BLOODBORNE PATHOGEN

Exposure Control Plan

2017

Drexel University

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BLOODBORNE PATHOGEN EXPOSURE CONTROL PLAN

INTRODUCTION

The purpose of this Exposure Control Plan is to provide documentation of the procedures which have been devised to reduce employee exposure to bloodborne pathogens in accordance with Occupational Safety and Health Administration (OSHA) Standard **29 CFR Part 1910.1030** - Occupational Exposure to Bloodborne Pathogens.

The Exposure Control Plan shall contain at least the following elements:

- An exposure determination
- The schedule and method of implementation for:
    - Methods of Compliance,
    - HIV and HBV Research Laboratories and Production Facilities,
    - Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up,
    - Communication of Hazards to Employees, and
    - Record keeping, of this standard, and
- The procedure for the evaluation of circumstances surrounding exposure incidents.

The Exposure Control Plan shall be accessible to employees at all times.

The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

The Exposure Control Plan shall document annual consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposures.

Clinical and research departments at Drexel University, who are required to establish an Exposure Control Plan, shall solicit input from non-managerial employees responsible for direct patient care and/or laboratory procedures who are potentially exposed to injuries from contaminated sharps. The identification, evaluation, and selection of effective engineering and work practice controls shall be documented in the Exposure Control Plan.

The Exposure Control Plan shall be made available to OSHA upon request for examination and copying.

DEFINITIONS

- **Blood** means human blood, human blood components, and products made from human blood.
- **Bloodborne Pathogens** means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to: Hepatitis Viruses and Human Immunodeficiency Virus (HIV).
- **Clinical Laboratory** means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.
- **Contaminated** means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- **Contaminated Laundry** means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.
- **Contaminated Sharps** means any contaminated object that can penetrate the skin including, but not limited to: needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.
- **Decontamination** means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.
- **Engineering Controls** means controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections, and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.
- **Exposure Incident** means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee's duties.
- **Hand Washing Facilities** means a facility providing an adequate supply of running potable water, soap, and single use towels or hot air drying machines.
- **Licensed Healthcare Professional** is a person whose legally permitted scope of practice allows him or her to independently perform healthcare.
- **HBV** means Hepatitis B Virus.
- **HIV** means Human Immunodeficiency Virus.
- **Needleless Systems** means a device that does not use needles for: (1) the collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established; (2) the administration of medication or fluids; or (3) any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.
- **Occupational Exposure** means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- **Other Potentially Infectious Materials (OPIM)** means (1) the following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body

fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

- **Parenteral** means piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.
- **Personal Protective Equipment (PPE)** is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts, or blouses) not intended to function as protection against a hazard is not considered to be personal protective equipment.
- **Production Facility** means a facility engaged in industrial-scale, large-volume, or high concentration production of HIV or HBV.
- **Regulated Waste** means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
- **Research Laboratory** means a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV, but not in the volume found in production facilities.
- **Sharps with Engineered Sharps Injury Protections** means a non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.
- **Source Individual** means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to: hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.
- **Sterilize** means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.
- **Universal Precautions** is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
- **Work Practice Controls** means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

METHODS OF COMPLIANCE

WRITTEN POLICIES AND PROCEDURES

The Drexel University Department of Environmental Health and Safety, in accordance with state and federal regulations, reviews the Bloodborne Pathogen standard, inclusive of universal precautions, engineering and work practice controls, and personal protective equipment on an annual basis and assists with respective departments as needed in regard to compliance.

UNIVERSAL PRECAUTIONS

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials. Treat all bodily fluids / materials as infectious, including any and all instrumentation and materials which may have come in contact with body fluids such as paper, gauze, bandages, sponges, gloves, etc. **Universal Precautions shall be observed at all times.**

ENGINEERING AND WORK PRACTICE CONTROLS

Engineering and Work Practice Controls are equipment or practices that reduce or eliminate the potential for exposure to blood or other potentially infective material (OPIM) without reliance on the employee to take self-protective actions. Engineering Controls include devices commercially available in a safety configuration used to reduce needle-stick injuries, such as safety needles, safety lancets, safety scalpels, needleless IV system, safe phlebotomy and butterfly devices, puncture-resistant sharps containers, and Biological Safety Cabinets, etc. Work Practice Controls include practices done on an administrative level to further reduce the likelihood of exposure to Bloodborne pathogens. Examples of Work Practice Controls may include labeling patient samples, using a designated refrigerator for patient samples only, training, rules, methods, and that the end user is the only user of sharps, etc.

Engineering and Work Practice Controls shall be used to eliminate or minimize employee exposure. Personal Protective Equipment (PPE) shall be used when occupational exposure remains after the institution of these controls. Engineering Controls shall be examined, maintained, and/or replaced on a regular schedule to ensure their effectiveness. The Department Administrator is responsible to ensure that these stipulations have been met.

Hand Hygiene

- Hand washing facilities shall be readily accessible to employees.
- When provision of hand washing facilities is not feasible, an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes shall be provided. When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as possible.
- Wash hands immediately or as soon as possible after removal of gloves or other personal protective equipment.
- Wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as possible following contact of such body areas with blood or other potentially infectious materials.
- Exercise hand hygiene prior to putting on gloves and immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganism to other patients or environments.
- It may be necessary to exercise hand hygiene between tasks and procedures on the same patient to prevent cross-contamination of different body sites.

Infectious Sharps Waste

Sharps containers shall be used for the disposal of all syringes, needles, scalpel blades, glass ware (broken and intact), petri dishes, pipettes, hard plastic which has the ability to shatter under pressure, and any other materials which may have become contaminated and has the ability to cut, scratch or pierce the skin and/or breach mucus membranes. Sharps containers shall not be moved unless properly closed to prevent spillage.

- Never bend, recap, or otherwise manipulate contaminated needles using both hands, or use any other technique that involves directing the point of a needle toward any part of the body; rather, use either a one-handed “scoop” technique or a mechanical device designed for holding the needle sheath.
- Immediately or as soon as possible, place used disposable syringes and needles, scalpel blades, and other sharp items in a biohazard labeled and puncture resistant container that is to remain in an upright position. At all times, containers shall be located as close as practical to the area in which the items were used or reasonably anticipated to be found.
- Take care to prevent injuries when using needles, scalpels, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used sharps.
- Place reusable sharps, in a manner that does not require employees to reach, by hand, into the container (e.g. syringes, needles, scalpels, scissors, etc.) in a biohazard labeled and puncture-resistant container for transport to the reprocessing area.

- Sharps containers shall be inspected daily. The person performing this inspection shall close all containers which are more than 3/4 full and check for adequate labeling.
- Do not reach into sharps container for any reason.
- Do not dispose of sharps in regular trash.
- Do not dispose non-sharps in sharps container.
- Do not use cardboard containers for disposal of sharps.
- Lids are to be kept closed on containers at all times.
- Close container prior to moving.
- Reusable containers are not opened, emptied, or cleaned manually or in any other manner, which would expose employees to the risk of percutaneous injury.
- Full containers shall be removed, disposed, and replaced by an outside contractor on a predetermined schedule or as needed basis. If removal and replacement has not been performed appropriately, close the container and contact the Department of Environmental Health and Safety at (215) 895-5919.
- Infectious sharps waste containers are located throughout locations including, but not limited to: laboratories, clinical practices, and storage rooms throughout the University.

Infectious Non-Sharps Waste

- All infectious non-sharps waste shall be disposed in red biohazard labeled bags.
- Infectious non-sharps waste red bags shall be contained in designated and labeled containers.
- Containers used to hold infectious non-sharps waste red bags shall be routinely cleaned with a 10% bleach solution by location staff.
- Lids are to be kept closed on containers at all times.
- Do not dispose infectious sharps in infectious non-sharps waste red bags.
- Do not dispose trash in infectious non-sharps waste red bags.
- The removal of full infectious non-sharps waste red bag waste shall be performed routinely by either in-house personnel or outside contractor.
- Infectious non-sharps waste containers are located throughout locations including, but not limited to: laboratories, clinical practices, and storage rooms throughout the University.

Annual Evaluation of Sharps

- Consideration and implementation of appropriate commercially available and effective safer medical devices, designed to eliminate occupational exposure to Bloodborne pathogens, shall be evaluated. New sharps injury prevention products reflecting changes in technology that eliminate or reduce exposure to bloodborne pathogens shall be reviewed at least annually, by non-managerial employee(s) who is potentially exposed to injuries from contaminated sharps, at which time consideration shall be given to, and implementation of, appropriate commercially available and effective devices designed to eliminate or minimize occupational exposure.

- The Safe Needle Committee will review safe needle systems and engineering controls on a biannual basis. This subcommittee is comprised of direct line staff and physicians. Information and outcomes will be reported to the Drexel University Physicians (DUP) Quality Committee which receives direct oversight from the Executive Committee and Board of Directors for the DUP clinical practices. Information and outcomes will be reported to Departmental Administrators, Chairs, and Deans for all other respective entities.

  The committee is comprised of medical assistants, physicians, one administrator, and a representative from the Drexel University Department of Environmental Health and Safety.

  The charge of the committee is to review sharps injuries/near misses, review safe needle systems, select and provide oversight of the implementation, and related use to include training and compliance. Information will be disseminated during routine quality control checks, monthly office manager meetings, and via email. Hands on training sessions will be made available to staff via manufacturer representatives or designated safety champion.

