

OSHA Bloodborne Pathogens Standard

Annual Refresher Training

This program was developed by:

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Overview

Purpose

This self-learning packet can be used to complete the annual refresher training for Bloodborne Pathogens that is mandated by OSHA. If you have any questions about the materials or require additional information please contact Environmental Services at 998-1450

The packet requires completion of a Post-test, which will be graded by a representative of Environmental Services. In order to meet the annual training requirement, you must achieve a score of at least 80%.

Objectives

Personnel who complete this packet will be familiar with:

- the OSHA Bloodborne Pathogens Standard;
- the epidemiology and symptoms of HIV, HBV and HCV;
- the modes of transmission of HIV, HBV and HCV;
- NYU's Bloodborne Pathogens Exposure Control Program;
- methods for recognizing activities that may involve exposure to blood and other potentially infectious materials;
- the proper disposal of potentially infectious materials;
- the use and limitations of universal standard precautions, engineering controls, work practices and personal protective equipment;
- the types, proper use, location, removal, handling, decontamination and/or disposal of personal protective equipment;
- the basis for selection of personal protective equipment;
- the efficacy and safety of the HBV vaccine, and its availability free of charge to employees;
- actions to take and persons to contact in an emergency;
- the procedure to follow if an exposure incident occurs; and
- the color-coding and signs and labeling that are used to identify potentially infectious materials.

Facts about HIV/ AIDS, Hepatitis B and Hepatitis C

Introduction

Many health care and laboratory workers are exposed to blood and other potentially infectious materials from patients who have active bloodborne infections or are carriers of infections. These exposures present a potential risk of disease. At NYU, the personnel who are at the highest risk include nurses, physicians, phlebotomists, dialysis personnel, lab technicians and technologists. Building service personnel and other employees who handle medical waste may be exposed if they are injured by contaminated needles or sharps.

The bloodborne disease that presents the greatest risk is hepatitis B. Worldwide the hepatitis B virus (HBV) infects an estimated 175 million people. Approximately 5% of the United States population carries antibody evidence of past HBV infection. Between 5% and 10% of HBV-infected adults develop chronic hepatitis with persistent infectivity, and 15% to 20% of chronically infected persons eventually develop cirrhosis or hepatocellular cancer. In the past, up to 30% of health care workers in high risk specialty areas, such as dialysis units, were infected by HBV. However, the number of hepatitis B cases in health care workers has declined significantly in recent years, from 12,000 cases in 1990 to 5,100 cases in 1995. This decline is, in part, due to aggressive vaccination programs.

While there is a decline in HBV infection in health care workers, infection with the hepatitis C virus (HCV) appears to be increasing. It is estimated that 1-2% of health care workers are infected with this virus. HCV can lead to chronic hepatitis in 50% to 60% of cases and to persistent infection in 85% of cases.

The acquired immune deficiency syndrome (AIDS) is also of great concern to individuals exposed to blood or other potentially infectious materials. It is estimated that over a million people may be infected with the human immunodeficiency virus (HIV), the virus that causes AIDS. Many of these infected people have no symptoms of illness. While HIV infection represents a real hazard to health care workers, only a small number of infections have resulted from occupational exposures. The risk of infection from an occupational exposure is approximately 0.3%. As of December 31, 1999, the CDC reported 56 documented and 136 possible cases of occupational transmission. Twenty-five of the 56 health care workers who seroconverted to HIV after occupational exposures have gone on to develop AIDS.

When health care workers have been infected with HIV, HBV or HCV on the job, it has usually been through accidental needlesticks or cuts, or blood splashing on broken skin or mucous membranes. Contact with saliva, urine, sweat or tears does not appear to pose a risk of exposure to HIV, HBV or HCV unless these substances contain visible blood. In December 1991, the Occupational Safety and Health Administration (OSHA) published a standard to protect personnel in health care facilities from exposure to HIV, HBV and other bloodborne pathogens. This information package was developed to provide NYU personnel with information on AIDS, HBV, HCV, the OSHA Standard and NYU's Exposure Control Program.

AIDS

What is AIDS/HIV-related illness?

AIDS is a bloodborne and sexually transmitted disease that results from a virus invading the body, damaging the immune system, and thereby allowing other infectious agents to invade the body and cause disease and death. "HIV-related illness" refers to a variety of conditions caused by infection with the AIDS virus. These conditions range from mild symptoms to life-threatening diseases.

What Causes AIDS/HIV-related illness?

AIDS/HIV-related illness is caused by the human immunodeficiency virus (HIV). This virus may also be referred to as the human T-lymphotrophic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV).

