead to liver failure and liver cancer. It is the leading cause for liver transplant.

• Hepatitis C is the most common chronic bloodborne infection. The CDC estimates that almost four million are infected with HCV, whereas less than one million are infected with HIV.

• Eighty percent of people infected with HCV are asymptomatic, but symptoms can include jaundice, fatigue, dark urine, abdominal pain, loss of appetite, and nausea.

• Seventy percent of chronically infected persons develop chronic liver disease.

Transmission:

• HCV is primarily spread by exposure to infected blood, primarily via IV drug use, occupational exposure like needlestick and sharps injuries, or having received a blood product prior to 1992. Transmission can also occur from an infected mother to her baby during birth.

• HCV also can be sexually transmitted, but this is rare.

• Hepatitis C is the most frequent infection resulting from needlestick and sharps injuries with a transmission rate of 2.7%-10%.

Treatment:

• There is no vaccine for hepatitis C.

• There is currently no approved PEP for HCV.

• Interferon monotherapy or combination therapy with ribavirin are the current treatments.

• Combination therapy is currently the preferred treatment and has been shown to be effective in 40% of infected persons.

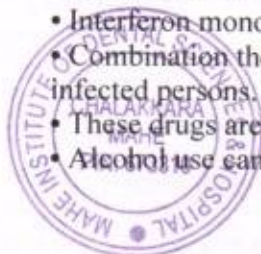
• These drugs are expensive.

• Alcohol use can make the disease worse.

Dr. Anil Melath, MDS

Principal

Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry





Hepatitis B

Hepatitis B, caused by HBV is now preventable due to the vaccine that must be offered to all health care workers and is given to children at birth. After the 1991 Bloodborne Pathogens Standard required that the vaccine be offered, cases of hepatitis B in health care workers dropped from 17,000 annually to 400 annually—and continue to drop. **It is strongly recommended that all health care workers be vaccinated since it is the best means of prevention.**

The Disease:

- About 30% of infected people demonstrate no symptoms. Symptoms can include jaundice, fatigue, abdominal pain, loss of appetite, nausea, vomiting, and joint pain.
- Death from liver disease can occur in 15-25% of chronically infected people.
- Transmission occurs via blood and body fluids and is spread via unprotected sex with an infected partner, IV drug use, and mother-child transmission.
- There are approximately 1.25 million chronically infected people, 20-30% of whom acquired their infection during childhood.
- The highest rate of disease occurs among 20-49-year-olds.

Who is at risk?

- Health care and public safety workers
- People with multiple sex partners
- Men who have sex with men
- IV drug users
- Infants born to infected mothers
- Hemodialysis patients

Treatment:

- Alpha interferon and lamivudine are used to treat chronic hepatitis B. They are effective in up to 40% of patients.
- These drugs should not be used in pregnant women.
- Alcohol use can make liver disease worse.



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



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PROCEDURE TO FOLLOW AFTER A NEEDLESTICK OR SHARPS INJURY

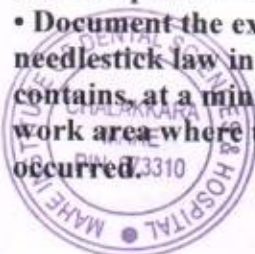
Now that you know the risk of infection from needlestick and sharps injuries, what should you do if you sustain an injury? Under the OSHA Bloodborne Pathogens Standard, employers must evaluate and treat health care workers in accordance with the latest post-exposure assessment, prophylaxis, and treatment guidelines published by the CDC. These guidelines and documents are available on the CDC's web site: <http://www.cdc.gov/ncidod/hip/guide/phssep.htm>).

Before an exposure occurs, make sure your employer is able to provide:

- Immediate evaluation and risk assessment of needlestick injuries—e.g., a hospital hotline.
- Confidential testing for HIV, hepatitis B, and hepatitis C.
- Access to post-exposure treatment and prophylactic medications within two hours of exposure.
- Counseling, education, and follow-up testing for up to one year after exposure. If you sustain a needlestick injury.