  The Mission Statement of The Safe Needle Committee is as follows: *"The Drexel University Safe Needle Committee will attempt to reduce the likelihood of sharps injuries and exposures through awareness promotion, training and education of staff, review of needlestick incidents, and the evaluation and implementation of safe sharps products and alternative devices."*

Food, Drinks, Cosmetics Application, and Contact Lenses

- Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in labs, exam rooms, and work areas where there is a reasonable likelihood of occupational exposure to blood and other potentially infectious materials.
- Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets, countertops, or bench tops where blood or other potentially infectious materials are present.

Tasks/Procedures Involving Blood and/or Other Potentially Infectious Materials

- All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances. Hoods and splash shields shall be utilized.
- Mouth pipetting/suctioning of blood and other potentially infectious materials is not permitted under any circumstance.
- Broken glassware, which may be contaminated, is cleaned up using mechanical means such as a brush and dustpan, tongs, or forceps. Broken glassware shall be disposed in biohazard labeled and puncture-resistant sharps container.
- Department administrators and office managers are responsible for soliciting information from staff members to identify opportunities to reduce or eliminate exposures to blood and other potentially infectious materials in their department.
- Refer to site specific tasks listed in Appendix E for additional information.

Specimens of Blood and/or Other Potentially Infectious Materials (OPIM)

- All specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.
- The container for storage, transport, or shipping shall be labeled or color-coded with orange bio-hazard labels and closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding is required when such specimens/containers leave the facility.

- If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded with orange bio-hazard labels.
- If the specimen could puncture the primary container, the primary container shall be placed within a secondary container which is puncture-resistant in addition to the above characteristics.

Contaminated Equipment for Servicing or Shipping

- Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and shall be decontaminated as necessary, unless Drexel University can demonstrate that decontamination of such equipment or portions of such equipment is not feasible.
- A readily observable bio-hazard label shall be attached to the equipment stating which portions remain contaminated. Drexel University shall ensure that this information is conveyed to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, and prior to handling, servicing, or shipping so that appropriate precautions shall be taken.

Personal Protective Equipment (PPE)

When there is occupational exposure, appropriate personal protective equipment such as gloves, gowns, laboratory coats, face shields or masks and eye protection, mouthpieces, resuscitation bags, pocket masks, or other ventilation devices shall be provided at no cost to the employee. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

- Drexel University shall ensure that the employee uses appropriate personal protective equipment unless Drexel University shows that the employee temporarily and briefly declined to use personal protective equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgment, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurrences in the future.
- Personal protective equipment in the appropriate sizes and with hypoallergenic alternatives shall be readily accessible at the worksite or is issued to employees.
- Personal protective equipment shall be issued and disposed at no cost to the employee.

- Personal protective equipment as needed to maintain its effectiveness shall be repaired or replaced at no cost to the employee.
- All personal protective equipment shall be removed prior to leaving the work area.
- When personal protective equipment is removed it shall be placed in an appropriately designated area or container for storage, washing, decontamination, or disposal.
- The type of PPE designated for each task / procedure depends on the task / procedure involved and the degree of exposure anticipated.
- Disposable PPE is disposed properly and immediately after use in a biohazard labeled non-sharps waste bag.

- **Gloves -** shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures, and when handling or touching contaminated items or surfaces.
    - Disposable (single use) gloves such as surgical or examination gloves shall be replaced as soon as practical when contaminated or as soon as possible if they are torn, punctured, or when their ability to function as a barrier is compromised.
    - Disposable gloves shall not be washed or decontaminated for re-use.
    - Hypoallergenic gloves, glove liners, powder less gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.
    - Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibits other signs of deterioration or when their ability to function as a barrier is compromised.

- **Masks, Eye Protection, and Face Shields** - Masks in combination with eye protection devices, such as goggles or safety glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

- **Gowns, Aprons, and Other Protective Body Clothing** - Appropriate protective clothing such as gowns, aprons, lab coats, clinic jackets, or similar outer garments shall be worn in occupational exposure situations. The type and characteristics will depend upon the task and degree of exposure anticipated.
    - If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as possible.
    - Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated.

Housekeeping

- All work areas and surfaces must be maintained in a clean and sanitary condition.
- Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as possible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.
- Protective coverings, such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper used to cover equipment and environmental surfaces, shall be removed and replaced as soon as possible when they become overtly contaminated or at the end of the work shift if they may have become contaminated during the shift.
- All bins, pails, cans and similar receptacles intended for reuse and which have reasonable likelihood for contamination shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as possible upon visible contamination.
- Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps. Broken glassware must be disposed in biohazard labeled and puncture-resistant sharps container.
- Reusable sharps that are contaminated with blood or other potentially infectious materials shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.
- Each employee is responsible for cleaning and decontaminating their individual work areas, surfaces and equipment, in addition to the proper disposal of their PPE, immediately or as soon as surfaces/areas or protective coverings become overtly contaminated, or after the occurrence of a spill of blood or OPIM, and following the end of a work shift.
- In the event of a large spill or accident involving blood or OPIM, Environmental Services or contracted housekeeping vendor should be contacted immediately to handle. Personnel Protection Equipment (PPE) is worn to clean all spills.

Laundry

- Contaminated laundry shall be handled as little as possible with a minimum of agitation.
- Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.
- Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded with an orange biohazard label. When a facility utilizes Universal Precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions.
- Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.
- Employees who have contact with contaminated laundry shall wear protective gloves and other appropriate personal protective equipment.
- When a facility ships contaminated laundry off-site to a second facility which does not utilize Universal Precautions in the handling of all laundry, the facility generating the contaminated laundry must place such laundry in bags or containers which are labeled or color-coded as biohazard.

Research Laboratories

These facilities shall follow all additional policies and procedures outlined in the University Laboratory Safety Manual regarding topics including, but not limited to: Biological Safety Cabinets, high risk biohazardous material, infectious sharps contaminated with radioactive agents, infectious material incubation and transport, human material with reference to AIDS/HIV, infectious waste disposal (infectious animal waste, non-infectious animal waste, pathological/chemotherapeutic infectious waste, infectious liquid waste), infectious contaminated glassware and equipment, spills of biohazardous materials, and shipping, receiving, or transferring etiologic agents.

The Laboratory Safety Manual contains biosafety procedures that have been developed and approved by the Drexel University Biosafety Committee. This manual is available at www.drexel.edu/facilities/healthSafety/labSafety/.

HIV and HBV Research Laboratories and Production Facilities

These facilities shall follow all policies and procedures outlined in the University Laboratory Safety Manual.

Hepatitis B Vaccination

The Hepatitis B vaccination shall be made available to all employees who have a potential for occupational exposure (as defined by this document). It shall be made available after the employee has received training in occupational exposure and within ten (10) working days of initial assignment unless the employee has previously received the complete HBV vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons. Any such employees will be noted accordingly.

- The Department of Environmental Health and Safety (EHS) will schedule an appointment at Occupational Health to receive these vaccinations. If you would like to schedule an appointment please contact EHS at (215) 895-5919.
- Drexel University shall not make participation in a prescreening program a prerequisite for receiving Hepatitis B vaccination.
- If the employee initially declines the Hepatitis B vaccination but at a later date decides to accept the vaccination, the vaccination shall then be made available. An appointment with Occupational Health must be scheduled through EHS.
- All employees who decline the Hepatitis B vaccination offered shall sign the OSHA required declination form indicating their refusal. This form can be found in Appendix B of this exposure control plan.
- If a routine titer (booster) dose of Hepatitis B vaccine is recommended by the US Public Health Service at a future date, such titer doses shall be made available at no cost to the employee.
- The Hepatitis B vaccination is a series of three (3) shots given over a six (6) month period. After the first shot is administered, the second will be given in one (1) month and the third shot six (6) months from the first shot. After the series is completed, titers must be drawn four (4) to six (6) weeks later or current CDC guidelines to make sure immunity has been achieved. Occupational Health shall provide all of the due dates for the following shots/titer, but it is the employee's responsibility to return to the provider for these services.

Post-Exposure Evaluation and Follow-up

- Should an exposure occur, immediately cleanse skin with soap and water. Be sure to use plenty of soap and a strong stream of water. If the eyes, nose or mouth are exposed, rinse with plenty of water and no soap.
- After cleansing, the employee must notify supervisor and immediately seek medical care at WorkNet Occupational Health (Monday through Friday 8 AM to 5 PM) immediately for post exposure evaluation. If WorkNet is unavailable or after hours, visit the nearest Emergency Room.
    - Public Safety personal shall seek medical care every time they assist with the medical transport of an individual (employee, student, suspect, etc) to the emergency room and/or circumstances when visible blood, abrasions, and/or scratches occur during arrest or detainment.
- An Employee Injury Report should be completed and faxed to Risk Management and the Department of Environmental Health and Safety within 24 hours. The Department of Environmental Health and Safety shall conduct an incident assessment after an exposure incident.
- Drexel University shall offer post-exposure evaluation and follow-up at no cost to the employee. Follow-up shall include the following:
    - A confidential medical evaluation (determination of type of prophylaxis and medical treatment indicated) under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional.
    - Documentation of route of exposure and circumstances related to the incident.
    - Identification and documentation of the source individual, unless Drexel University can establish that identification is infeasible or prohibited by state or local law.
    - The source individual's blood shall be tested as soon as possible and after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, Drexel University shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented.
    - When the source individual is already known to be infected with HBV or HIV, testing for the source individual’s known HBV or HIV status need not be repeated.
    - Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
    - The exposed employee's blood shall be collected as soon as possible and tested after consent is obtained.