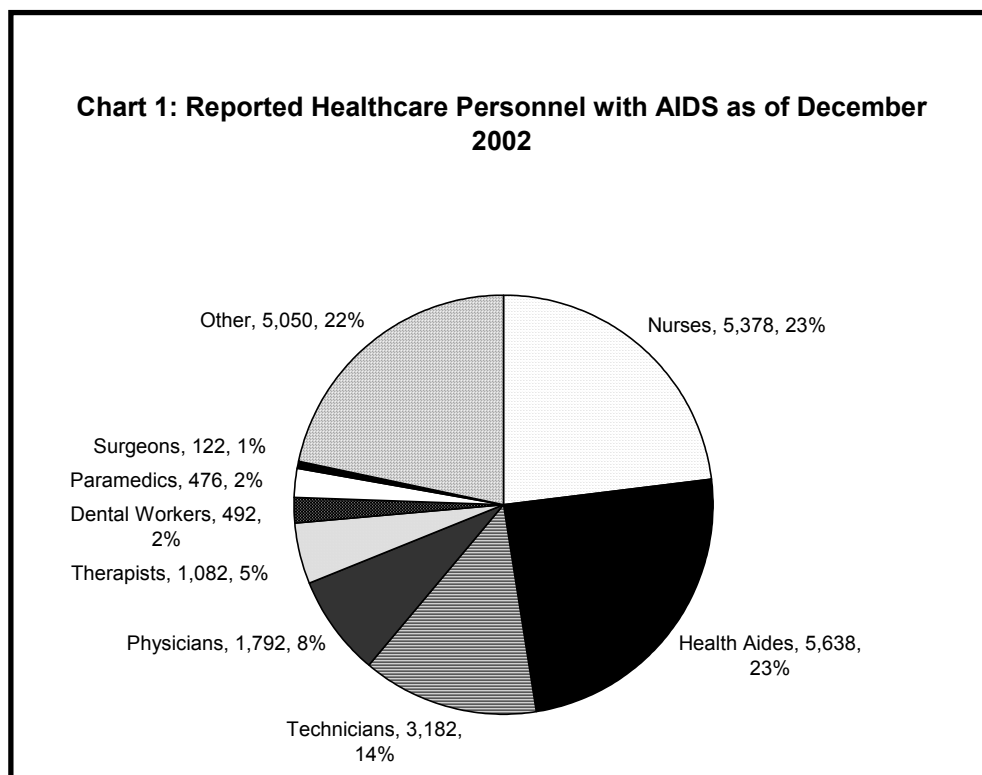
What is the risk to health care workers?

The risk of infection from an occupational exposure is approximately 0.3%. The most recent CDC data (12/2001) indicate that 57 health care workers, with or without AIDS, are documented as having occupationally-acquired HIV infection and another 138 are suspected of having been infected on the job. These data are presented in Table 1.

TABLE 1: Healthcare personnel with documented and possible occupationally acquired HIV infection, as of December 2001

Occupation	Documented	Possible
Nurse	24	35
Laboratory worker, clinical	16	17
Physician, non-surgical	6	12
Laboratory technician, non-clinical	3	-
Housekeeper/maintenance worker	2	13
Technician, surgical	2	2
Embalmer/Morgue technician	1	2
Health aide/attendant	1	15
Respiratory therapist	1	2
Technician, dialysis	1	3
Dental worker (including dentist)	-	6
Emergency medical technician/paramedic	-	12
Physician, Surgical	-	6
Other technician/therapist	-	9
Other healthcare occupation	-	4
TOTAL	57	138

CDC data through December 2002 indicate that 24,844 individuals with AIDS had a history of employment in healthcare. These cases represent 5.1% of the 486,826 AIDS cases reported to CDC for whom occupational information is known. The type of job within the healthcare industry is known for 23,212 or 93% and this is illustrated in Chart 1. The “other” category is comprised of maintenance workers, administrative staff and other non-medical staff. Unfortunately, 73% of healthcare workers with AIDS are reported to have died, including 1,407 non-surgical physicians, 3,962 nurses, 385 dental workers, 328 paramedics and 92 surgeons.



How is it Transmitted?

HIV is spread through body fluids -- primarily blood, semen, and vaginal secretions. Certain other body fluids and body tissues also should be regarded as potentially infectious (see Page 8). The primary ways in which HIV is transmitted are by sexual contact and needle sharing. An infected woman can pass the virus to her fetus. In the workplace, the virus may be transmitted by needlesticks with contaminated needles,

through blood contact with skin wounds or breaks in the skin, and by mucous membrane contact with contaminated blood.

HIV is not transmitted by casual contact, touching or shaking hands, eating food prepared by an infected person, or from drinking fountains, telephones, toilets or other surfaces.

What are the Symptoms?

Individuals who are infected with HIV may have no symptoms, may have HIV-related illness or may have AIDS.

The symptoms of AIDS include:

- enlarged lymph nodes (swollen glands) in the neck, armpits or groin
- raised purple areas on the skin, mouth, eyes, nose or anus
- thrush (candida), a white coating of the mouth or throat, caused by a fungus
- sudden weight loss that is not explained by dieting or other reasons
- fever and/or night sweats
- repeated bouts of diarrhea
- fatigue that is not explained by other causes
- a dry cough that does not go away

The main **diseases** people with AIDS develop are:

- Pneumocystis carinii pneumonia -- a rare type of pneumonia
- Kaposi's sarcoma -- a rare form of skin cancer
- severe cases of other infections including herpes simplex, tuberculosis, candida (thrush) and severe diarrhea

In some AIDS patients the virus invades the brain and spinal cord, causing mental disorders and paralysis.

Is there a Vaccine or Treatment for AIDS?