After Exposure take the following actions immediately:

- Wash the wound with soap and water.
- Alert your supervisor and initiate the injury reporting system used in your workplace.
- Identify the source patient, who should be tested for HIV, hepatitis B, and hepatitis C infections. Your workplace will begin the process to test the patient by seeking consent.
- Report to the nursing superintendent and emergency department at designated treatment facility.
- Get tested immediately and confidentially for HIV, hepatitis B, and hepatitis C infections.
- Get PEP in accordance with CDC guidelines when the source patient is unknown or tests positive for:
 - HIV: Start prophylaxis within two hours of exposure. HIV PEP should include a four-week regimen of two drugs (zidovudine [ZDV] and lamivudine [3TC]; 3TC and stavudine [d4T]; or didanosine [ddI] and d4T) for most exposures and an expanded regimen that includes a third drug for HIV exposures that pose an increased risk for transmission. When the source patient's virus is known or suspected to be resistant to or more of the PEP drugs, the selection of drugs to which the source patient's virus is unlikely to be resistant is recommended.
 - Hepatitis B: If vaccinated no treatment, but if unvaccinated get HBIG and initiate HB vaccine series.
 - Hepatitis C: No treatment is currently recommended, but you may want to consult a specialist about experimental PEP.
- Document the exposure in detail, for your own records as well as for the employer. Under the needlestick law in United States, employers must maintain a confidential sharps injury log that contains, at a minimum, the type and brand of device involved in the incident, the department or work area where the exposure incident occurred, and an explanation of how the incident occurred.



Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry



Follow-Up:

- Get confidential follow-up, post-exposure testing at six weeks, three months, and six months, and depending on the risk, at one year.
- Receive monitoring and follow-up of PEP.
- Take precautions (especially by practicing safe sex) to prevent exposing others until follow-up testing is complete.
- Don't be afraid to seek additional information or a referral to an infectious disease specialist if you have any questions. Also, consider counseling—a needlestick injury can be traumatic, regardless of the outcome.

PREVENTION

While exposure to bloodborne pathogens is one of the most deadly hazards that nurses face on a daily basis, it is also one of the most preventable. Over 80% of needlestick injuries can be prevented with the use of safe needle devices, which, in conjunction with worker education and work practice controls, can reduce injuries by over 90%.

The first safe needle designs were patented in the 1970s. In 1992, the FDA issued an alert to all health care facilities to use needleless IV systems wherever possible. That alert was merely a recommendation, and it took another eight years for it to be required by law.

With the rapid development of technology and engineering controls, prevention is becoming easier and easier. The cost of follow-up for a high-risk exposure is more expensive. A liver transplant due to hepatitis C costs hundreds of thousands of dollars. Other costs from needlestick and sharps injury include workers' compensation, overtime, and expenses related to recruitment and training of staff to replace a worker who becomes ill.

There is solid evidence that devices with safety features significantly reduce needlestick injuries:

- Needleless or protected-needle IV systems decreased needlestick injuries related to IV connectors by 62% to 88%.
- Phlebotomy injuries were reduced by 76% with a self-blunting needle, 66% with a hinged needle shield, and 23% with a sliding-shield, winged-steel (butterfly-type) needle.
- Phlebotomy injuries were reduced by 82% with a needle shield, but a recapping device had minimal impact.
- Safer IV catheters that encase the needle after use reduced needlestick injuries related to IV insertion by 83% in three hospitals.

You can work with your health care facility to reduce preventable exposures by identifying the highest risk procedures and devices and implementing the most effective control measures. Methods to control hazards are usually discussed in terms of the hierarchy of controls. The box below demonstrates how to apply the hierarchy of controls framework to bloodborne pathogen hazards. In addition to eliminating sharps, using safe needle devices is one of the best ways to prevent injuries.