- If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least ninety (90) days. If, within ninety (90) days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as possible.
- Employee shall be offered post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service.
- Drexel University shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.
- Counseling and evaluation of reported illnesses shall be given to employee.
- Drexel University shall ensure that the healthcare professional evaluating an employee after an exposure incident is provided the following information; a copy of the Bloodborne pathogen standard; a description of the exposed employee's duties as they relate to the exposure incident; documentation of the route(s) of exposure and circumstances under which exposure occurred; results of the source individual's blood testing, if available; and all medical records relevant to the appropriate treatment of the employee including vaccination status which are Drexel University's responsibility to maintain.
- Drexel University shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within fifteen (15) days of the completion of the evaluation.
- All medical records relevant to the appropriate treatment of the employee including vaccination status which are Drexel University’s responsibility to maintain.
- The healthcare professional's written opinion for Hepatitis B vaccination shall be limited to whether Hepatitis B vaccination is indicated for an employee, and if the employee has received such vaccination.
- The healthcare professional's written opinion for post-exposure evaluation and follow-up shall be limited to the following information: that the employee has been informed of the results of the evaluation; and that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment. All other findings or diagnoses shall remain confidential and shall not be included in the written report.

Sharps Injury Log

- A confidential Sharps Injury Log is maintained by the Drexel University Department of Environmental Health and Safety. This log is reviewed for trends and is available upon request by OSHA.
- The Department of Environmental Health and Safety shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such manner as to protect the confidentiality of the injured employee. The sharps injury log shall contain, 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.
- The requirement to establish and maintain a sharps injury log shall apply to Drexel University who is required to maintain a log of occupational injuries and illnesses under **29 CFR 1904**.

Communication of Hazards to Employees

- Universal Precautions must be observed at all times. Treat all bodily fluids / materials as infectious, including any and all instrumentation and materials which may have come in contact with body fluids such as paper, gauze, bandages, sponges, gloves, etc.
- Warning label or sign that includes the universal biohazard symbol followed by the term "biohazard" and is fluorescent orange or orange-red in color must be affixed in a manner that prevents loss, unintentional removal, or unintentional access to:
    - bags / containers of contaminated laundry,
    - bags / containers of regulated waste,
    - refrigerators and freezers containing blood and/or Other Potentially Infectious Material (OPIM),
    - bags / containers used to store, dispose, transport, or ship blood or OPIM. (Individual containers of blood/potentially infectious materials do not need a label if they are kept within the facility or are placed in a labeled secondary bag/container),
    - and contaminated equipment which is to be serviced or shipped must have a readily observable label attached which contains the biohazard symbol and the word "biohazard" along with a statement relating which portions of the equipment remain contaminated.

Labels and Signs

Labels and signs required by this section shall include the following:

- Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials.
- These labels shall be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.
- Labels shall be affixed as close as possible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.
- Labels must be present on all containers of regulated waste, refrigerators, and freezers containing blood or other potentially infectious material.
- Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment, or disposal are exempted from the labeling requirement.
- Labels must be placed on all containers used for holding red infectious non-sharps waste bags.
- Labels must be placed on all infectious sharps waste containers.
- Biohazard signs must be present on all doors leading to areas containing potentially contaminated materials (e.g. laboratory doors, HIV and HBV Research Laboratory and Production Facilities).
- Labels must be present on equipment and/or potentially contaminated equipment (centrifuges, flow cytometers, etc.).

Information and Training

Additional training shall be provided when changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created. Please notify the Department of Environmental Health and Safety to review these training needs.

Clinical and Research Personnel

New Hire – All new employees shall be trained on-line via the Department of Environmental Health and Safety (EHS) training website: http://www.drexelehstraining.com/
Training shall focus on the contents of the Bloodborne pathogen standard 29 CFR 1910.1030 and information specific to their individuals work areas. Training must be completed at the time of initial assignment. This training must be provided during working hours.

Annual – Annual training is required by all clinical and research employees via the (EHS) training website: http://www.drexelehstraining.com/
by the anniversary of the last completed training session. The annual training session shall review items covered in the initial new hire training, but shall also include changes in regulations and any new policies adapted by the University.

Facilities Management and Public Safety Personnel

Facilities Management and Public Safety Personnel shall be trained during scheduled sessions by an instructor from EHS on an annual basis.

RECORD KEEPING

- Drexel University shall establish and maintain an accurate record for each employee with occupational exposure, in accordance with 29 CFR 1910.1020. This record shall include: the name and social security number of the employee; a copy of the employee's Hepatitis B vaccination status including the dates of all the Hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination; a copy of all results of examinations, medical testing, and follow-up procedures; Drexel University's copy of the healthcare professional's written opinion; a copy of the information provided to the healthcare professional; Drexel University shall ensure that employee medical records are kept confidential and not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by this section or as may be required by law.
- Drexel University shall maintain the records for at least the duration of employment plus thirty (30) years.

TRAINING RECORDS

- Training records shall include the following information: the dates of the training sessions; the contents or a summary of the training sessions and the names and job titles of all persons attending the training sessions.
- Training records shall be maintained for three (3) years from the date on which the training occurred.
- Training records for examination and copying will be made available upon request to OSHA.

RESPONSIBILITY FOR IMPLEMENTING THIS PLAN

- Each employee is responsible for complying with this exposure control plan.
- Department directors, mangers, supervisors, and/or department administrators are responsible for implementing this plan in their respective area(s).
- Department directors, managers, supervisors, and/or department administrators are responsible for ensuring that approved safe needle alternatives are being evaluated.
- Department administrators are responsible for identifying new positions or new tasks and procedures, which involve occupational exposure to blood and OPIM so that appropriate exposure control measures can be developed and implemented.
- The Drexel University Department of Environmental Health and Safety shall digitally retain training records.
- The Drexel University Department of Environmental Health and Safety shall review the plan and update as needed at least annually.

EMERGENCY CONTACT INFORMATION

University City Campus - Emergency Contact Numbers

Department	Name	Office Number	Mobile Number	Pager Number
Drexel Public Safety		**215-895-2222**		
Emergency Room	**HUP**	**215-662-3920**		
Student Health	**Drexel**	**215-895-5800**		
Occupational Health	**WorkNet**	**215-762-8590**		
University Safety (EHS)	**Office**	**215-895-5919**		
University Safety (EHS)	**Jon Chase**	**215-895-5891**	**215-669-6122**	
University Safety (EHS)	**Martin Bell**	**215-895-5892**	**215-778-4278**	
University Safety (EHS)	**Joseph Nihill**	**215-895-1624**	**267-249-0348**	
University Safety (EHS)	**Jaime Barbaro**	**215-895-5896**	**215-768-1623**	
University Safety (EHS)	**Jeff Nemetz**	**215-895-5913**	**215-778-3039**	
University Safety (EHS)	**Jim Klinger**	**215-895-5909**	**215-768-1624**	
Radiation Safety	**Kent Lambert**	**215-762-2908**		
Facilities		**215-895-1700**		**215-308-1058**
Housekeeping Services		**215-895-1700**	**267-446-1086**	**215-265-0583**

Center City Campus - Emergency Contact Numbers

Department	Name	Office Number	Mobile Number	Pager Number
Tenet Security		**215-762-7110**		
Drexel Public Safety		**215-895-2222**		
Emergency Room	**HUH**	**215-762-7963**		
Student Health	**Drexel**	**215-895-5800**		
Occupational Health	**WorkNet**	**215-762-8590**		
University Safety (EHS)	**Office**	**215-895-5919**		
University Safety (EHS)	**Jon Chase**	**215-895-5891**	**215-669-6122**	
University Safety (EHS)	**Martin Bell**	**215-895-5892**	**215-778-4278**	
University Safety (EHS)	**Joseph Nihill**	**215-895-1624**	**267-249-0348**	
University Safety (EHS)	**Jaime Barbaro**	**215-895-5896**	**215-768-1623**	
University Safety (EHS)	**Jeff Nemetz**	**215-895-5913**	**215-778-3039**	
University Safety (EHS)	**Jim Klinger**	**215-895-5909**	**215-768-1624**	
Hospital Facilities	**Luis Gonzalez**	**215-762-3519**		
Hospital Safety	**Steven Morrissey**	**215-762-6133**		**215-762-PAGE-4-2826**
Radiation Safety	**Kent Lambert**	**215-762-2908**		
Facilities (HSCO)	**Brian Lynch**	**215-255-7318**	**215-783-2557**	
Facilities (HSCO)	**Alex Sheppard**	**215-762-5141**	**215-990-7280**	
On Call Pager (HSCO)				**215-363-0564**
Tenet Maintenance		**215-762-3000**		
Housekeeping Services		**215-762-4700**		

Queen Lane Campus - Emergency Contact Numbers

Department	Name	Office Number	Mobile Number	Pager Number
Drexel Public Safety		**215-895-2222**		
Queen Lane Security		**215-991-8102**		
Student Health		**215-895-5800**		
Occupational Health		**215-762-8590**		
University Safety (EHS)	**Office**	**215-895-5919**		
University Safety (EHS)	**Jon Chase**	**215-895-5891**	**215-669-6122**	
University Safety (EHS)	**Martin Bell**	**215-895-5892**	**215-778-4278**	
University Safety (EHS)	**Joseph Nihill**	**215-895-1624**	**267-249-0348**	
University Safety (EHS)	**Jaime Barbaro**	**215-895-5896**	**215-768-1623**	
University Safety (EHS)	**Jeff Nemetz**	**215-895-5913**	**215-778-3039**	
University Safety (EHS)	**Jim Klinger**	**215-895-5909**	**215-768-1624**	
Radiation Safety	**Kent Lambert**	**215-762-2908**		
Facilities (HSCO)	**Brian Lynch**	**215-255-7318**	**215-783-2557**	
Facilities (HSCO)	**Ray Stoffel**	**215-991-8484**	**215-651-1321**	
On Call Pager (HSCO)				**215-363-0564**
Maintenance		**215-991-8500**		
Housekeeping Services		**215-991-8145**		