To date there is no vaccine to prevent AIDS. However, recent research suggests that drug combinations, referred to as anti-HIV drug cocktails, may be able to prevent infection if they are administered within 2 hours of a high-risk exposure. The CDC recommends an immediate course of AZT (zidovudine), and one or two other drugs for anyone who is stuck by a contaminated needle or has an infectious body fluid splash on mucous membranes or non-intact skin. The choice of drugs is based on the risk of the exposure incident and the source patient's history.

The drugs used to prevent HIV infection have serious side effects, which may include anemia, headache, fever, nausea, insomnia, diarrhea and rashes. More complete

information on the benefits and side effects is available from the University Health Center.

How do They Test for AIDS?

A test known as the **ELISA** test is used to screen blood for antibodies to HIV. In New York State, if the results of two ELISA tests on the same blood sample are positive the results are confirmed with another test known as the **Western Blot**. If the results of both tests are positive, it means the person has been infected with HIV and has produced antibodies. If the ELISA test is negative it means that there are no detectable antibodies to the virus in the person's blood at the present time. However, a test can be negative if the person has been infected and has not yet developed the antibodies. As a rule, it takes between 6 weeks and 6 months to develop antibodies after infection. The antibody test is not perfect, and there have been cases of positive results that proved to be false after further testing.

Rapid tests are also available for screening blood and body fluids for antibodies to HIV. These tests produce results in 20-60 minutes, making them faster than the EIA, which provides results within several weeks. Like the EIA, the reactive rapid test requires a follow-up confirmatory test before a final diagnosis of infection can be made. In March 2004, the FDA approved the OraQuick test for use with oral fluid and on plasma specimens. This test is the first and only rapid HIV test approved for use with oral fluid. Clinical studies have shown the specificity and sensitivity of this test to be 99.3% and 99.9%, respectively. Currently both the oral fluid and blood specimen tests are restricted for use by trained personnel, and are not commercially available. Although the OraQuick test has been approved to detect antibodies to HIV-1 and HIV-2, the oral fluid test is limited to detection of antibodies to HIV-1. Neither test has been approved to screen blood donors.

Hepatitis

What is Hepatitis?

Hepatitis is an inflammation of the liver. Infectious agents, medications or toxins can cause hepatitis. There are several types of hepatitis (A, B, C and D), but hepatitis B and C present the greatest risk to health care and laboratory workers.

Hepatitis B

How is Hepatitis B Transmitted?

The hepatitis B virus (HBV) causes Hepatitis B. Most cases of HBV occur as a result of sexual contact or needle sharing. In the workplace, HBV is transmitted by needlestick injuries, through blood contact with skin wounds or other breaks in the skin, and by mucous membrane contact with contaminated blood or blood products. HBV is a

relatively hearty virus – it can remain alive and viable outside the body for several days. In areas like dialysis units, the virus may be transmitted through equipment that has not been properly disinfected. An infected mother can transmit the virus to her fetus.

HBV is not transmitted by casual contact, touching or shaking hands, eating food prepared by an infected person or from drinking fountains, telephones, toilets or other surfaces. Thus, the occupational risk of HBV infection is directly related to the amount of contact with infected blood or blood products. As with HIV, certain body fluids and tissues should be regarded as potentially infectious.

What are the Symptoms?

Once HBV takes up residence in the liver, it incubates for about 6 weeks before the onset of symptoms. There are some people who are infected with HBV who may never have symptoms. The subsequent disease ranges from a mild flu-like illness marked by fever, nausea, vomiting and fatigue and jaundice (yellowing of the skin) to a sometimes fatal liver failure. In most cases the symptoms recede after a few days. Nevertheless, doctors regard hepatitis B as a serious illness because it is a leading cause of chronic liver diseases, including cirrhosis and cancer.

5 to 10% of all those infected with HBV are unable to get rid of the virus and become chronic carriers of the virus. Carriers may continually infect others.

Is There a Vaccine or Treatment for Hepatitis B?

A hepatitis B vaccine is available. The vaccine is generally thought to be 95-97% effective in producing antibodies against hepatitis B. It is usually administered as a series of 3 injections over a 6-month period. However, it sometimes takes up to 5 injections for the vaccine to be effective. No serious adverse reactions to the vaccine have been reported. The vaccine is available at no cost to eligible employees through the University Health Center.

There is also treatment available for individuals who have been exposed to HBV and have not received the HBV vaccine. The treatment may include injections of hepatitis B vaccine and immune globulin or hepatitis B immune globulin (HBIG). Immune globulin (also called gamma globulin) is a concentrate of human antibodies. HBIG is a concentrate of human antibodies specifically against hepatitis B. Treatment with immune globulin or HBIG helps fight off the disease. However, this treatment is not as effective as vaccination, and will not give lasting protection.

Hepatitis C

How is Hepatitis C Transmitted?

Hepatitis C is caused by the hepatitis C virus (HCV). HCV is most efficiently transmitted by large or repeated percutaneous exposures to blood, such as blood transfusions from infectious donors and needle sharing among IV drug abusers. The risk factors for HCV transmission to health care workers are not well defined.