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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Hierarchy of Controls

Most Effective

- **Elimination of hazard**—remove sharps and needles and eliminate all unnecessary injections. Jet injectors may substitute for syringes and needles. Other examples include the elimination of unnecessary sharps like towel clips, and using needleless IV systems.
- **Engineering controls**—examples include needles that retract, sheathe or blunt immediately after use.
- **Administrative controls**—policies aimed to limit exposure to the hazard. Examples include allocation of resources demonstrating a commitment to health care worker safety, a needlestick prevention committee, an exposure control plan, removing all unsafe devices, and consistent training on the use of safe devices.
- **Work practice controls**—examples include no re-capping, placing sharps containers at eye-level and at arms reach, emptying sharps containers before they're full, and establishing the means for safe handling and disposing of sharps devices before beginning a procedure.
- **Personal Protective Equipment (PPE)**—barriers and filters between the worker and the hazard. Examples include eye goggles, gloves, masks, and gowns.

Least Effective

NEEDLESTICK PREVENTION COMMITTEE

Key Players in Committee Formation

The first step toward a comprehensive exposure control program is the creation of a needlestick prevention committee. After gaining support and commitment to prevention from top level administrators, establish a multidisciplinary needlestick and sharps injury prevention committee, required in some states, to bring together various departments, such as nursing, purchasing, housekeeping, infection control, employee health, ask management, and employee education and training. For the committee to be effective it must have power—the decision-makers in your institution should be represented. It is essential to be aware of the roles and levels of authority of all the related committees. Frontline health care workers—those most at risk for injury and with the most experience using needles and sharps—are equally represented on that committee.

With frontline staff nurses involved, the most appropriate devices are more likely to be selected, and staff are more likely to accept and use the new devices and practices.

Role of the Committee

The needlestick prevention committee should seek training on the principles of the industrial hygiene hierarchy of controls, product design features, and applying criteria for device evaluation to ensure a consistent knowledge level among device evaluators and for an effective selection process. The training should not be conducted by or in the presence of product representatives. Once a device is selected, the manufacturer can provide useful in-service education on the use of that device prior to implementation. This committee's primary goals are to prevent needlestick and sharps injuries and to ensure that the hospital is adhering to standards. The committee's responsibilities should include

- Defining bloodborne pathogen exposure problems.
- Developing strategies for improved needlestick injury reporting procedures.
- Overseeing the exposure control plan as mandated by OSHA, including post exposure follow-up.
- Monitoring the post-exposure treatment program.

Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



- Developing surveillance systems to monitor needlestick injuries.
- Reviewing the sharps injury log.
- Obtaining and disseminating information about new devices as they develop.
- Evaluating, selecting, and implementing safe devices.
- Ensuring health care workers' input into product selection.
- Training on new safety devices.
- Documenting the committee's work in meeting minutes.
- Hospitals to comply with applicable local, state regulation standards.

IDENTIFY AND DOCUMENT NEEDLESTICK AND SHARPS HAZARDS

The first step for the needlestick committee is to identify and document where and why needlestick and sharps injuries are occurring. There are various tools you can use to assist you in this task including: the needlestick and sharps injury log.

Document! Document! Document!

All nurses have a responsibility to document. Documentation is always the first step, and it is essential that you and your colleagues report and document every needlestick and sharps injury to:

- Ensure timely post-exposure follow-up, including testing and treatment.
- Collect data to evaluate the health and safety of your workplace.

The importance of documenting cannot be overstated and will improve their own health and safety. Promptly reporting a needlestick and starting PEP can protect you in the future. It is in your best interest—no matter how busy you are—to document illnesses and injuries. Attempt documenting all injuries and illnesses, not just sharps injuries.