Academy of Natural Sciences - Emergency Contact Numbers

Department	Name	Office Number	Mobile Number	Pager Number
Drexel Public Safety		**215-895-2222**		
ANS Security Desk		**215-299-1019**		
Occupational Health		**215-762-8590**		
University Safety (EHS)	**Office**	**215-895-5919**		
University Safety (EHS)	**Jon Chase**	**215-895-5891**	**215-669-6122**	
University Safety (EHS)	**Martin Bell**	**215-895-5892**	**215-778-4278**	
University Safety (EHS)	**Joseph Nihill**	**215-895-1624**	**267-249-0348**	
University Safety (EHS)	**Jaime Barbaro**	**215-895-5896**	**215-768-1623**	
University Safety (EHS)	**Jeff Nemetz**	**215-895-5913**	**215-778-3039**	
University Safety (EHS)	**Jim Klinger**	**215-895-5909**	**215-768-1624**	
Radiation Safety	**Kent Lambert**	**215-762-2908**		
Building Operations	**Joe Resnick**	**215-299-1089**	**215-768-0731**	
Building Operations	**Dave Taylor**	**215-299-1158**	**215-768-0732**	
Building Operations	**Carl Zuccarelli**	**215-299-1030**	**215-416-3198**	

HEPATITIS B VACCINE DECLINATION FORM

I understand that due to my occupational exposure to blood or other infectious materials that I may be at risk of acquiring Hepatitis B virus infection. I have been given the opportunity to be vaccinated with the Hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or potentially infectious materials and I want the Hepatitis B vaccine, I can receive the vaccination series as no charge to me.

_____

(Signature)

_____

(Print Name)

_____

(Title)

_____

(Date)

_____

(Department)

_____

(Location)

Please submit this form to the Department of Environmental Health and Safety.

SITE SPECIFIC INFORMATION

Name: _____
Location: _____
Phone Number: _____ **Fax Number:** _____

Briefly describe operational control / management of area:

_____
_____

Briefly describe delineation of Drexel area(s) of this area (*e.g. operational control of entire area, limited operational control of rooms 1 and 2 on Tuesdays only*):

_____
_____

Days and hours of operation: _____

All infectious *sharps* waste containers are:
removed by _____
disposed by _____

Frequency of removal of infectious *sharps* waste containers are:

_____

All infectious *non-sharps* waste bags are:
removed by _____
disposed by _____

Frequency of removal of infectious *non-sharps* waste bags are:

_____

Infectious waste removal and disposal provided by (Drexel, landlord, etc):

_____

List Personal Protective Equipment (PPE) available in this area:

_____
_____
_____
_____
_____
_____
_____

Housekeeping is provided by: _____
Phone Number for Housekeeping service: _____

EXPOSURE DETERMINATION

Each employer who has an employee(s) with occupational exposure as defined by:

a reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties

shall prepare an exposure determination for every job classification. This exposure determination shall be as follows:

List all job classifications in your area, which **will have** occupational exposure:

List job classifications in your area, which **may have** occupational exposure:

List additional Work Practice Controls:

Exposure determination is based upon the employee's risk of occupational exposure to blood and other potentially infectious materials (OPIM) without regard to the use of Personal Protective Equipment (PPE).

JOB HAZARD ANALYSIS

List the task description, hazard description, and the engineering controls, work practice controls, and personnel protective equipment to be utilized for tasks that may potentially result in occupational exposure to Bloodborne pathogens. Involve your employees in this hazard analysis process as they have a unique understanding and knowledge that is invaluable for finding hazards in a job task.

Task Description	**Hazard Description**	**Hazard Controls** ***(Engineering Controls, Work Practice Controls, Personnel Protection Equipment, etc).***

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Task Description	**Hazard Description**	**Hazard Controls** ***(Engineering Controls, Work Practice Controls, Personnel Protection Equipment, etc).***

SHARPS INVENTORY AND ANNUAL REVIEW

Complete an inventory of all sharps if these devices are utilized within your area. This list shall be reviewed and updated accordingly. Select 'Safety' to indicate that the item is an appropriate commercially available and effective sharp device designed to eliminate or minimize occupational exposures. Select 'Non-Safety' if a safe alternative is not commercially available or the use of a safe needle impedes the procedure and/or patient care. Involve your employees with this review.

Item Description	Manufacture	Catalog Number	Safety	Non - Safety	Reason for decline of sharps safety engineering control product
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

Reviewed Date: _____ **Annual Review Date: _____**

Item Description	Manufacture	Catalog Number	Safety	Non - Safety	Reason for decline of sharps safety engineering control product
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

Item Description	Manufacture	Catalog Number	Safety	Non - Safety	Reason for decline of sharps safety engineering control product
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

Item Description	Manufacture	Catalog Number	Safety	Non - Safety	Reason for decline of sharps safety engineering control product
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

CLEANING AND DECONTAMINATING BLOOD SPILLS SOP

Include the current Blood or Other Potentially Infectious Material Clean-up and Impacted Surface Decontamination Standard Operating Procedure (SOP) after this appendix title divider.

Department of Environmental Health and Safety

SOP Number: 0094
Approved: 11/27/12

Standard Operating Procedures
for
Blood or Other Potentially Infectious Material (OPIM)
Clean-up and Impacted Surface Decontamination

Purpose

The purpose of this document is to establish specific standard operating procedures for the clean-up and impacted surface decontamination of blood or Other Potentially Infectious Material (OPIM).

Applicability

This standard operating procedure applies to appropriate professional staff or others properly trained in Bloodborne Pathogens in accordance of OSHA Standard **29 CFR Part 1910.1030** and equipped to clean potentially infectious materials and decontaminate contaminated surfaces.

Procedure

A. General Information

- The information stated within this SOP meets the requirements described in OSHA Standard 29 CFR 1910.30 and is provided as a supplement to the University's Bloodborne Pathogens Exposure Control Plan. The information herein is not intended as a substitute for written policy and training.
- All spills shall be immediately contained and cleaned by appropriate professional staff or others properly trained and equipped to work with blood or Other Potentially Infectious Material (OPIM).
- Sharps are NOT to be picked up directly with the hands and shall be cleaned up using mechanical means, such as a brush and dustpan, tongs, or forceps. Since it is impossible to visually determine whether a contaminated sharp is infectious, ALL sharp items will be considered infectious (Universal Precautions).
- Dispose ALL sharps (contaminated and not contaminated) in the designated and approved sharps container.

B. Personal Protective Equipment (PPE)

Personal protective equipment (PPE) includes any specialized clothing or equipment designed to create a barrier against exposure hazards. PPE **does not** eliminate exposure to

hazards it only reduces the potential risk that an injury or exposure will occur. Personal protective equipment, as described below, must be worn by all University personnel involved in the cleanup activities of blood or Other Potentially Infectious Material (OPIM) spills.

- Disposable (single use) gloves must be worn at all times to help protect the hands from contamination and the chemicals used for disinfecting.
- Disposable gloves shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured or when their ability to function as a barrier has been compromised.
- Disposable gloves shall not be washed or decontaminated for re-use.
- Eye Protection in the form of face shields / safety goggles will help prevent contact in the mucous membrane of the eyes, nose, and mouth.
- Lab coats will help prevent contamination to clothing and skin.

C. Decontamination and Sanitizing

Chemicals (biocide / germicide or 10% bleach) used to effectively decontaminate areas impacted by blood or OPIM spill must be prepared and applied to surfaces according to the manufacturer's instruction. In order for these chemicals to properly disinfectant they must remain wet and in contact with impacted areas for the recommended amount of time. The contact time will vary depending on which chemical is used. If using a 10% bleach solution, allow the disinfectant to remain in contact with the impacted area for at least ten (10) minutes prior to cleansing.

D. Cleanup Protocol

Spills of Blood or Other Potentially Infectious Material (OPIM)

1. All contaminated work surfaces, tools, objects, etc., will be decontaminated immediately or as soon as feasible after any spill of blood or other potentially infectious materials.
2. Assure all spill cleanup equipment is in the immediate vicinity of the spill.
3. Section off the area from through traffic by the use of barriers, warning tape, or signs.
4. Demarcate with slippery when wet signs when appropriate.
5. Put on gloves, protective lab coat/gown, and face shield/goggles.
6. Spray a **biocide / germicide** over entire area in order to decontaminate. **Do not pour or spray direct stream at the spill** to avoid splashing and aerosolization of the material.
7. Wipe / sweep up using appropriate materials (i.e. absorbent pads, towels, mop, dust pan and broom, etc.).

a. Broken glass and similar sharps will not be picked up directly with the hands. Sweep or brush material into dustpan and dispose into approved puncture resistant sharps container.
b. If spill was on a carpet, pick-up all visible signs of the decontaminated spill with wet / dry vacuum. Discard solution in custodial sink.
c. If spill is in an outdoor area, spray entire area clean with hose to further dilute spill.

8. Place soiled absorbent in biohazard bag.
9. The disinfectant must be left in contact with contaminated work surfaces, tools, or objects for the manufacture's recommended exposure time (usually 5-10 minutes) before cleaning. For bleach solution, leave on for 10 minutes minimum. Increase time if heavily soiled and keep spill area wet.
10. Repeat applying biocide / germicide over entire area. Allow surface to air dry.
11. All other equipment that may have been contaminated with blood or other potentially infectious materials will be examined and decontaminated with biocide / germicide before servicing or use. This includes mops, brooms, pans, etc.
12. Remove PPE - Discard disposable gloves in biohazard bag. If heavy reusable gloves are used, disinfect by spray with disinfectant and wipe clean. Re-apply disinfectant to cleaned gloves and allow to air dry. Repeat disinfection techniques for eye and face protection.
13. Wash hands and arms.
14. Contact the Department of Environmental Health and Safety to dispose of all contaminated material and red biohazard bags at (215) 895-5919.

