

Information from the
Centers for Disease Control and Prevention
National Center for Infectious Diseases
Division of Healthcare Quality Promotion and
Division of Viral Hepatitis

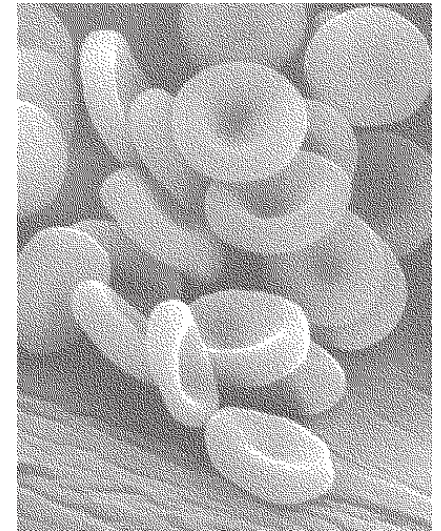
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Updated July 2003

Exposure to Blood

What Healthcare Personnel Need to Know



Department of Health & Human Services



OTHER SOURCES OF INFORMATION

HBV and HCV

For additional information about hepatitis B and hepatitis C, call the hepatitis information line at 1-888-4-HEPCDC (1-888-443-7232) or visit CDC's hepatitis website at www.cdc.gov/hepatitis.

Any reaction or adverse health event after getting hepatitis B vaccine should be reported to your healthcare provider. The Vaccine Adverse Event Reporting System (1-800-822-7967) receives reports from healthcare providers and others about vaccine side effects.

HIV

Information specialists who staff the CDC National AIDS Hotline (1-800-342-2437) can answer questions or provide information on HIV infection and AIDS and the resources available in your area. The HIV/AIDS Treatment Information Service (1-800-448-0440) can also be contacted for information on the clinical treatment of HIV/AIDS. For free copies of printed material on HIV infection and AIDS, please call or write the CDC National Prevention Information Network, P.O. Box 6003, Rockville, MD 20849-6003, telephone 1-800-458-5231, Internet address www.cdcnpin.org. Additional information about occupational exposures to bloodborne pathogens is available on CDC's Division of Healthcare Quality Promotion's website at www.cdc.gov/ncidod/hip or by calling 1-800-893-0485 and on CDC's National Institute of Occupational Safety and Health's website at www.cdc.gov/niosh or call 1-800-35 NIOSH (1-800-356-4674).

HBV-HCV-HIV

PEpline (the National Clinicians' Postexposure Prophylaxis Hotline) is a 24-hour, 7-day-a-week consultation service for clinicians managing occupational exposures. This service is supported by the Health Resources and Services Administration Ryan White CARE Act and the AIDS Education and Training Centers and CDC. PEpline can be contacted by phone at (888) 448-4911 (toll free) or on the Internet at <http://pepline.ucsf.edu/pepline>.

Exposure to Blood

What Healthcare Personnel Need to Know

OCCUPATIONAL EXPOSURES TO BLOOD

Introduction

Healthcare personnel are at risk for occupational exposure to bloodborne pathogens, including hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Exposures occur through needlesticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth, or skin with a patient's blood. Important factors that influence the overall risk for occupational exposures to bloodborne pathogens include the number of infected individuals in the patient population and the type and number of blood contacts. Most exposures do not result in infection. Following a specific exposure, the risk of infection may vary with factors such as these:

- ◆ The pathogen involved
- ◆ The type of exposure
- ◆ The amount of blood involved in the exposure
- ◆ The amount of virus in the patient's blood at the time of exposure

Your employer should have in place a system for reporting exposures in order to quickly evaluate the risk of infection, inform you about treatments available to help prevent infection, monitor you for side effects of treatments, and determine if infection occurs. This may involve testing your blood and that of the source patient and offering appropriate postexposure treatment.

How can occupational exposures be prevented?

Many needlesticks and other cuts can be prevented by using safer techniques (for example, not recapping needles by hand), disposing of used needles in appropriate sharps disposal containers, and using medical devices with safety features designed to prevent injuries. Using appropriate barriers such as gloves, eye and face protection, or gowns when contact with blood is expected can prevent many exposures to the eyes, nose, mouth, or skin.

IF AN EXPOSURE OCCURS

What should I do if I am exposed to the blood of a patient?