Sharps Injury Log

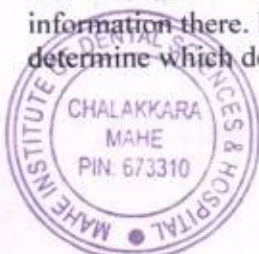
The newly revised Bloodborne Pathogens Standard requires to “maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps.” The log must contain, at a minimum, the following information:

- Date of the injury
- Type and brand of the device involved
- Department or work area where the incident occurred
- Explanation of how the incident occurred

You can use the data contained in the log to:

- Analyze injury frequencies by specific attributes like work units, devices, and procedures.
- Identify high-risk devices and procedures.
- Identify injuries that could be prevented.
- Evaluate the efficacy of newly implemented safe devices.
- Share and compare information and successes with other institutions.

Your needlestick committee should regularly review the sharps injury log. You will find crucial information there. By learning which types of devices are involved in injuries, you will be able to determine which devices are not safe and must be replaced. While reviewing the log, you also might notice



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
Affiliated to Pondicherry Central University, Recognized by Dental Council of India
Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

that certain departments or units seem to have a high number of injuries. Armed with that information, you can work with that unit to determine why they are sustaining so many injuries.

Adequate staffing might help prevent needlestick injuries. The information contained in the log will help you develop the answers to prevent more injuries. You will know if you need to increase training, stock more safe devices, and/or increase staffing.

As you analyze the log data, the committee should identify high priorities for action, especially to eliminate the highest risk devices and prevent the highest risk and most frequently occurring injuries.

Survey

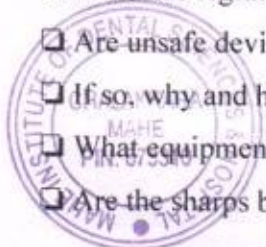
While every needlestick and sharps injury should be documented, many people do not report them. In addition, many health care workers simply are unaware of the laws that protect them or the policies already in place at their health care facility. When your needlestick prevention committee begins its work, you will need to assess the situation in your workplace. In addition to the logs, a survey can help determine whether needlestick injuries are being reported, whether staff are using safe devices, and whether they are aware of the laws and policies in place. Often, increased attention to needlestick injury prevention will result in an increase in the number of reported injuries. If used for an initial assessment and follow-up annually, this survey will help the needlestick prevention committee determine whether a change in the number of needlestick injuries recorded is, for example, really an increase in the number of injuries occurring or an improvement in the reporting of existing injuries.

Workplace Walk-Through

A walk-through, which is a workplace inspection, is a crucial way to identify workplace hazards. Walk-throughs should be regularly planned and conducted by the needlestick prevention committee. They should be conducted during work hours and during different shifts. Walk through all units and speak with supervisors and frontline health care workers. You can use the following checklist to help you gather information.

Checklist:

- What kinds of sharps are available on the unit?
- What procedures require needles and sharps?
- What type of patients are involved in these procedures?
- Where is the procedure done?
- Who does the procedure?
- Are there alternative methods to perform the procedure that can eliminate the sharp? For example: oral versus injectable administration of medication or needleless IV connectors.
- Are safe devices for all categories of sharps available on the unit?
- Are they used? Why or why not?
- Are there legitimate uses of conventional devices, and are there procedures that cannot use safe devices?
- Are unsafe devices still on the unit?
- If so, why and how can use and access to these devices be monitored and controlled?
- What equipment is available in the supply closets?
- Are the sharps boxes available within arm's reach, in sight and routinely replaced when full?



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
U.T. of Puducherry



References:

Occupational Safety and Health Administration (OSHA) Sources:

- OSHA needlestick prevention Web site includes information on the Needlestick Safety and Prevention Act, the Bloodborne Pathogens Standard, and OSHA Compliance Directives: www.osha.gov/SLTC/needlestick/index.html
OSHA Needlestick Fact Sheet: www.osha.gov/needlesticks/needlefact.html
OSHA FAQs: www.osha.gov/needlesticks/needlefaq.html
OSHA Bloodborne Fact Sheets: www.oshaslc.gov/OshDoc/data_BloodborneFacts/:
- Reporting Exposure Incidents
 - Protect Yourself When Handling Sharps
 - Hepatitis B Vaccination—Protection For You
 - Personal Protective Equipment Cuts Risk
 - Holding the Line on Contamination