What are the Symptoms?

Typical symptoms include jaundice, fatigue, abdominal pain, loss of appetite, intermittent nausea and vomiting.

How Serious is Hepatitis C?

Hepatitis C is serious for some individuals, but not for others. About 85% of the people who get hepatitis C carry the virus for the rest of their lives. Most of these have some liver damage but many do not feel sick from the disease. Some people with liver damage due to hepatitis C may develop cirrhosis (scarring) of the liver and liver failure, which may take many years to develop. Others have no long-term effects.

Is There a Vaccine or Treatment for Hepatitis C?

There is no vaccine for hepatitis C. There are some drugs licensed for the treatment of individuals with long-term HCV. About 2-3 out of every 10 patients who are treated gets rid of the virus. Treatment with immune globulin is not recommended.

What if I am Pregnant?

5 out of every 100 infants born to HCV infected women become infected. This occurs at the time of birth, and there is no treatment that can prevent this from happening. However, infants infected with HCV at the time of birth seem to do very well in the first few years of life. More studies are needed to find out if these infants will have problems from the infection as they grow older.

The OSHA Bloodborne Pathogens Standard

The OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030) was passed to protect personnel working in healthcare facilities from exposure to HIV and HBV and other bloodborne diseases. It incorporates recommendations originally developed by the CDC.

Copies of the OSHA standard are available from the Environmental Services Department.

New emphasis on preventing needlestick injuries

Over a decade has passed since OSHA published the Bloodborne Pathogens Standard. During that time, many different medical devices have been developed or re-engineered to reduce the risk of needlestick and other sharps injuries. Despite these advances, health care workers continue to suffer high rates of needlesticks and sharps injuries.

The CDC estimates that 600,000 to 800,000 needlestick injuries occur each year, and that only half of these injuries are reported. In response to concern over these exposures, Congress passed the Needlestick Safety and Prevention Act, directing OSHA to revise the Bloodborne Pathogens Standard. This revision became effective in April 2001.

The revised standard states that “safer medical devices, such as sharps with engineered sharps injury protections and needleless systems must be used where feasible.” OSHA expects health care facilities to use safer devices, in preference to relying on good work practices, personal protective equipment and/or prophylactic measures.

Some examples of sharps with engineered injury protection are:

- syringes with a sheath that shields the attached needle after use;
- needles that retract into a syringe after use;
- shielded or retracting catheters; and
- IV delivery systems that use a catheter port with a needle housed in a protective covering.

Some examples of needleless systems are:

- IV systems which administer medication or fluids through a catheter port using non-needle connections; and
- jet injection systems which deliver liquid medication beneath the skin or through a muscle.

OSHA also requires that employers:

- evaluate and implement safer needle devices as part of the annual evaluation of the Bloodborne Pathogens Exposure Control Plan;
- involve employees in the selection of safer needle devices; and

investigate all sharps injuries from contaminated sharps, and maintain records.

Who is Covered?

The OSHA standard covers all employees who might have direct contact with blood or other potentially infectious materials.

What does "Other Potentially Infectious Materials" Mean?

In addition to blood, OSHA and the CDC define human tissue and the following body fluids as potentially infectious: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid and any other body fluid that is visibly contaminated with blood. Saliva in dental procedures is also considered potentially infectious.

OSHA and the CDC differ in their approach to feces, nasal secretions, sputum, sweat, tears, urine and vomit. Under OSHA's definition, these materials are not considered infectious unless they are visibly contaminated with blood. However, under CDC Infection Control Guidelines and NYU policy, all of these materials should be treated as if they were infectious. They are all covered under the concept of Standard Precautions.

What Must Employers Do?

Employers must identify personnel who may be exposed to blood or other potentially infectious materials and develop an Exposure Control Plan to protect them.

The Exposure Control Plan must include provisions for:

- making hepatitis B vaccine available to eligible personnel
- minimizing or eliminating the potential for personnel to be exposed
- labeling potentially infectious materials
- ensuring proper housekeeping and waste disposal
- training personnel on the hazards and the steps they need to take to protect themselves
- providing medical care following any exposure incident

What Must Employees Do?

They must follow the practices and procedures that are included in the Exposure Control Plan.

NYU's Exposure Control Plan

NYU's Exposure Control Plan was developed to protect personnel from HIV, HBV and HCV. Copies of the plan are available from the University Health Center and Environmental Services. This section highlights key elements of the plan.

Who is at Risk for Exposure to HIV and HBV?

Many individuals in the university have no risk of becoming infected with HIV, HBV or HCV on the job since these viruses are not spread by casual contact.

However, personnel who come into contact with blood, semen, vaginal fluids or body fluids containing blood may be at risk for exposure. The personnel at highest risk include nurses and nursing students, doctors and medical students, phlebotomists, dialysis personnel, lab technicians and technologists. Building service personnel and other employees who handle medical waste may be exposed if contaminated needles or sharps injure them.

What Can You do to Protect Yourself and Others?

HBV Vaccination

- Get vaccinated for HBV. The vaccine is available, free of charge, to all eligible employees through the University Health Center.
- NYU recommends that all personnel whose jobs place them at risk take advantage of the free vaccination program.
- If you do not want to be vaccinated, you must sign a Declination Form in the University Health Center.