1. Immediately following an exposure to blood:

- ◆ Wash needlesticks and cuts with soap and water
- ◆ Flush splashes to the nose, mouth, or skin with water
- ◆ Irrigate eyes with clean water, saline, or sterile irrigants

No scientific evidence shows that using antiseptics or squeezing the wound will reduce the risk of transmission of a bloodborne pathogen. Using a caustic agent such as bleach is not recommended.

2. **Report the exposure** to the department (e.g., occupational health, infection control) responsible for managing exposures. Prompt reporting is essential because, in some cases, postexposure treatment may be recommended and it should be started as soon as possible. Discuss the possible risks of acquiring HBV, HCV, and HIV and the need for postexposure treatment with the provider managing your exposure. You should have already received hepatitis B vaccine, which is extremely safe and effective in preventing HBV infection.

RISK OF INFECTION AFTER EXPOSURE

What is the risk of infection after an occupational exposure?

HBV

Healthcare personnel who have received hepatitis B vaccine and developed immunity to the virus are at virtually no risk for infection. For a susceptible person, the risk from a single needlestick or cut exposure to HBV-infected blood ranges from 6-30% and depends on the hepatitis B e antigen (HBeAg) status of the source individual. Hepatitis B surface antigen (HBsAg)-positive individuals who are HBeAg positive have more virus in their blood and are more likely to transmit HBV than those who are HBeAg negative. While there is a risk for HBV infection from exposures of mucous membranes or nonintact skin, there is no known risk for HBV infection from exposure to intact skin.

HCV

The average risk for infection after a needlestick or cut exposure to HCV-infected blood is approximately 1.8%. The risk following a blood exposure to the eye, nose or mouth is unknown, but is believed to be very small; however, HCV infection from blood splash to the eye has been reported. There also has been a report of HCV transmission that may have resulted from exposure to nonintact skin, but no known risk from exposure to intact skin.

HIV

- ◆ The average risk of HIV infection after a needlestick or cut exposure to HIV-infected blood is 0.3% (i.e., three-tenths of one percent, or about 1 in 300). Stated another way, 99.7% of needlestick/cut exposures do not lead to infection.
- ◆ The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be, on average, 0.1% (1 in 1,000).
- ◆ The risk after exposure of non-intact skin to HIV-infected blood is estimated to be less than 0.1%. A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin (a few drops of blood on skin for a short period of time).

How many healthcare personnel have been infected with blood-borne pathogens?

HBV

The annual number of occupational infections has decreased 95% since hepatitis B vaccine became available in 1982, from >10,000 in 1983 to <400 in 2001 (CDC, unpublished data).

HCV

There are no exact estimates on the number of healthcare personnel occupationally infected with HCV. However, studies have shown that 1% of hospital healthcare personnel have evidence of HCV infection (about 3% of the U.S. population has evidence of infection). The number of these workers who may have been infected through an occupational exposure is unknown.

HIV

As of December 2001, CDC had received reports of 57 documented cases and 138 possible cases of occupationally acquired HIV infection among healthcare personnel in the United States since reporting began in 1985.

TREATMENT FOR THE EXPOSURE

Is vaccine or treatment available to prevent infections with blood-borne pathogens?

HBV

As mentioned above, hepatitis B vaccine has been available since 1982 to prevent HBV infection. All healthcare personnel who have a reasonable chance of exposure to blood or body fluids should receive hepatitis B vaccine. Vaccination ideally should occur during the healthcare worker's training period. Workers should be tested 1-2 months after the vaccine series is complete to make sure that vaccination has provided immunity to HBV infection. Hepatitis B immune globulin (HBIG) alone or in combination with vaccine (if not previously vaccinated) is effective in preventing HBV infection after an exposure. The decision to begin treatment is based on several factors, such as:

- ◆ Whether the source individual is positive for hepatitis B surface antigen
- ◆ Whether you have been vaccinated
- ◆ Whether the vaccine provided you immunity

HCV

There is no vaccine against hepatitis C and no treatment after an exposure that will prevent infection. Neither immune globulin nor antiviral therapy is recommended after exposure. For these reasons, following recommended infection control practices to prevent percutaneous injuries is imperative.