National Institute of Occupational Safety and Health (NIOSH)

Sources:

- NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings. Publication No. 2000-108: www.cdc.gov/niosh/2000-108.html
NIOSH Guidelines for Selecting, Evaluating and Using Sharps Disposal Containers. Publication No. 97-111: www.cdc.gov/niosh/sharps1.html

Centers for Disease Control and Prevention (CDC) Sources:

- CDC needlestick prevention Web site: www.cdc.gov/health/needlesticks.htm
CDC HIV/AIDS Web site: www.cdc.gov/hiv/dhap.htm
CDC hepatitis C Web site: www.cdc.gov/ncidod/diseases/hepatitis/c/index.htm
CDC hepatitis B Web site: www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
CDC prophylaxis information: www.cdc.gov/ncidod/hip/guide/phssep.htm
CDC guidelines for infection control in health care personnel:
www.cdc.gov/ncidod/hip/GUIDE/infectcont98.htm



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



OSHA model exposure control plan

The Model Exposure Control Plan is intended to serve employers as an example exposure control plan which is required by the Bloodborne Pathogens Standard. A central component of the requirements of the standard is the development of an exposure control plan (ECP).

The intent of this model is to provide small employers with an easy-to-use format for developing a written exposure control plan. Each employer will need to adjust or adapt the model for their specific use.

The information contained in this publication is not considered a substitute for the OSH Act or any provisions of OSHA standards. It provides general guidance on a particular standard-related topic but should not be considered a definitive interpretation for compliance with OSHA requirements. The reader should consult the OSHA standard in its entirety for specific compliance requirements.

POLICY

The (Facility Name) is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this endeavor, the following exposure control plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

The ECP is a key document to assist our firm in implementing and ensuring compliance with the standard, thereby protecting our employees. This ECP includes:

- * Determination of employee exposure
- * Implementation of various methods of exposure control, including:
 - Universal precautions
 - Engineering and work practice controls
 - Personal protective equipment
 - Housekeeping
- * Hepatitis B vaccination
- * Post-exposure evaluation and follow-up
- * Communication of hazards to employees and training
- * Recordkeeping
- * Procedures for evaluating circumstances surrounding an exposure incident



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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U.T. of Puducherry. Ph : 0490 2337765

PROGRAM ADMINISTRATION


- * (Name of responsible person or department) is (are) responsible for the implementation of the ECP. (Name of responsible person or department) will maintain, review, and update the ECP at least annually, and whenever necessary to include new or modified tasks and procedures. Contact location/phone number: _____
- * Those employees who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.
- * (Name of responsible person or department) will maintain and provide all necessary personal protective equipment (PPE), engineering controls (e.g., sharps containers), labels, and red bags as required by the standard. (Name of responsible person or department) will ensure that adequate supplies of the aforementioned equipment are available in the appropriate sizes. Contact location/phone number: _____
- * (Name of responsible person or department) will be responsible for ensuring that all medical actions required are performed and that appropriate employee health and OSHA records are maintained. Contact location/phone number: _____
- * (Name of responsible person or department) will be responsible for training, documentation of training, and making the written ECP available to employees, OSHA, and NIOSH representatives. Contact location/phone number: _____

EMPLOYEE EXPOSURE DETERMINATION

The following is a list of all job classifications at our establishment in which all employees have occupational exposure:

<u>JOB TITLE</u>	<u>DEPARTMENT/LOCATION</u>
<u>(Example: Phlebotomists)</u>	<u>(Clinical Lab)</u>
_____	_____




Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe - 673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

The following is a list of job classifications in which some employees at our establishment have occupational exposure. Included is a list of tasks and procedures, or groups of closely related tasks and procedures, in which occupational exposure may occur for these individuals:

<u>JOB TITLE</u>	<u>DEPARTMENT/LOCATION</u>	<u>TASK/PROCEDURE</u>
(Example: Housekeeper)	Environmental Services	Handling Regulated Waste)
_____	_____	_____

Part-time, temporary, contract and per diem employees are covered by the standard. How the provisions of the standard will be met for these employees should be described in the ECP.