Contaminated Laundry

Laundry contaminated with blood or other potentially infectious materials shall be addressed appropriately as described below:

1. Handle contaminated laundry as little as possible with use of protective gloves.
2. Isolate garments penetrated by blood or OPIM immediately or as soon as possible.
3. Place soiled laundry in appropriate containers or **red** biohazard waste bags.
4. Garments should be **red** bagged at the location where soiled.
5. Garments should be stored for disposal at the location where soiled.
6. Contaminated laundry is not to be sorted or rinsed with other non-soiled laundry or in the area of use.

E. *Exposure Incident*

In the event that an employee experiences an exposure (contact of material in skin, eye, mucous membrane, ingestion, etc) during cleanup activities, the following steps must be performed:

- Exposed and/or affected area(s) should be immediately and thoroughly washed with soap and water.
- Eyes and mucus membranes should be irrigated with copious amounts of water for fifteen (15) minutes at minimum.
- Secure first aid if needed.
- Immediately report the incident/injury to a Supervisor.
- Seek immediate medical attention at WorkNet Occupational Health (Monday through Friday 8 AM to 5 PM) immediately for post exposure evaluation. If WorkNet is unavailable or after hours, visit the nearest Emergency Room.
- Complete the required incident report forms.

BLOODBORNE PATHOGENS STANDARD

Include the Occupational Safety and Health Administration (OSHA) Standard **29 CFR Part 1910.1030** - Occupational Exposure to Bloodborne Pathogens after this appendix title divider.

- **Part Number:** 1910
- **Part Title:** Occupational Safety and Health Standards
- **Subpart:** Z
- **Subpart Title:** Toxic and Hazardous Substances
- **Standard Number:** 1910.1030
- **Title:** Bloodborne pathogens.
- **Appendix:** A
- **GPO Source:** e-CFR

1910.1030(a)

Scope and Application. This section applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b) of this section.

1910.1030(b)

Definitions. For purposes of this section, the following shall apply:

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, or designated representative.

Blood means human blood, human blood components, and products made from human blood.

Bloodborne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Clinical Laboratory means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

Contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Laundry means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharps means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

Decontamination means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Director means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.

Engineering Controls means controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Handwashing Facilities means a facility providing an adequate supply of running potable water, soap, and single-use towels or air-drying machines.

Licensed Healthcare Professional is a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

HBV means hepatitis B virus.

HIV means human immunodeficiency virus.

Needleless systems means a device that does not use needles for:

(1) The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established; (2) The administration of medication or fluids; or (3) Any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.

Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Materials means (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

Personal Protective Equipment is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Production Facility means a facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

Regulated Waste means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Research Laboratory means a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

Sharps with engineered sharps injury protections means a nonneedle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

Source Individual means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

Sterilize means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Work Practice Controls means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

1910.1030(c)

Exposure Control --

1910.1030(c)(1)

Exposure Control Plan.

1910.1030(c)(1)(i)

Each employer having an employee(s) with occupational exposure as defined by paragraph (b) of this section shall establish a written Exposure Control Plan designed to eliminate or minimize employee exposure.

1910.1030(c)(1)(ii)

The Exposure Control Plan shall contain at least the following elements:

1910.1030(c)(1)(ii)(A)

The exposure determination required by paragraph (c)(2),

1910.1030(c)(1)(ii)(B)

The schedule and method of implementation for paragraphs (d) Methods of Compliance, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, (g) Communication of Hazards to Employees, and (h) Recordkeeping, of this standard, and

1910.1030(c)(1)(ii)(C)

The procedure for the evaluation of circumstances surrounding exposure incidents as required by paragraph (f)(3)(i) of this standard.

1910.1030(c)(1)(iii)

Each employer shall ensure that a copy of the Exposure Control Plan is accessible to employees in accordance with 29 CFR 1910.1020(e).

1910.1030(c)(1)(iv)

The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure. The review and update of such plans shall also:

1910.1030(c)(1)(iv)(A)

Reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens; and

1910.1030(c)(1)(iv)(B)

Document annually consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.

1910.1030(c)(1)(v)

An employer, who is required to establish an Exposure Control Plan shall solicit input from non-managerial employees responsible for direct patient care who are potentially exposed to injuries from contaminated sharps in the identification, evaluation, and selection of effective engineering and work practice controls and shall document the solicitation in the Exposure Control Plan.

1910.1030(c)(1)(vi)

The Exposure Control Plan shall be made available to the Assistant Secretary and the Director upon request for examination and copying.

1910.1030(c)(2)

Exposure Determination.

1910.1030(c)(2)(i)

Each employer who has an employee(s) with occupational exposure as defined by paragraph (b) of this section shall prepare an exposure determination. This exposure determination shall contain the following:

1910.1030(c)(2)(i)(A)

A list of all job classifications in which all employees in those job classifications have occupational exposure;

1910.1030(c)(2)(i)(B)

A list of job classifications in which some employees have occupational exposure, and

1910.1030(c)(2)(i)(C)

A list of all tasks and procedures or groups of closely related task and procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of paragraph (c)(2)(i)(B) of this standard.

1910.1030(c)(2)(ii)

This exposure determination shall be made without regard to the use of personal protective equipment.

1910.1030(d)

Methods of Compliance --

1910.1030(d)(1)

General. Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

1910.1030(d)(2)

Engineering and Work Practice Controls.

1910.1030(d)(2)(i)

Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

1910.1030(d)(2)(ii)

Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

1910.1030(d)(2)(iii)

Employers shall provide handwashing facilities which are readily accessible to employees.

1910.1030(d)(2)(iv)

When provision of handwashing facilities is not feasible, the employer shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible.

1910.1030(d)(2)(v)

Employers shall ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment.

1910.1030(d)(2)(vi)

Employers shall ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.

1910.1030(d)(2)(vii)

Contaminated needles and other contaminated sharps shall not be bent, recapped, or removed except as noted in paragraphs (d)(2)(vii)(A) and (d)(2)(vii)(B) below. Shearing or breaking of contaminated needles is prohibited.

1910.1030(d)(2)(vii)(A)

Contaminated needles and other contaminated sharps shall not be bent, recapped or removed unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.

1910.1030(d)(2)(vii)(B)

Such bending, recapping or needle removal must be accomplished through the use of a mechanical device or a one-handed technique.

1910.1030(d)(2)(viii)

Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed. These containers shall be:

1910.1030(d)(2)(viii)(A)

Puncture resistant;

1910.1030(d)(2)(viii)(B)

Labeled or color-coded in accordance with this standard;

1910.1030(d)(2)(viii)(C)

Leakproof on the sides and bottom; and

1910.1030(d)(2)(viii)(D)

In accordance with the requirements set forth in paragraph (d)(4)(ii)(E) for reusable sharps.

1910.1030(d)(2)(ix)

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

1910.1030(d)(2)(x)

Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.

1910.1030(d)(2)(xi)

All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

1910.1030(d)(2)(xii)

Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

1910.1030(d)(2)(xiii)

Specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.

1910.1030(d)(2)(xiii)(A)

The container for storage, transport, or shipping shall be labeled or color-coded according to paragraph (g)(1)(i) and closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding in accordance with paragraph (g)(1)(i) is required when such specimens/containers leave the facility.

1910.1030(d)(2)(xiii)(B)

If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded according to the requirements of this standard.

1910.1030(d)(2)(xiii)(C)

If the specimen could puncture the primary container, the primary container shall be placed within a secondary container which is puncture-resistant in addition to the above characteristics.

1910.1030(d)(2)(xiv)

Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and shall be decontaminated as necessary, unless the employer can demonstrate that decontamination of such equipment or portions of such equipment is not feasible.

1910.1030(d)(2)(xiv)(A)

A readily observable label in accordance with paragraph (g)(1)(i)(H) shall be attached to the equipment stating which portions remain contaminated.

1910.1030(d)(2)(xiv)(B)

The employer shall ensure that this information is conveyed to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, prior to handling, servicing, or shipping so that appropriate precautions will be taken.

1910.1030(d)(3)

Personal Protective Equipment --

1910.1030(d)(3)(i)

Provision. When there is occupational exposure, the employer shall provide, at no cost to the employee, appropriate personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

1910.1030(d)(3)(ii)

Use. The employer shall ensure that the employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use personal protective equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgement, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurrences in the future.

1910.1030(d)(3)(iii)

Accessibility. The employer shall ensure that appropriate personal protective equipment in the appropriate sizes is readily accessible at the worksite or is issued to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

1910.1030(d)(3)(iv)

Cleaning, Laundering, and Disposal. The employer shall clean, launder, and dispose of personal protective equipment required by paragraphs (d) and (e) of this standard, at no cost to the employee.

1910.1030(d)(3)(v)

Repair and Replacement. The employer shall repair or replace personal protective equipment as needed to maintain its effectiveness, at no cost to the employee.

1910.1030(d)(3)(vi)

If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as feasible.

1910.1030(d)(3)(vii)

All personal protective equipment shall be removed prior to leaving the work area.

1910.1030(d)(3)(viii)

When personal protective equipment is removed it shall be placed in an appropriately designated area or container for storage, washing, decontamination or disposal.

1910.1030(d)(3)(ix)

Gloves. Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.

1910.1030(d)(3)(ix)(A)

Disposable (single use) gloves such as surgical or examination gloves, shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.

1910.1030(d)(3)(ix)(B)

Disposable (single use) gloves shall not be washed or decontaminated for re-use.