HIV

There is no vaccine against HIV. However, results from a small number of studies suggest that the use of some antiretroviral drugs after certain occupational exposures may reduce the chance of HIV transmission. Postexposure prophylaxis (PEP) is recommended for certain occupational exposures that pose a risk of transmission. However, for those exposures without risk of HIV infection, PEP is not recommended because the drugs used to prevent infection may have serious side effects. You should discuss the risks and side effects with your healthcare provider before starting PEP for HIV.

How are exposures to blood from an individual whose infection

status is unknown handled?

HBV–HCV–HIV

If the source individual cannot be identified or tested, decisions regarding follow-up should be based on the exposure risk and whether the source is likely to be infected with a bloodborne pathogen. Follow-up testing should be available to all personnel who are concerned about possible infection through occupational exposure.

What specific drugs are recommended for postexposure treatment?

HBV

If you have not been vaccinated, then hepatitis B vaccination is recommended for any exposure regardless of the source person's HBV status. HBIG and/or hepatitis B vaccine may be recommended depending on the source person's infection status, your vaccination status and, if vaccinated, your response to the vaccine.

HCV

There is no postexposure treatment that will prevent HCV infection.

HIV

The Public Health Service recommends a 4-week course of a combination of either two antiretroviral drugs for most HIV exposures, or three antiretroviral drugs for exposures that may pose a greater risk for transmitting HIV (such as those involving a larger volume of blood with a larger amount of HIV or a concern about drug-resistant HIV). Differences in side effects associated with the use of these drugs may influence which drugs are selected in a specific situation. These recommendations are intended to provide guidance to clinicians and may be modified on a case-by-case basis. Determining which drugs and how many drugs to use or when to change a treatment regimen is largely a matter of judgment. Whenever possible, consulting an expert with experience in the use of antiviral drugs is advised, especially if a recommended drug is not available, if the source patient's virus is likely to be resistant to one or more recommended drugs, or if the drugs are poorly tolerated.

How soon after exposure to a bloodborne pathogen should treatment start?

HBV

Postexposure treatment should begin as soon as possible after exposure, preferably within 24 hours, and no later than 7 days.

HIV

Treatment should be started as soon as possible, preferably within hours as opposed to days, after the exposure. Although animal studies suggest that treatment is less effective when started more than 24-36 hours after exposure, the time frame after which no benefit is gained in humans is not known. Starting treatment after a longer period (e.g., 1 week) may be considered for exposures that represent an increased risk of transmission.

Has the FDA approved these drugs to prevent bloodborne virus infection following an occupational exposure?

HBV

Yes. Both hepatitis B vaccine and HBIG are approved for this use.

HIV

No. The FDA has approved these drugs only for the treatment of existing HIV infection, but not as a treatment to prevent infection. However, physicians may prescribe any approved drug when, in their professional judgment, the use of the drug is warranted.

What is known about the safety and side effects of these drugs?

HBV

Hepatitis B vaccine and HBIG are very safe. There is no information that the vaccine causes any chronic illnesses. Most illnesses reported after a hepatitis B vaccination are related to other causes and not the vaccine. However, you should report to your healthcare provider any unusual reaction after a hepatitis B vaccination.

HIV

All of the antiviral drugs for treatment of HIV have been associated with side effects. The most common side effects include upset stomach (nausea, vomiting, diarrhea), tiredness, or headache. The few serious side effects that have been reported in healthcare personnel using combinations of antiviral drugs after exposure have included kidney stones, hepatitis, and suppressed blood cell production. Protease inhibitors (e.g., indinavir and nelfinavir) may interact with other medicines and cause serious side effects and should not be taken in combination with certain other drugs, such as non-sedating antihistamines, e.g., Claritin®. If you need to take antiviral drugs for an HIV exposure, it is important to tell the healthcare provider managing your exposure about any medications you are currently taking.

Can pregnant healthcare personnel take the drugs recommended for postexposure treatment?

HBV

Yes. Women who are pregnant or breast-feeding can receive the hepatitis B vaccine and/or HBIG. Pregnant women who are exposed to blood should be vaccinated against HBV infection, because infection during pregnancy can cause severe illness in the mother and a chronic infection in the newborn. The vaccine does not harm the fetus.

HIV

Pregnancy should not rule out the use of postexposure treatment when it is warranted. If you are pregnant you should understand what is known and not known regarding the potential benefits and risks associated with the use of anti-viral drugs in order to make an informed decision about treatment.