Standard Precautions

- Follow Standard Precautions. Treat all blood and other potentially infectious materials as if they were contaminated with HIV or HBV.
- At NYU, Standard Precautions must be used when handling feces, nasal secretions, sputum, sweat, tears, urine or vomit, even though it is not required by OSHA. NYU adopted this policy because some of these materials may contain infectious agents that are spread by other (non-bloodborne) routes, for example, ingestion.
- Standard Precautions aren't needed if you have casual contact with patients -- for example, admitting, delivering food trays, taking a blood pressure, visiting and keeping medical records.

Engineering Controls

- Use devices engineered to prevent exposures whenever they are available.
- The following are examples of engineering controls found within NYU:
 - ⇒ puncture resistant sharps containers
 - ⇒ splash guards
 - ⇒ biological safety cabinets
 - ⇒ safety syringes
 - ⇒ a needleless IV system
 - ⇒ centrifuge safety cups
 - ⇒ mechanical pipetting devices

Protective Clothing and Equipment

- Wear protective gloves when you draw blood from patients or handle blood, blood products or potentially infectious materials.

- If disposable gloves become soiled with blood, remove them carefully and wash your hands immediately.
- Remove protective gloves before you touch non-contaminated items (for example, telephones and doorknobs).
- Wear gowns or aprons, eye protection and a mask for procedures that could involve splashing or spattering of blood or body fluids.
- Remove all protective clothing either right before you leave a contaminated area (e.g. a lab) or right after (e.g. a TB isolation room).
- Wash your hands carefully after removing protective clothing.
- If the available protective clothing and equipment does not fit properly, ask your supervisor to obtain the size you need.
- Never take contaminated protective clothing, such as lab coats, home for laundering.
- Use pocket masks, resuscitation bags, or other ventilation devices to minimize exposure that may occur during emergency mouth-to-mouth resuscitation.

Standard Work Practices

- Don't eat, drink, smoke, apply cosmetics or lip balm, or insert or remove contact lenses in areas where you could be exposed to blood or other potentially infectious materials.
- Store all food and drink away from potentially infectious materials.
- Wash hands thoroughly after removing gloves, and immediately after contact with blood or other potentially infectious material.
- Never bend or cut needles, or recap them using a two-handed technique.
- [If you must recap a needle, use a one-handed technique.](#)
- Dispose of contaminated sharps in an appropriate sharps container immediately after use.
- Handle blood and other potentially infectious materials carefully, in order to minimize the potential for splashing and spraying.
- Clean and decontaminate your work area at the end of each work shift.

Additional Laboratory Practices

- Use a biological safety cabinet for procedures that could generate aerosols.
- Use sealed rotors or centrifuge safety cups when centrifuging potentially infectious materials.
- Use a cartridge-type filter and liquid disinfectant traps to protect vacuum lines, and prevent the spread of infectious agents through them.
- Never put a pipette in your mouth. Use mechanical pipetting devices.

Warning Labels

- Label contaminated equipment and potentially infectious materials with Biohazard labels.
- Treat all materials that are labeled with Biohazard labels as if infectious.

Waste Disposal (also see pages 14-15)

- Handle sharps containers with extraordinary care to prevent accidental injury.
- Discard all sharps (disposable syringes, needles, scalpel blades, contaminated Pasteur pipettes, contaminated slides and other sharp items) into puncture resistant sharps containers immediately after use.
- Discard other potentially infectious waste into red bags or autoclave bags. The following are examples of such wastes:
 - ⇒ blood and blood products
 - ⇒ materials that are saturated or dripping with blood
 - ⇒ contaminated laboratory waste
 - ⇒ contaminated animal waste.
- Decontaminate infectious liquids (e.g. with bleach) before pouring them into the drain. The final concentration of bleach after it is added to the infectious liquid should be at least 10%.
- Place any wastes, which may leak into closed, leak proof, unbreakable containers or bags before they are discarded.

Spills

- Disinfect blood spills immediately with a freshly prepared 1 in 10 dilution of household bleach.

What Should You do if You are Exposed?

For exposures to blood or body fluid, immediately treat the exposed area as follows:

- For needlesticks or cuts, squeeze the area under running water (warm if possible) until it bleeds.
- For skin contact, wash the area with soap and running water for several minutes.
- For eye contact, flush the eyes with copious amounts of running water.
- **Do not** vigorously disrupt the skin.
- **Do not** use bleach or other strong chemicals to clean an exposure or other wound site. Harsh chemicals can damage the skin and increase chances of infection through the skin.

Then:

- Report the incident to your supervisor as soon as possible.
- **If applicable, ask your supervisor to help get information from the source patient about any infectious diseases or risk factors the source patient may have.**
- **Within 2 hours** of the exposure, report to University Health Center or to the Tisch Hospital Emergency Room (ER) if the University Health Center is closed.
- Complete an NYU Work Related Incident/Injury Form. Copies are available at Environmental Services (998-1423) or online at <http://www.nyu.edu/pages/insurance/page7.html>.