METHODS OF IMPLEMENTATION AND CONTROL

Universal Precautions

All employees will utilize universal precautions.

Exposure Control Plan

Employees covered by the bloodborne pathogens standard receive an explanation of this ECP during their initial training session. It will also be reviewed in their annual refresher training. All employees have an opportunity to review this plan at any time during their work shifts by contacting (Name of responsible person or department). If requested, we will provide an employee with a copy of the ECP free of charge and within 15 days of the request.

(Name of responsible person or department) is responsible for reviewing and updating the ECP annually or more frequently if necessary to reflect any new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

Engineering Controls and Work Practices

Engineering controls and work practice controls will be used to prevent or minimize exposure to bloodborne pathogens. The specific engineering controls and work practice controls used are listed below:

- * (For example: non-glass capillary tubes, SESIPs, needleless systems)
- * _____
- * _____



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



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Sharps disposal containers are inspected and maintained or replaced by (Name of responsible person or department) every (list frequency) or whenever necessary to prevent overfilling.

This facility identifies the need for changes in engineering control and work practices through (Examples: Review of OSHA records, employee interviews, committee activities, etc.)

We evaluate new procedures or new products regularly by (Describe the process, literature reviewed, supplier info, products considered)

Both front line workers and management officials are involved in this process: (Describe how employees will be involved)

(Name of responsible person or department) will ensure effective implementation of these recommendations.

Personal Protective Equipment (PPE)

PPE is provided to our employees at no cost to them. Training is provided by (Name of responsible person or department) in the use of the appropriate PPE for the tasks or procedures employees will perform.

The types of PPE available to employees are as follows:


(Ex. gloves, eye protection, etc.)

PPE is located (List location) and may be obtained through (Name of responsible person or department)
(Specify how employees are to obtain PPE, and who is responsible for ensuring that it is available.)

All employees using PPE must observe the following precautions:

- Wash hands immediately or as soon as feasible after removal of gloves or other PPE.
- Remove PPE after it becomes contaminated, and before leaving the work area.
- Used PPE may be disposed of in (List appropriate containers for storage, laundering, decontamination, or disposal.)
- Wear appropriate gloves when it can be reasonably anticipated that there may be hand contact with blood or OPIM, and when handling or touching contaminated




Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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U.T. of Puducherry. Ph : 0490 2337765

items or surfaces; replace gloves if torn, punctured, contaminated, or if their ability to function as a barrier is compromised.

- Utility gloves may be decontaminated for reuse if their integrity is not compromised; discard utility gloves if they show signs of cracking, peeling, tearing, puncturing, or deterioration.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eye, nose, or mouth.
- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the outer surface.

The procedure for handling used PPE is as follows: (may refer to specific agency procedure by title or number and last date of review)

(For example, how and where to decontaminate face shields, eye protection, resuscitation equipment)

Housekeeping

Regulated waste is placed in containers which are closable, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded (see Labels), and closed prior to removal to prevent spillage or protrusion of contents during handling.

The procedure for handling sharps disposal containers is: (may refer to specific agency procedure by title or number and last date of review).

The procedure for handling other regulated waste is: (may refer to specific agency procedure by title or number and last date of review).

Contaminated sharps are discarded immediately or as soon as possible in containers that are closable, puncture-resistant, leakproof on sides and bottoms, and labeled or color-coded appropriately. Sharps disposal containers are available at _____ (must be easily accessible and as close as feasible to the immediate area where sharps are used).



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Palloor, Mahe - 673310
UT of Puducherry



MAHE INSTITUTE OF DENTAL SCIENCES & HOSPITAL
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Chalakkara, P.O. Pallor, Mahe-673 310
U.T. of Puducherry. Ph : 0490 2337765

Bins and pails (e.g., wash or emesis basins) are cleaned and decontaminated as soon as feasible after visible contamination.