FOLLOW-UP AFTER AN EXPOSURE

What follow-up should be done after an exposure?

HBV

Because postexposure treatment is highly effective in preventing HBV infection, CDC does not recommend routine follow-up after treatment. However, any symptoms suggesting hepatitis (e.g., yellow eyes or skin, loss of appetite, nausea, vomiting, fever, stomach or joint pain, extreme tiredness) should be reported to your healthcare provider. If you receive hepatitis B vaccine, you should be tested 1-2 months after completing the vaccine series to determine if you have responded to the vaccine and are protected against HBV infection.

HCV

You should be tested for HCV antibody and liver enzyme levels (alanine aminotransferase or ALT) as soon as possible after the exposure (baseline) and at 4-6 months after the exposure. To check for infection earlier, you can be tested for the virus (HCV RNA) 4-6 weeks after the exposure. Report any symptoms suggesting hepatitis (mentioned above) to your healthcare provider.

HIV

You should be tested for HIV antibody as soon as possible after exposure (baseline) and periodically for at least 6 months after the exposure (e.g., at 6 weeks, 12 weeks, and 6 months). If you take antiviral drugs for postexposure treatment, you should be checked for drug toxicity by having a complete blood count and kidney and liver function tests just before starting treatment and 2 weeks after starting treatment. You should report any sudden or severe flu-like illness that occurs during the follow-up period, especially if it involves fever, rash, muscle aches, tiredness, malaise, or swollen glands. Any of these may suggest HIV infection, drug reaction, or other medical conditions. You should contact the healthcare provider managing your exposure if you have any questions or problems during the follow-up period.

What precautions should be taken during the follow-up period?

HBV

If you are exposed to HBV and receive postexposure treatment, it is unlikely that you will become infected and pass the infection on to others. No precautions are recommended.

HCV

Because the risk of becoming infected and passing the infection on to others after an exposure to HCV is low, no precautions are recommended.

HIV

During the follow-up period, especially the first 6-12 weeks when most infected persons are expected to show signs of infection, you should follow recommendations for preventing transmission of HIV. These include not donating blood, semen, or organs and not having sexual intercourse. If you choose to have sexual intercourse, using a condom consistently and correctly may reduce the risk of HIV transmission. In addition, women should consider not breast-feeding infants during the follow-up period to prevent the possibility of exposing their infants to HIV that may be in breast milk.

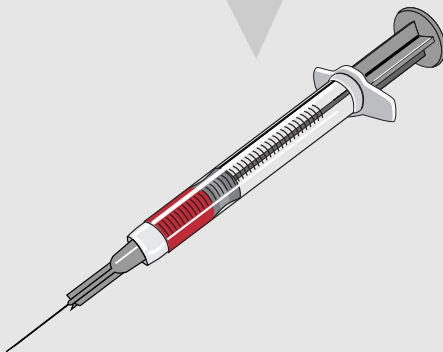
PREVENTION OF OCCUPATIONAL INFECTIONS WITH HBV, HCV, OR HIV

Hepatitis B virus is largely preventable through vaccination. For HBV, HCV, and HIV, however, preventing occupational exposures to blood can prevent occupational infections with HBV, HCV, and HIV. This includes using appropriate barriers such as gown, gloves and eye protection as appropriate, safely handling needles and other sharp instruments, and using devices with safety features.



What Every Worker Should Know

How to Protect Yourself From Needlestick Injuries



U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, OH 45226-1998

Official Business
Penalty for Private Use \$300

DHHS (NIOSH) Publication No. 2000-135



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health



What infections can be caused by needlestick injuries?

Needlestick injuries can expose workers to a number of blood-borne pathogens that can cause serious or fatal infections. The pathogens that pose the most serious health risks are

- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV)—the virus that causes AIDS

HBV vaccination is recommended for all health care workers (unless they are immune because of previous exposure). HBV vaccine has proved highly effective in preventing infection in workers exposed to HBV. However, no vaccine exists to prevent HCV or HIV infection.

Preventing needlestick injuries is the best way to protect yourself from these infections.

Who is at risk of needlestick injury?

Any worker who may come in contact with needles is at risk, including *nursing staff, lab workers, doctors, and housekeepers.*

How common are needlestick injuries among health care workers?