- If you go to the Tisch Hospital ER for your initial evaluation, remember to report to the University Health Center for follow-up.

Facts About Handwashing

Why is Handwashing so Important?

According to the Centers for Disease Control and Prevention (CDC) handwashing is the single most important procedure for preventing the spread of infection. That is because microorganisms can enter your body by “hitching a ride” through hand-to-hand, food-to-hand and surface-to-hand contact.

In 2002, the CDC released new hand hygiene guidelines. These guidelines advise the use of alcohol based hand rubs to protect patients and workers in health care settings. Recent data show that alcohol cleaners are more effective than hand washing for two reasons:

- Health care personnel are more inclined to use alcohol based hand rubs because they are convenient.
- Alcohol hand rubs reduce the number of bacteria on hands more effectively than soap and water.

It is important to remember that if hands are visibly soiled, they should be cleaned with soap and water before using an alcohol cleaner.

When is it Necessary to **sanitize** Your Hands?

In order to protect yourself and your patients you should wash your hands:

- before and after each patient contact (if applicable)
- after removing gloves
- after situations which could result in hand contact with blood, body fluids or secretions
- after handling items that could be contaminated, such as bedpans and dressings
- before eating, drinking, handling food and applying make-up
- after using bathroom facilities, blowing your nose, etc.
- whenever hands are visibly soiled

What is the proper method for hand cleaning?

With soap and water:

- If you are wearing rings, remove them. If you can't remove a ring, move it around during the hand washing procedure, to ensure the area under it is properly washed and dried.
- Wet hands under warm running water.
- Apply soap and work up a lather by rubbing your hands together. Be sure to reach all surfaces.

- Scrub lathered hands for **at least 15 seconds** over every part of your hands, including between your fingers and over your knuckles and wrists.
- Rinse your hands thoroughly under warm running water, pointing your fingertips down.
- Dry your hands with a paper towel and discard the towel. If you are wearing rings, don't forget to dry underneath them.
- Turn off manual faucets using a paper towel and discard the towel.

With an alcohol-based hand sanitizer:

- Use only if your hands are not visibly soiled. If your hands are visibly soiled, follow the instructions above before using a waterless hand sanitizer.
- When decontaminating hands with a waterless sanitizer agent, apply the product to the palm of one hand and rub hands together, covering all surfaces of the hands and fingers until they are dry. Hands should be dry within 15-20 seconds.

Facts about “Sharps” and “Red Bag” Waste

Introduction

Red bag waste and sharps are types of Medical Waste. Medical Waste is defined as "any of the following waste which is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals."

The regulations that apply to Medical Waste have changed more than once over the past decade. During the late 1980's, many items were regulated because they looked "medical". One notable example is IV bags and associated tubing. New York State regulators recently relaxed the regulations because scientific studies suggested that some items were inappropriately regulated.

The current regulations define five subcategories of Medical Waste. Items in the first category must be discarded into "sharps" containers. Solid materials in the last four categories must be placed in "red bags". Most liquids may be poured down the drain, after they have been properly decontaminated.

Sharps

Used and Unused Needles including the following items, even if they have not been used: hypodermic needles, IV needles, IV stylets, butterflies and other medical needles, and hypodermic or IV syringes to which a needle or other sharp is still attached.

Blood Vials that have been used for blood – even if there is only a trace of blood left in them.

Other Contaminated Sharps including contaminated Pasteur pipettes, scalpel blades and broken or unbroken glass (e.g. slides and cover slips) that have been in contact with infectious agents.

Note: Glass and plastic materials (other than syringes with an attached needle) which have not been in contact with infectious materials do not need to be discarded into red sharps containers. However, they must be discarded in heavy-duty cardboard boxes or rigid containers, in order to protect employees who transport the trash from injury. Several vendors provide heavy duty cardboard “Glass Disposal Containers” that can be used for this purpose.

Red Bag (Infectious) Waste

All of the solid items in this category **MUST** be discarded into red bags. Liquids can be decontaminated with bleach and poured down the drain.

Cultures and stocks

Cultures and stocks of agents infectious to humans, and associated biologicals, including cultures from medical and pathological laboratories, cultures and stocks of infectious agents from research and industrial laboratories, wastes from the production of biologicals, discarded live and attenuated vaccines, and culture dishes and devices used to transfer inoculate, and mix cultures.

Human pathological wastes

Human pathological wastes including tissue, organs, and body parts (except teeth and the contiguous structures of bone and gum), body fluids that are removed during surgery, autopsy or other medical procedures, and specimens of body fluids and their containers, and discarded material saturated with such body fluids other than urine. This category does not include urine or fecal materials, unless they are submitted for diagnosis of infectious diseases.

Note:

- 1) Additional precautions are necessary when discarding human pathological wastes infected with Creutzfeldt-Jakob disease (CJD). Please contact Infection Control for further information.
- 2) Tissue fixed in formalin should be discarded through the chemical waste disposal program.

Human blood and blood products

Human blood and blood products including discarded waste human blood, discarded blood components, containers with free flowing blood or blood components, and discarded saturated material containing free flowing human blood or blood components; and items that were saturated and/or dripping with human blood that are now caked with dried human blood.