1910.1030(d)(3)(ix)(C)

Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.

1910.1030(d)(3)(ix)(D)

If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:

1910.1030(d)(3)(ix)(D)(1)

Periodically reevaluate this policy;

1910.1030(d)(3)(ix)(D)(2)

Make gloves available to all employees who wish to use them for phlebotomy;

1910.1030(d)(3)(ix)(D)(3)

Not discourage the use of gloves for phlebotomy; and

1910.1030(d)(3)(ix)(D)(4)

Require that gloves be used for phlebotomy in the following circumstances:

1910.1030(d)(3)(ix)(D)(4)(i)

When the employee has cuts, scratches, or other breaks in his or her skin;

1910.1030(d)(3)(ix)(D)(4)(ii)

When the employee judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative source individual; and

1910.1030(d)(3)(ix)(D)(4)(iii)

When the employee is receiving training in phlebotomy.

1910.1030(d)(3)(x)

Masks, Eye Protection, and Face Shields. Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

1910.1030(d)(3)(xi)

Gowns, Aprons, and Other Protective Body Clothing. Appropriate protective clothing such as, but not limited to, gowns, aprons, lab coats, clinic jackets, or similar outer garments shall be worn in occupational exposure situations. The type and characteristics will depend upon the task and degree of exposure anticipated.

1910.1030(d)(3)(xii)

Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated (e.g., autopsies, orthopaedic surgery).

1910.1030(d)(4)

Housekeeping --

1910.1030(d)(4)(i)

General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate written schedule for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

1910.1030(d)(4)(ii)

All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

1910.1030(d)(4)(ii)(A)

Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

1910.1030(d)(4)(ii)(B)

Protective coverings, such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper used to cover equipment and environmental surfaces, shall be removed and replaced as soon as feasible when they become overtly contaminated or at the end of the workshift if they may have become contaminated during the shift.

1910.1030(d)(4)(ii)(C)

All bins, pails, cans, and similar receptacles intended for reuse which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination.

1910.1030(d)(4)(ii)(D)

Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps.

1910.1030(d)(4)(ii)(E)

Reusable sharps that are contaminated with blood or other potentially infectious materials shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

1910.1030(d)(4)(iii)

Regulated Waste --

1910.1030(d)(4)(iii)(A)

Contaminated Sharps Discarding and Containment.

1910.1030(d)(4)(iii)(A)(1)

Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are:

1910.1030(d)(4)(iii)(A)(1)(i)

Closable;

1910.1030(d)(4)(iii)(A)(1)(ii)

Puncture resistant;

1910.1030(d)(4)(iii)(A)(1)(iii)

Leakproof on sides and bottom; and

1910.1030(d)(4)(iii)(A)(1)(iv)

Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard.

1910.1030(d)(4)(iii)(A)(2)

During use, containers for contaminated sharps shall be:

1910.1030(d)(4)(iii)(A)(2)(i)

Easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found (e.g., laundries);

1910.1030(d)(4)(iii)(A)(2)(ii)

Maintained upright throughout use; and

1910.1030(d)(4)(iii)(A)(2)(iii)

Replaced routinely and not be allowed to overfill.

1910.1030(d)(4)(iii)(A)(3)

When moving containers of contaminated sharps from the area of use, the containers shall be:

1910.1030(d)(4)(iii)(A)(3)(i)

Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping;

1910.1030(d)(4)(iii)(A)(3)(ii)

Placed in a secondary container if leakage is possible. The second container shall be:

1910.1030(d)(4)(iii)(A)(3)(ii)(A)

Closable;

1910.1030(d)(4)(iii)(A)(3)(ii)(B)

Constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; and

1910.1030(d)(4)(iii)(A)(3)(ii)(C)

Labeled or color-coded according to paragraph (g)(1)(i) of this standard.

1910.1030(d)(4)(iii)(A)(4)

Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of percutaneous injury.

1910.1030(d)(4)(iii)(B)

Other Regulated Waste Containment --

1910.1030(d)(4)(iii)(B)(1)

Regulated waste shall be placed in containers which are:

1910.1030(d)(4)(iii)(B)(1)(i)

Closable;

1910.1030(d)(4)(iii)(B)(1)(ii)

Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

1910.1030(d)(4)(iii)(B)(1)(iii)

Labeled or color-coded in accordance with paragraph (g)(1)(i) this standard; and

1910.1030(d)(4)(iii)(B)(1)(iv)

Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

1910.1030(d)(4)(iii)(B)(2)

If outside contamination of the regulated waste container occurs, it shall be placed in a second container. The second container shall be:

1910.1030(d)(4)(iii)(B)(2)(i)

Closable;

1910.1030(d)(4)(iii)(B)(2)(ii)

Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

1910.1030(d)(4)(iii)(B)(2)(iii)

Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard; and

1910.1030(d)(4)(iii)(B)(2)(iv)

Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

1910.1030(d)(4)(iii)(C)

Disposal of all regulated waste shall be in accordance with applicable regulations of the United States, States and Territories, and political subdivisions of States and Territories.

1910.1030(d)(4)(iv)

Laundry.

1910.1030(d)(4)(iv)(A)

Contaminated laundry shall be handled as little as possible with a minimum of agitation.

1910.1030(d)(4)(iv)(A)(1)

Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.

1910.1030(d)(4)(iv)(A)(2)

Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard. When a facility utilizes Universal Precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions.

1910.1030(d)(4)(iv)(A)(3)

Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.

1910.1030(d)(4)(iv)(B)

The employer shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate personal protective equipment.

1910.1030(d)(4)(iv)(C)

When a facility ships contaminated laundry off-site to a second facility which does not utilize Universal Precautions in the handling of all laundry, the facility generating the contaminated laundry must place such laundry in bags or containers which are labeled or color-coded in accordance with paragraph (g)(1)(i).

1910.1030(e)

HIV and HBV Research Laboratories and Production Facilities.

1910.1030(e)(1)

This paragraph applies to research laboratories and production facilities engaged in the culture, production, concentration, experimentation, and manipulation of HIV and HBV. It does not apply to clinical or diagnostic laboratories engaged solely in the analysis of blood, tissues, or organs. These requirements apply in addition to the other requirements of the standard.

1910.1030(e)(2)

Research laboratories and production facilities shall meet the following criteria:

1910.1030(e)(2)(i)

Standard Microbiological Practices. All regulated waste shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

1910.1030(e)(2)(ii)

Special Practices.

1910.1030(e)(2)(ii)(A)

Laboratory doors shall be kept closed when work involving HIV or HBV is in progress.

1910.1030(e)(2)(ii)(B)

Contaminated materials that are to be decontaminated at a site away from the work area shall be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area.

1910.1030(e)(2)(ii)(C)

Access to the work area shall be limited to authorized persons. Written policies and procedures shall be established whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work areas and animal rooms.

1910.1030(e)(2)(ii)(D)

When other potentially infectious materials or infected animals are present in the work area or containment module, a hazard warning sign incorporating the universal biohazard symbol shall be posted on all access doors. The hazard warning sign shall comply with paragraph (g)(1)(ii) of this standard.

1910.1030(e)(2)(ii)(E)

All activities involving other potentially infectious materials shall be conducted in biological safety cabinets or other physical-containment devices within the containment module. No work with these other potentially infectious materials shall be conducted on the open bench.

1910.1030(e)(2)(ii)(F)

Laboratory coats, gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms. Protective clothing shall not be worn outside of the work area and shall be decontaminated before being laundered.

1910.1030(e)(2)(ii)(G)

Special care shall be taken to avoid skin contact with other potentially infectious materials. Gloves shall be worn when handling infected animals and when making hand contact with other potentially infectious materials is unavoidable.

1910.1030(e)(2)(ii)(H)

Before disposal all waste from work areas and from animal rooms shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

1910.1030(e)(2)(ii)(I)

Vacuum lines shall be protected with liquid disinfectant traps and high-efficiency particulate air (HEPA) filters or filters of equivalent or superior efficiency and which are checked routinely and maintained or replaced as necessary.

1910.1030(e)(2)(ii)(J)

Hypodermic needles and syringes shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles. Only needle-locking syringes or disposable syringe-needle units (i.e., the needle is integral to the syringe) shall be used for the injection or aspiration of other potentially infectious materials. Extreme caution shall be used when handling needles and syringes. A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use. The needle and syringe shall be promptly placed in a puncture-resistant container and autoclaved or decontaminated before reuse or disposal.

1910.1030(e)(2)(ii)(K)

All spills shall be immediately contained and cleaned up by appropriate professional staff or others properly trained and equipped to work with potentially concentrated infectious materials.

1910.1030(e)(2)(ii)(L)

A spill or accident that results in an exposure incident shall be immediately reported to the laboratory director or other responsible person.

1910.1030(e)(2)(ii)(M)

A biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually or more often if necessary. Personnel shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them.

1910.1030(e)(2)(iii)

Containment Equipment.

1910.1030(e)(2)(iii)(A)

Certified biological safety cabinets (Class I, II, or III) or other appropriate combinations of personal protection or physical containment devices, such as special protective clothing, respirators, centrifuge safety cups, sealed centrifuge rotors, and containment caging for animals, shall be used for all activities with other potentially infectious materials that pose a threat of exposure to droplets, splashes, spills, or aerosols.

1910.1030(e)(2)(iii)(B)

Biological safety cabinets shall be certified when installed, whenever they are moved and at least annually.

1910.1030(e)(3)

HIV and HBV research laboratories shall meet the following criteria:

1910.1030(e)(3)(i)

Each laboratory shall contain a facility for hand washing and an eye wash facility which is readily available within the work area.