Estimates indicate that 600,000 to 800,000 needlestick injuries occur each year. Unfortunately, about half of these injuries are not reported. *Always report needlestick injuries to your employer to ensure that you receive appropriate followup care.*

What kinds of needles usually cause needlestick injuries?

- Hypodermic needles
- Blood collection needles
- Suture needles
- Needles used in IV delivery systems

Do certain work practices increase the risk of needlestick injury?

Yes. Past studies have shown that needlestick injuries are often associated with these activities:

- Recapping needles
- Transferring a body fluid between containers
- Failing to dispose of used needles properly in puncture-resistant sharps containers

How can I protect myself from needlestick injuries?

- Avoid the use of needles where safe and effective alternatives are available.
- Help your employer select and evaluate devices with safety features that reduce the risk of needlestick injury.
- Use devices with safety features provided by your employer.
- Avoid recapping needles.
- Plan for safe handling and disposal of needles before using them.
- Promptly dispose of used needles in appropriate sharps disposal containers.
- Report all needlestick and sharps-related injuries promptly to ensure that you receive appropriate followup care.
- Tell your employer about any needlestick hazards you observe.
- Participate in training related to infection prevention.
- Get a hepatitis B vaccination.

For additional information, see ***NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings*** [DHHS (NIOSH) Publication No. 2000-108]. Single copies of the Alert are available from the following:

NIOSH-Publications Dissemination
4676 Columbia Parkway
Cincinnati, OH 45226-1998

1-800-35-NIOSH (1-800-356-4674)

Fax: 513-533-8573

E-mail: pubstaff@cdc.gov

Web site: www.cdc.gov/niosh

Needlestick injuries can lead to serious or fatal infections. Health care workers who use or may be exposed to needles are at increased risk of needlestick injury. All workers who are at risk should take steps to protect themselves from this significant health hazard.



Revision to OSHA's Bloodborne Pathogens Standard Technical Background and Summary

April 2001

Background

The Occupational Safety and Health Administration published the Occupational Exposure to Bloodborne Pathogens standard in 1991 because of a significant health risk associated with exposure to viruses and other microorganisms that cause bloodborne diseases. Of primary concern are the human immunodeficiency virus (HIV) and the hepatitis B and hepatitis C viruses.

The standard sets forth requirements for employers with workers exposed to blood or other potentially infectious materials. In order to reduce or eliminate the hazards of occupational exposure, an employer must implement an exposure control plan for the worksite with details on employee protection measures. The plan must also describe how an employer will use a combination of engineering and work practice controls, ensure the use of personal protective clothing and equipment, provide training, medical surveillance, hepatitis B vaccinations, and signs and labels, among other provisions. Engineering controls are the primary means of eliminating or minimizing employee exposure and include the use of safer medical devices, such as needleless devices, shielded needle devices, and plastic capillary tubes.

Nearly 10 years have passed since the bloodborne pathogens standard was published. Since then, many different medical devices have been developed to reduce the risk of needlesticks and other sharps injuries. These devices replace sharps with non-needle devices or incorporate safety features designed to reduce injury. Despite these advances in technology, needlesticks and other sharps injuries continue to be of concern due to the high frequency of their occurrence and the severity of the health effects.

The Centers for Disease Control and Prevention estimate that healthcare workers sustain nearly 600,000 percutaneous injuries annually involving contaminated sharps. In response to both the continued concern over such exposures and the technological developments which can increase employee protection, Congress passed the **Needlestick Safety and Prevention Act** directing OSHA to revise the bloodborne pathogens standard to establish in greater detail requirements that employers identify and make use of effective and safer medical devices. That revision was published on Jan. 18, 2001, and became effective April 18, 2001.

Summary

The revision to OSHA's bloodborne pathogens standard added new requirements for employers, including additions to the exposure control plan and keeping a sharps injury log. It does **not** impose new requirements for employers to protect workers from sharps injuries; the original standard already required employers to adopt engineering and work practice controls that would eliminate or minimize employee exposure from hazards associated with bloodborne pathogens.

The revision does, however, specify in greater detail the engineering controls, such as safer medical devices, which must be used to reduce or eliminate worker exposure.