Animal waste

Animal waste including carcasses, body parts, body fluids, blood or bedding originating from animals known to be contaminated with infectious agents during research, or from animals inoculated during research with infectious agents.

Control of Infection

The Chain of Transmission

An infectious disease cannot spread from one person to another, unless there is an intact chain of transmission that includes: 1) the infectious agent, 2) a reservoir, 3) an exit from the reservoir, 4) an environment conducive to transmission of the infectious agent, 5) an entry into a new host, and 6) a susceptible new host.

You can prevent the spread of disease by breaking any link in the chain.

Reservoir

This is the place where the infectious agent lives and multiplies. It may be a person, animal, insect, plant, soil, water, food or other organic substance, or it may be a combination of these places. The infectious agent depends on the reservoir for its growth, multiplication and survival. For some infectious agents, humans are the only reservoir. For others there must be an intermediate reservoir, which could be an animal or an inanimate object. When the reservoir is a human, the individual may or may not appear to be ill.

Portal of Exit

When an infectious agent leaves a reservoir, it usually escapes from an opening near its breeding site. This is referred to as the portal of exit. The portal of exit could be the nose or mouth, the rectum, the urinary tract, an open lesion or any wound through which blood escapes. Some infectious agents can escape through more than one portal of exit.

The period of time during which an infectious agent can escape coincides with the period when the disease is contagious or communicable. This varies with each disease. As a rule, there is an inverse relationship between length of the communicable period and how infectious the organism is. Highly infectious agents, such as the influenza virus, have a

short duration of escape and are more contagious, whereas the less infectious M. tuberculosis has a long duration of escape and lower communicability.

Transmission

The portal of exit determines the way in which an infectious agent is transmitted. Infectious agents can be transmitted directly or indirectly. There is direct transmission when there is actual physical contact between the source and the victim, as occurs with sexually transmitted diseases. There is indirect transmission when an infectious agent must survive on an animate or inanimate vehicle for a time before contact with the human host. Inanimate vehicles include air, food, water, soil, countertops, and biologic materials. An inanimate vehicle that has the potential for infecting many persons is called a common vehicle.

Portal of Entry

The portal of entry into the new host often corresponds with the portal of exit from the human reservoir. The infectious agent may enter through ingestion, inhalation, injection, contact with mucous membranes or across the placenta. The duration of exposure to the infectious agent and the number of organisms required to start the infectious process varies with each disease.

Host Susceptibility

The extent to which an individual is susceptible to infection is influenced by many factors. These include general human characteristics, such as age, sex, ethnic group and heredity; cultural behaviors, such as eating habits and personal hygiene; geographic and environmental factors; and general health status, including nutrition, hormonal balance, and the presence of disease. These factors also contribute to the response of an individual who is exposed to an infectious agent.

Control of Transmission

It is relatively easy to control most infectious diseases, since you only have to break one link in the chain of transmission to do this. Control measures may be directed at killing or altering the virulence of the pathogen, destroying non-human reservoirs and vectors, isolating infected persons, using precautions with infected body fluids and contaminated objects and improving host resistance.

Effective control is also based on monitoring the occurrence of specific diseases, to facilitate early intervention. Many infectious diseases must be reported to the local health department.

Post Test

Name: _____ Date: _____

Social Security #: _____ Job Title: _____

Department _____ Bldg/Rm: _____

No. of years/months at NYU: _____ years _____ months

No. of years/months in current occupation _____ years _____ months

Job Category (check only one)

MD (attending staff)		Nursing Student	
MD (intern/resident/fellow)		Nurse Practitioner	
Medical Student		RN	
Research lab worker, PI		LPN	
Research lab worker (not PI)		Nurse's aide	
Clinical Lab Worker		Other (specify)	

Acknowledgement of Training

I have reviewed the reference materials included in this training package and completed the post-test. I understand that I should call Environmental Services (998-1450) if I have any questions about the OSHA Bloodborne Pathogens Standard or NYU's Compliance Program.

Signature

Date:

Return completed Post-test to: Environmental Services
14 Waverly Place – 2nd Floor

Directions: Circle the **BEST** answer to each question. References are included in the self-study packet.

1. According to the CDC, as of December 1999 there were _____ documented cases of occupational transmission of HIV.
 - a) 5
 - b) 56
 - c) 560
 - d) 5600

2. In 1995, there were _____ new cases of hepatitis B in healthcare workers.
 - a) 5
 - b) 51
 - c) 510
 - d) 5100

3. Which of the following is FALSE about the tests to screen for HIV infection?
 - a) The ELISA test is used to screen for HIV infection.
 - b) The Western Blot is used to confirm the results of ELISA testing.
 - c) If the results of either your ELISA test or your Western Blot are positive, you are infected with HIV.
 - d) You can be infected with HIV and still have a negative ELISA test.