Broken glassware which may be contaminated is picked up using mechanical means, such as a brush and dust pan.

Laundry

The following contaminated articles will be laundered by this company:

Laundering will be performed by (Name of responsible person or department)
_____ at (time and/or location) _____.

The following laundering requirements must be met:

- * handle contaminated laundry as little as possible, with minimal agitation
- * place wet contaminated laundry in leak-proof, labeled or color-coded containers before transport. Use (red bags or bags marked with biohazard symbol) _____ for this purpose.
- * wear the following PPE when handling and/or sorting contaminated laundry:
(List appropriate PPE) _____

Labels

The following labeling method(s) is used in this facility:

EQUIPMENT TO BE LABELED _____ LABEL TYPE (size, color, etc.)
(e.g., specimens, contaminated laundry, etc.) red bag, biohazard label, etc.

(Name of responsible person or department) _____ will ensure warning labels are affixed or red bags are used as required if regulated waste or contaminated equipment is brought into the facility. Employees are to notify _____ if they discover regulated waste containers, refrigerators containing blood or OPIM, contaminated equipment, etc. without proper labels.

HEPATITIS B VACCINATION

(Name of responsible person or department) _____ will provide training to employees on hepatitis B vaccinations, addressing the safety, benefits, efficacy, methods of administration, and availability.



Dr. Anil Melath, MDS
Principal
Mahe Institute of Dental Sciences & Hospital
Chalakkara, P.O. Pallor, Mahe -673310
UT of Puducherry



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The hepatitis B vaccination series is available at no cost after training and within 10 days of initial assignment to employees identified in the exposure determination section of this plan. Vaccination is encouraged unless: 1) documentation exists that the employee has previously received the series, 2) antibody testing reveals that the employee is immune, or 3) medical evaluation shows that vaccination is contraindicated.

However, if an employee chooses to decline vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at no cost. Documentation of refusal of the vaccination is kept at _____ (List location or person responsible for this recordkeeping).

Vaccination will be provided by _____ (List Health care Professional who is responsible for this part of the plan) at _____ (location).

Following the medical evaluation, a copy of the health care professional's Written Opinion will be obtained and provided to the employee. It will be limited to whether the employee requires the hepatitis vaccine, and whether the vaccine was administered.

POST-EXPOSURE EVALUATION AND FOLLOW-UP

Should an exposure incident occur, contact _____ (Name of responsible person) at the following number: _____.

An immediately available confidential medical evaluation and follow-up will be conducted by _____ (Licensed health care professional). Following the initial first aid (clean the wound, flush eyes or other mucous membrane, etc.), the following activities will be performed:

- Document the routes of exposure and how the exposure occurred.
- Identify and document the source individual (unless the employer can establish that identification is infeasible or prohibited by state or local law).
- Obtain consent and make arrangements to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's health care provider.
- If the source individual is already known to be HIV, HCV and/or HBV positive, new testing need not be performed.
- Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws and regulations concerning the identity and infectious status of the source individual (e.g., laws protecting confidentiality).
- After obtaining consent, collect exposed employee's blood as soon as feasible after exposure incident, and test blood for HBV and HIV serological status
- If the employee does not give consent for HIV serological testing during collection of blood for baseline testing, preserve the baseline blood sample for at least 90



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days; if the exposed employee elects to have the baseline sample tested during this waiting period, perform testing as soon as feasible.

ADMINISTRATION OF POST-EXPOSURE EVALUATION AND FOLLOW-UP

(Name of responsible person or department) _____ ensures that health care professional(s) responsible for employee's hepatitis B vaccination and post-exposure evaluation and follow-up are given a copy of OSHA's bloodborne pathogens standard.

(Name of responsible person or department) _____ ensures that the health care professional evaluating an employee after an exposure incident receives the following:

- * a description of the employee's job duties relevant to the exposure incident
- * route(s) of exposure
- * circumstances of exposure
- * if possible, results of the source individual's blood test
- * relevant employee medical records, including vaccination status

(Name of responsible person or department) _____ provides the employee with a copy of the evaluating health care professional's written opinion within 15 days after completion of the evaluation.