1910.1030(e)(3)(ii)

An autoclave for decontamination of regulated waste shall be available.

1910.1030(e)(4)

HIV and HBV production facilities shall meet the following criteria:

1910.1030(e)(4)(i)

The work areas shall be separated from areas that are open to unrestricted traffic flow within the building. Passage through two sets of doors shall be the basic requirement for entry into the work area from access corridors or other contiguous areas. Physical separation of the high-containment work area from access corridors or other areas or activities may also be provided by a double-doored clothes-change room (showers may be included), airlock, or other access facility that requires passing through two sets of doors before entering the work area.

1910.1030(e)(4)(ii)

The surfaces of doors, walls, floors and ceilings in the work area shall be water resistant so that they can be easily cleaned. Penetrations in these surfaces shall be sealed or capable of being sealed to facilitate decontamination.

1910.1030(e)(4)(iii)

Each work area shall contain a sink for washing hands and a readily available eye wash facility. The sink shall be foot, elbow, or automatically operated and shall be located near the exit door of the work area.

1910.1030(e)(4)(iv)

Access doors to the work area or containment module shall be self-closing.

1910.1030(e)(4)(v)

An autoclave for decontamination of regulated waste shall be available within or as near as possible to the work area.

1910.1030(e)(4)(vi)

A ducted exhaust-air ventilation system shall be provided. This system shall create directional airflow that draws air into the work area through the entry area. The exhaust air shall not be recirculated to any other area of the building, shall be discharged to the outside, and shall be dispersed away from occupied areas and air intakes. The proper direction of the airflow shall be verified (i.e., into the work area).

1910.1030(e)(5)

Training Requirements. Additional training requirements for employees in HIV and HBV research laboratories and HIV and HBV production facilities are specified in paragraph (g)(2)(ix).

1910.1030(f)

Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up --

1910.1030(f)(1)

General.

1910.1030(f)(1)(i)

The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident.

1910.1030(f)(1)(ii)

The employer shall ensure that all medical evaluations and procedures including the hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including prophylaxis, are:

1910.1030(f)(1)(ii)(A)

Made available at no cost to the employee;

1910.1030(f)(1)(ii)(B)

Made available to the employee at a reasonable time and place;

1910.1030(f)(1)(ii)(C)

Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional; and

1910.1030(f)(1)(ii)(D)

Provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place, except as specified by this paragraph (f).

1910.1030(f)(1)(iii)

The employer shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.

1910.1030(f)(2)

Hepatitis B Vaccination.

1910.1030(f)(2)(i)

Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

1910.1030(f)(2)(ii)

The employer shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.

1910.1030(f)(2)(iii)

If the employee initially declines hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the employer shall make available hepatitis B vaccination at that time.

1910.1030(f)(2)(iv)

The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer sign the statement in Appendix A.

1910.1030(f)(2)(v)

If a routine booster dose(s) of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) shall be made available in accordance with section (f)(1)(ii).

1910.1030(f)(3)

Post-exposure Evaluation and Follow-up. Following a report of an exposure incident, the employer shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:

1910.1030(f)(3)(i)

Documentation of the route(s) of exposure, and the circumstances under which the exposure incident occurred;

1910.1030(f)(3)(ii)

Identification and documentation of the source individual, unless the employer can establish that identification is infeasible or prohibited by state or local law;

1910.1030(f)(3)(ii)(A)

The source individual's blood shall be tested as soon as feasible and after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, the employer shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented.

1910.1030(f)(3)(ii)(B)

When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.

1910.1030(f)(3)(ii)(C)

Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

1910.1030(f)(3)(iii)

Collection and testing of blood for HBV and HIV serological status;

1910.1030(f)(3)(iii)(A)

The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.

1910.1030(f)(3)(iii)(B)

If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.

1910.1030(f)(3)(iv)

Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service;

1910.1030(f)(3)(v)

Counseling; and

1910.1030(f)(3)(vi)

Evaluation of reported illnesses.

1910.1030(f)(4)

Information Provided to the Healthcare Professional.

1910.1030(f)(4)(i)

The employer shall ensure that the healthcare professional responsible for the employee's Hepatitis B vaccination is provided a copy of this regulation.

1910.1030(f)(4)(ii)

The employer shall ensure that the healthcare professional evaluating an employee after an exposure incident is provided the following information:

1910.1030(f)(4)(ii)(A)

A copy of this regulation;

1910.1030(f)(4)(ii)(B)

A description of the exposed employee's duties as they relate to the exposure incident;

1910.1030(f)(4)(ii)(C)

Documentation of the route(s) of exposure and circumstances under which exposure occurred;

1910.1030(f)(4)(ii)(D)

Results of the source individual's blood testing, if available; and

1910.1030(f)(4)(ii)(E)

All medical records relevant to the appropriate treatment of the employee including vaccination status which are the employer's responsibility to maintain.

1910.1030(f)(5)

Healthcare Professional's Written Opinion. The employer shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

1910.1030(f)(5)(i)

The healthcare professional's written opinion for Hepatitis B vaccination shall be limited to whether Hepatitis B vaccination is indicated for an employee, and if the employee has received such vaccination.

1910.1030(f)(5)(ii)

The healthcare professional's written opinion for post-exposure evaluation and follow-up shall be limited to the following information:

1910.1030(f)(5)(ii)(A)

That the employee has been informed of the results of the evaluation; and

1910.1030(f)(5)(ii)(B)

That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

1910.1030(f)(5)(iii)

All other findings or diagnoses shall remain confidential and shall not be included in the written report.

1910.1030(g)

Medical Recordkeeping. Medical records required by this standard shall be maintained in accordance with paragraph (h)(1) of this section.

1910.1030(g)

Communication of Hazards to Employees --

1910.1030(g)(1)

Labels and Signs --

1910.1030(g)(1)(i)

Labels.

1910.1030(g)(1)(i)(A)

Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in paragraph (g)(1)(i)(E), (F) and (G).

1910.1030(g)(1)(i)(B)

Labels required by this section shall include the following legend:

1910.1030(g)(1)(i)(C)

These labels shall be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.

1910.1030(g)(1)(i)(D)

Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

1910.1030(g)(1)(i)(E)

Red bags or red containers may be substituted for labels.

1910.1030(g)(1)(i)(F)

Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempted from the labeling requirements of paragraph (g).

1910.1030(g)(1)(i)(G)

Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.

1910.1030(g)(1)(i)(H)

Labels required for contaminated equipment shall be in accordance with this paragraph and shall also state which portions of the equipment remain contaminated.

1910.1030(g)(1)(i)(I)

Regulated waste that has been decontaminated need not be labeled or color-coded.

1910.1030(g)(1)(ii)

Signs.

1910.1030(g)(1)(ii)(A)

The employer shall post signs at the entrance to work areas specified in paragraph (e), HIV and HBV Research Laboratory and Production Facilities, which shall bear the following legend:

(Name of the Infectious Agent)
(Special requirements for entering the area)
(Name, telephone number of the laboratory director or other responsible person.)

1910.1030(g)(1)(ii)(B)

These signs shall be fluorescent orange-red or predominantly so, with lettering and symbols in a contrasting color.

1910.1030(g)(2)

Information and Training.

1910.1030(g)(2)(i)

The employer shall train each employee with occupational exposure in accordance with the requirements of this section. Such training must be provided at no cost to the employee and during working hours. The employer shall institute a training program and ensure employee participation in the program.

1910.1030(g)(2)(ii)

Training shall be provided as follows:

1910.1030(g)(2)(ii)(A)

At the time of initial assignment to tasks where occupational exposure may take place;

1910.1030(g)(2)(ii)(B)

At least annually thereafter.

1910.1030(g)(2)(iii)

[Reserved]

1910.1030(g)(2)(iv)

Annual training for all employees shall be provided within one year of their previous training.

1910.1030(g)(2)(v)

Employers shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

1910.1030(g)(2)(vi)

Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

1910.1030(g)(2)(vii)

The training program shall contain at a minimum the following elements:

1910.1030(g)(2)(vii)(A)

An accessible copy of the regulatory text of this standard and an explanation of its contents;

1910.1030(g)(2)(vii)(B)

A general explanation of the epidemiology and symptoms of bloodborne diseases;

1910.1030(g)(2)(vii)(C)

An explanation of the modes of transmission of bloodborne pathogens;

1910.1030(g)(2)(vii)(D)

An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan;

1910.1030(g)(2)(vii)(E)

An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;

1910.1030(g)(2)(vii)(F)

An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;

1910.1030(g)(2)(vii)(G)

Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment;

1910.1030(g)(2)(vii)(H)

An explanation of the basis for selection of personal protective equipment;

1910.1030(g)(2)(vii)(I)

Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;

1910.1030(g)(2)(vii)(J)

Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;

1910.1030(g)(2)(vii)(K)

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;

1910.1030(g)(2)(vii)(L)

Information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident;

1910.1030(g)(2)(vii)(M)

An explanation of the signs and labels and/or color coding required by paragraph (g)(1); and

1910.1030(g)(2)(vii)(N)

An opportunity for interactive questions and answers with the person conducting the training session.

1910.1030(g)(2)(viii)

The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

1910.1030(g)(2)(ix)

Additional Initial Training for Employees in HIV and HBV Laboratories and Production Facilities. Employees in HIV or HBV research laboratories and HIV or HBV production facilities shall receive the following initial training in addition to the above training requirements.

1910.1030(g)(2)(ix)(A)

The employer shall assure that employees demonstrate proficiency in standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to work with HIV or HBV.

1910.1030(g)(2)(ix)(B)

The employer shall assure that employees have prior experience in the handling of human pathogens or tissue cultures before working with HIV or HBV.