4. Which of the following is LEAST LIKELY to cause infection with hepatitis B?
 - a) having blood splash into your eyes
 - b) getting stuck with a needle used to draw blood
 - c) getting cut with a broken blood vial
 - d) having urine spill from a bedpan onto broken skin

5. Which of the following IS NOT a common symptom of hepatitis B infection?
 - a) nausea
 - b) jaundice
 - c) anemia
 - d) fever

6. Which of the following is FALSE?
 - a) Hepatitis is an inflammation of the liver.
 - b) There are several types of infectious hepatitis.
 - c) The Hepatitis B virus dies very rapidly after it comes into contact with air.
 - d) One of the symptoms of hepatitis is jaundice.

7. Which of the following is TRUE about the Hepatitis B vaccine?
 - a) The vaccine has serious side effects.
 - b) The vaccine is available to eligible employees though The University Health Center.
 - c) Eligible employees pay only a nominal charge for the vaccine.

- d) After 1 injection, the vaccine is 98% effective in protecting people from Hepatitis B.
8. Which of the following is TRUE about the hepatitis C virus?
- a) Around 10% of those infected with HCV, carry the virus for the rest of their lives.
 - b) The hepatitis C vaccine is over 90% effective in protecting people from HCV.
 - c) Hepatitis C is usually treated with immune globulin.
 - d) Only 2-3 out of every 10 patients who are treated for hepatitis C gets rid of the virus.
9. According to OSHA, which of the following IS NOT infectious for HIV, HBV or HCV.
- a) blood
 - b) semen
 - c) tears
 - d) saliva in dental procedures
10. You should use Standard Precautions when handling blood from:
- a) elderly patients
 - b) IV-drug abusers
 - c) children
 - d) all of the above
11. Which of the following is TRUE:
- a) Physicians don't need to wear gloves when drawing blood from a patient.
 - b) Lab workers should take contaminated lab coats home for laundering.
 - c) You should not wear contaminated lab coats in the cafeteria.
 - d) You don't need to wash your hands after removing gloves, unless your glove has a hole in it.
12. Which of the following IS NOT an Engineering Control?
- a) puncture resistant sharps containers
 - b) biological safety cabinets
 - c) maintenance mechanics
 - d) safety syringes
13. If you spill blood it should be cleaned up:
- a) immediately, or as soon as possible
 - b) using an appropriate disinfectant, such as 10% bleach
 - c) wearing gloves
 - d) all of the above

14. In a procedure likely to involve hand contact with blood, but no splashing or spraying, it would be appropriate to wear:
- a) shoe covers
 - b) a mask with eye protection
 - c) gloves and a lab coat
 - d) gloves, a mask and eye protection
15. Which of the following is FALSE?
- a) Professionals such as doctors and nurses must complete annual Bloodborne Pathogens Training.
 - b) You should store your food and drink close to you when working with blood, so you don't have to leave the room.
 - c) Every time you remove your gloves, you must wash your hands with soap and running water as soon as possible.
 - d) If you can be exposed to blood in your job and don't want to receive the Hepatitis B vaccine, you must sign a declination form.
16. A mask and eye protection should be worn when:
- a) cleaning blood spills
 - b) closing sharps containers
 - c) there is a potential to aerosolize blood
 - d) decontaminating counter tops
17. Which of the following is TRUE:
- a) You don't have to wear protective gloves if you are allergic to latex.
 - b) When recapping a needle is allowed, it's important to use two hands.
 - c) It's OK to store food next to blood, if the food is in a bag or lunch box.
 - d) HIV and HBV may be present in body fluids other than blood.
18. If you are stuck with a contaminated needle, the first thing you should do is:
- a) complete an OSHA form.
 - b) report to the University Health Center (or the ER if the Health Center is closed)
 - c) squeeze the injured area under warm running water.
 - d) report the incident to your supervisor.
19. Which of the following is TRUE about Blood Vials?
- a) all contaminated blood vials must be discarded into Red Bags
 - b) only blood vials with more than 5 cc's of blood should be discarded into Red Bags
 - c) contaminated blood vials that are empty should be discarded into Clear or Black Bags
 - d) all contaminated blood vials must be discarded in Red Sharps Containers

20. By law, which of the following items must be discarded into a "red bag"?
- a) blood soaked gauze
 - b) Pasteur pipettes
 - c) blood vials
 - d) IV bags
21. The single most effective means for controlling the spread of infections is:
- a) protective gloves
 - b) frequent and adequate hand washing
 - c) surgical masks
 - d) avoiding the NYC subway system
22. You should wash your hands in each of the following situations except one. Which one?
- a) before using the telephone
 - b) before eating
 - c) after hand contact with blood
 - d) after removing contaminated gloves
23. Which of the following IS NOT NECESSARY for effective handwashing?
- a) wet hands
 - b) apply soap and work up a lather
 - c) allow skin to contact soap for at least 2 minutes
 - d) scrub lathered hands for at least 15 seconds
 - e) rinse hands thoroughly
 - f) dry hands
24. Which of the following is FALSE about the Chain of Infection?
- a) You must have an intact Chain for an infectious disease to spread.
 - b) The Chain includes a Portal of Exit and a Portal of Entry.
 - c) The susceptibility of the host is influenced by eating habits and personal hygiene.
 - d) In order to prevent the spread of disease you must break every link in the Chain.
25. The initials OSHA stand for:

O _____ S _____ &

H _____ A _____.

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