PROCEDURES FOR EVALUATING THE CIRCUMSTANCES SURROUNDING AN EXPOSURE INCIDENT


(Name of responsible person or department) _____ will review the circumstances of all exposure incidents to determine:

- * engineering controls in use at the time
- * work practices followed
- * a description of the device being used (including type and brand)
- * protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, etc.)
- * location of the incident (O.R., E.R., patient room, etc.)
- * procedure being performed when the incident occurred
- * employee's training

(Name of Responsible Person) _____ will record all percutaneous injuries from contaminated sharps in the Sharps Injury Log.

If it is determined that revisions need to be made, (Responsible person or department) _____ will ensure that appropriate changes are made to this ECP. (Changes may include an evaluation of safer devices, adding employees to the exposure determination list, etc.)




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EMPLOYEE TRAINING

All employees who have occupational exposure to bloodborne pathogens receive training conducted by _____ (Name of responsible person or department) _____. (Attach a brief description of their qualifications.)

All employees who have occupational exposure to bloodborne pathogens receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases. In addition, the training program covers, at a minimum, the following elements:

- * a copy and explanation of the standard
- * an explanation of our ECP and how to obtain a copy
- * an explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident
- * an explanation of the use and limitations of engineering controls, work practices, and PPE
- * an explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE
- * an explanation of the basis for PPE selection
- * information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge
- * information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM
- * an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available
- * information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident
- * an explanation of the signs and labels and/or color coding required by the standard and used at this facility
- * an opportunity for interactive questions and answers with the person conducting the training session.

Training materials for this facility are available at _____.

RECORDKEEPING

Training Records

Training records are completed for each employee upon completion of training. These documents will be kept for at least three years at _____ (Name of responsible person or location of records) _____.



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The training records include:

- * the dates of the training sessions
- * the contents or a summary of the training sessions
- * the names and qualifications of persons conducting the training sessions
- * the names and job titles of all persons attending the training sessions

Employee training records are provided upon request to the employee or the employee's authorized representative within 15 working days. Such requests should be addressed to _____ (Name of Responsible person or department)

Medical Records

Medical records are maintained for each employee with occupational exposure in accordance with 29 CFR 1910.1020, "Access to Employee Exposure and Medical Records."

_____ (Name of Responsible person or department) is responsible for maintenance of the required medical records. These confidential records are kept at _____ (List location) for at least the duration of employment plus 30 years.

Employee medical records are provided upon request of the employee or to anyone having written consent of the employee within 15 working days. Such requests should be sent to _____ (Name of responsible person or department and address)

OSHA Recordkeeping

An exposure incident is evaluated to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904). This determination and the recording activities are done by _____ (Name of responsible person or department)

Sharps Injury Log

In addition to the 1904 Recordkeeping Requirements, all percutaneous injuries from contaminated sharps are also recorded in the Sharps Injury Log. All incidences must include at least:

- the date of the injury
- the type and brand of the device involved
- the department or work area where the incident occurred
- an explanation of how the incident occurred.

This log is reviewed at least annually as part of the annual evaluation of the program and is maintained for at least five years following the end of the calendar year that they cover. If



a copy is requested by anyone, it must have any personal identifiers removed from the report.

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DATE: -----08/2/2014----

CIRCULAR

This is to inform that a lecture is scheduled on __11\2\2014_ (___TUESDAY) at Lecture Hall- 2 (___9_ am to ___11_ am) organized by Dept of Oral Maxillofacial Surgery. All Nursing staff , chair side assistants and cleaning staff are requested to attend the lecture.

TOPIC:

“PREVENTION AND MANAGEMENT OF NEEDLE STICK INJURY”

SPEAKER: Dr Manoj Kumar, Professor, OMFS

Principal
Mahe institute of dental sciences



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