Exposure Control Plan

The revision includes new requirements regarding the employer's Exposure Control Plan, including an annual review and update to reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens. The employer must:

- take into account innovations in medical procedure and technological developments that reduce the risk of exposure (e.g., newly available medical devices designed to reduce needlesticks); and
- document consideration and use of appropriate, commercially-available, and effective safer devices (e.g., describe the devices identified as candidates for use, the method(s) used to evaluate those devices, and justification for the eventual selection).

No one medical device is considered appropriate or effective for all circumstances. Employers must select devices that, based on reasonable judgment:

- will not jeopardize patient or employee safety or be medically inadvisable; and
- will make an exposure incident involving a contaminated sharp less likely to occur.

Employee Input

Employers must solicit input from non-managerial employees responsible for direct patient care regarding the identification, evaluation, and selection of effective engineering controls, including safer medical devices. Employees selected should represent the range of exposure situations encountered in the workplace, such as those in geriatric, pediatric, or nuclear medicine, and others involved in direct care of patients.

OSHA will check for compliance with this provision during inspections by questioning a representative number of employees to determine if and how their input was requested.

Documentation of employee input

Employers are required to document, in the Exposure Control Plan, how they received input from employees. This obligation can be met by:

- Listing the employees involved and describing the process by which input was requested; or
- Presenting other documentation, including references to the minutes of meetings, copies of documents used to request employee participation, or records of responses received from employees.

Recordkeeping

Employers who have employees who are occupationally exposed to blood or other potentially infectious materials, and who are required to maintain a log of occupational injuries and illnesses under existing recordkeeping rules, must also maintain a sharps injury log. That log will be maintained in a manner that protects the privacy of employees. At a minimum, the log will contain the following:

- the type and brand of device involved in the incident;
- location of the incident (e.g., department or work area); and
- description of the incident

The sharps injury log may include additional information as long as an employee's privacy is protected. The format of the log can be determined by the employer.

Modification of Definitions

The revision to the bloodborne pathogens standard includes modification of definitions relating to engineering controls. Two terms have been added to the standard, while the description of an existing term has been amended.

Engineering Controls

Engineering Controls include all control measures that isolate or remove a hazard from the

workplace, such as sharps disposal containers and self-sheathing needles. The original bloodborne pathogens standard was not specific regarding the applicability of various engineering controls (other than the above examples) in the healthcare setting. The revision now specifies that "safer medical devices, such as sharps with engineered sharps injury protections and needleless systems" constitute an effective engineering control, and must be used where feasible.

Sharps with Engineered Sharps Injury Protections

This is a new term which includes nonneedle sharps or needle devices containing built-in safety features that are used for collecting fluids or administering medications or other fluids, or other procedures involving the risk of sharps injury. This description covers a broad array of devices, including:

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

Needleless Systems

This is a new term defined as devices which provide an alternative to needles for various procedures to reduce the risk of injury involving contaminated sharps. Examples include:

- IV medication 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.

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Occupational Safety & Health Administration
200 Constitution Avenue, NW
Washington, DC 20210



Fact Sheet

Universal Precautions for Prevention of Transmission of HIV and Other Bloodborne Infections

Updated: 1996 Released: 1987

"Universal precautions," as defined by CDC, are a set of precautions designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens when providing first aid or health care. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other bloodborne pathogens.

Universal precautions took the place of and eliminated the need for the isolation category "Blood and Body Fluid Precautions" in the 1983 CDC Guidelines for Isolation Precautions in Hospitals. However, implementing universal precautions does not eliminate the need for other isolation precautions, such as droplet precautions for influenza, airborne isolation for pulmonary tuberculosis, or contact isolation for methicillin-resistant *Staphylococcus aureus*.

Universal precautions differ from the system of Body Substance Isolation (BSI) used in some institutions. For information about BSI, refer to the following articles:

1. Lynch P, et al. Rethinking the role of isolation precautions in the prevention of nosocomial infections. *Annals of Internal Medicine* 1987;107:243-246.
2. Lynch P, et al. Implementing and evaluating a system of generic infection precautions: Body substance isolation. *American Journal of Infection Control* 1990;18:1-12.

In 1996, CDC published new guidelines (standard precautions) for isolation precautions in hospitals. Standard precautions synthesize the major features of BSI and universal precautions to prevent transmission of a variety of organisms. Standard precautions were developed for use in hospitals and may not necessarily be indicated in other settings where universal precautions are used, such as child care settings and schools.

Universal precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal precautions also apply to tissues and to the following fluids: cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids. Universal precautions do not apply to feces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. Universal precautions do not apply to saliva except when visibly contaminated with blood or in the dental setting where blood contamination of saliva is predictable.

Universal precautions involve the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which can reduce the risk of exposure of the health care worker's skin or mucous membranes to potentially infective materials. In addition, under universal precautions, it is recommended that all health care workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Pregnant health care workers are not known to be at greater risk of contracting HIV infection than are health care workers who are not pregnant; however, if a health care worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant health care workers should be especially familiar with, and strictly adhere to, precautions to minimize the risk of HIV transmission.

WRITTEN GUIDELINES: UNIVERSAL PRECAUTIONS

Universal precautions are discussed in the following documents:

1. **CDC. Recommendations for prevention of HIV transmission in health-care settings.** MMWR 1987;36(suppl no. 2S).
2. **CDC. Update: Universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings.** MMWR 1988;37:377-388.
3. **CDC. Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health-care and public-safety workers.** MMWR 1989;38(S-6):1-36.

These three documents may be obtained by calling the AIDS Hotline at 1-800-342-2437 or the National AIDS Information Clearinghouse at 1-800-458-5231.

In addition, the Occupational Safety and Health Administration (OSHA) has published a standard on "bloodborne pathogens." For information about this document, call 202-219-7157.

For information on infection control in dental practice, call 1-800-458-5231 to obtain "The Infection Control File." For further questions on dental practice, call the Division of Oral Health, CDC, telephone 770-488-3034.

GLOVING, GOWNING, MASKING, AND OTHER PROTECTIVE BARRIERS AS PART OF UNIVERSAL PRECAUTIONS

All health care workers should routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure during contact with any patient's blood or body fluids that require universal precautions.

Recommendations for the use of gloves are presented in detail in the Morbidity and Mortality Weekly Report dated June 24, 1988, which is available by calling the National AIDS Information Hotline at 1-800-342-2437 or the National AIDS Information Clearinghouse at 1-800-458-5231.

Gloves should be worn:

- for touching blood and body fluids requiring universal precautions, mucous membranes, or nonintact skin of all patients, and
- for handling items or surfaces soiled with blood or body fluids to which universal precautions apply.

Gloves should be changed after contact with each patient. Hands and other skin surfaces should be washed immediately or as soon as patient safety permits if contaminated with blood or body fluids requiring universal precautions. Hands should be washed immediately after gloves are removed. Gloves should reduce the incidence of blood contamination of hands during phlebotomy, but they cannot prevent penetrating injuries caused by needles or other sharp instruments. Institutions that judge routine gloving for all phlebotomies is not necessary should periodically reevaluate their policy. Gloves should always be available to health care workers who wish to use them for phlebotomy. In addition, the following general guidelines apply:

1. Use gloves for performing phlebotomy when the health care worker has cuts, scratches, or other breaks in his/her skin.
2. Use gloves in situations where the health care worker judges that hand contamination with blood may occur, e.g., when performing phlebotomy on an uncooperative patient.
3. Use gloves for performing finger and/or heel sticks on infants and children.
4. Use gloves when persons are receiving training in phlebotomy.

The Center for Devices and Radiological Health, Food and Drug Administration (FDA), has responsibility for regulating the medical glove industry. For more information about selection of gloves, call FDA at 301-443-8913.

Masks and protective eyewear or face shields should be worn by health care workers to prevent exposure of mucous membranes of the mouth, nose, and eyes during procedures that are likely to generate droplets of blood or body fluids requiring universal precautions. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or body fluids requiring universal precautions.

All health care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped by hand, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal. The puncture-resistant containers should be located as close as practical to the use area. All reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.

General infection control practices should further minimize the already minute risk for salivary transmission of HIV. These infection control practices include the use of gloves for digital examination of mucous membranes and endotracheal suctioning, handwashing after exposure to saliva, and minimizing the need for emergency mouth-to-mouth resuscitation by making mouthpieces and other ventilation devices available for use in areas where the need for resuscitation is predictable.

Although universal precautions do not apply to human breast milk, gloves may be worn by health care workers in situations where exposures to breast milk might be frequent, e.g., in breast milk banking.

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