1910.1030(g)(2)(ix)(C)

The employer shall provide a training program to employees who have no prior experience in handling human pathogens. Initial work activities shall not include the handling of infectious agents. A progression of work activities shall be assigned as techniques are learned and proficiency is developed. The employer shall assure that employees participate in work activities involving infectious agents only after proficiency has been demonstrated.

1910.1030(h)

Recordkeeping --

1910.1030(h)(1)

Medical Records.

1910.1030(h)(1)(i)

The employer shall establish and maintain an accurate record for each employee with occupational exposure, in accordance with 29 CFR 1910.1020.

1910.1030(h)(1)(ii)

This record shall include:

1910.1030(h)(1)(ii)(A)

The name and social security number of the employee;

1910.1030(h)(1)(ii)(B)

A copy of the employee's hepatitis B vaccination status including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by paragraph (f)(2);

1910.1030(h)(1)(ii)(C)

A copy of all results of examinations, medical testing, and follow-up procedures as required by paragraph (f)(3);

1910.1030(h)(1)(ii)(D)

The employer's copy of the healthcare professional's written opinion as required by paragraph (f)(5); and

1910.1030(h)(1)(ii)(E)

A copy of the information provided to the healthcare professional as required by paragraphs (f)(4)(ii)(B)(C) and (D).

1910.1030(h)(1)(iii)

Confidentiality. The employer shall ensure that employee medical records required by paragraph (h)(1) are:

1910.1030(h)(1)(iii)(A)

Kept confidential; and

1910.1030(h)(1)(iii)(B)

Not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by this section or as may be required by law.

1910.1030(h)(1)(iv)

The employer shall maintain the records required by paragraph (h) for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020.

1910.1030(h)(2)

Training Records.

1910.1030(h)(2)(i)

Training records shall include the following information:

1910.1030(h)(2)(i)(A)

The dates of the training sessions;

1910.1030(h)(2)(i)(B)

The contents or a summary of the training sessions;

1910.1030(h)(2)(i)(C)

The names and qualifications of persons conducting the training; and

1910.1030(h)(2)(i)(D)

The names and job titles of all persons attending the training sessions.

1910.1030(h)(2)(ii)

Training records shall be maintained for 3 years from the date on which the training occurred.

1910.1030(h)(3)

Availability.

1910.1030(h)(3)(i)

The employer shall ensure that all records required to be maintained by this section shall be made available upon request to the Assistant Secretary and the Director for examination and copying.

1910.1030(h)(3)(ii)

Employee training records required by this paragraph shall be provided upon request for examination and copying to employees, to employee representatives, to the Director, and to the Assistant Secretary.

1910.1030(h)(3)(iii)

Employee medical records required by this paragraph shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, to the Director, and to the Assistant Secretary in accordance with 29 CFR 1910.1020.

1910.1030(h)(4)

Transfer of Records. The employer shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h).

1910.1030(h)(5)

Sharps injury log.

1910.1030(h)(5)(i)

The employer shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such manner as to protect the confidentiality of the injured employee. The sharps injury log shall contain, at a minimum:

1910.1030(h)(5)(i)(A)

The type and brand of device involved in the incident,

1910.1030(h)(5)(i)(B)

The department or work area where the exposure incident occurred, and

1910.1030(h)(5)(i)(C)

An explanation of how the incident occurred.

1910.1030(h)(5)(ii)

The requirement to establish and maintain a sharps injury log shall apply to any employer who is required to maintain a log of occupational injuries and illnesses under 29 CFR part 1904.

1910.1030(h)(5)(iii)

The sharps injury log shall be maintained for the period required by 29 CFR 1904.33.

1910.1030(i)

Dates —

1910.1030(i)(1)

Effective Date. The standard shall become effective on March 6, 1992.

1910.1030(i)(2)

The Exposure Control Plan required by paragraph (c) of this section shall be completed on or before May 5, 1992.

1910.1030(i)(3)

Paragraphs (g)(2) Information and Training and (h) Recordkeeping of this section shall take effect on or before June 4, 1992.

1910.1030(i)(4)

Paragraphs (d)(2) Engineering and Work Practice Controls, (d)(3) Personal Protective Equipment, (d)(4) Housekeeping, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, and (g)(1) Labels and Signs of this section, shall take effect July 6, 1992.

[56 FR 64004, Dec. 06, 1991, as amended at 57 FR 12717, April 13, 1992; 57 FR 29206, July 1, 1992; 61 FR 5507, Feb. 13, 1996; 66 FR 5325 Jan., 18, 2001; 71 FR 16672 and 16673, April 3, 2006; 73 FR 75586, Dec. 12, 2008; 76 FR 33608, June 8, 2011; 76 FR 80740, Dec. 27, 2011; 77 FR 19934, April 3, 2012]

Next Standard (1910.1030 App A)

Regulations (Standards - 29 CFR) - Table of Contents

ADDITIONAL TRAINING SIGN-IN SHEET

Item Description: _____

Trainer: _____

Department: _____ Location: _____

Employee Name	Signature

ADDITIONAL EDUCATION AND AWARENESS MATERIALS

Include any Additional Education and Awareness Materials after this appendix title divider.

Sharps Safety begins with you.

BE PREPARED. Anticipate injury risks. Prepare the patient and organize the work area with prevention in mind.

BE AWARE. Keep exposed sharps in view and under your control. Visually inspect for unprotected sharps in trays, beds and waste receptacles.

DISPOSE WITH CARE. Be responsible for the sharps you use. Activate safety features. Dispose in sharps containers.

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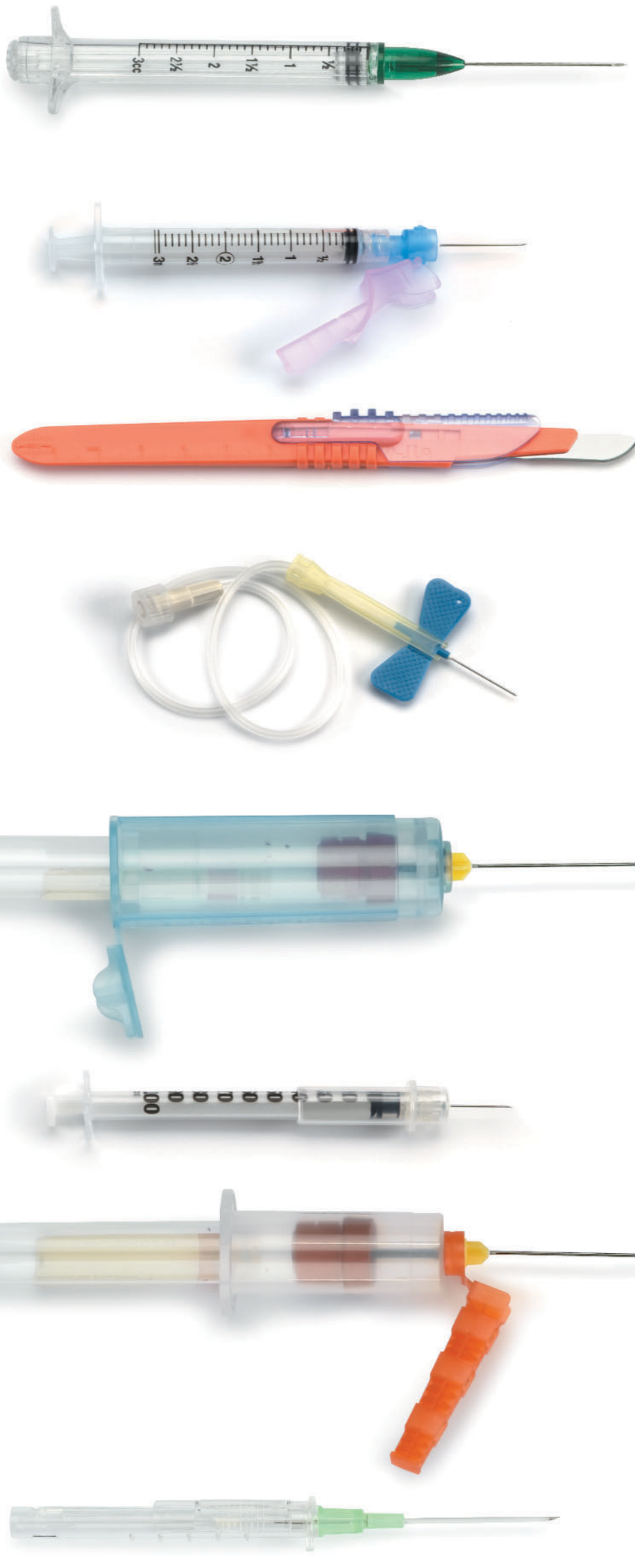
DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

sharps safety
BE SHARP. BE SAFE.

www.cdc.gov/sharpssafety

NOW YOU SEE IT.



NOW YOU DON'T.

PROTECT YOURSELF AND OTHERS- USE SHARPS WITH SAFETY FEATURES

BE PREPARED. Anticipate injury risks and prepare the patient and work area with prevention in mind. Use a sharps device with safety features whenever it is available.

BE AWARE. Learn how to use the safety features on sharps devices.

DISPOSE WITH CARE. Engage safety features immediately after use and dispose in sharps safety containers.

Support for printing this poster came from an unrestricted educational grant provided by Safety Institute, Premier, Inc.

WHAT YOU CAN DO TO HELP PREVENT AN INJURY

Be Prepared

- Organize your work area with appropriate sharps disposal containers within reach
- Work in well-lit areas
- Receive training on how to use sharps safety devices
- Before handling sharps, assess any hazards–get help if needed

Be Aware

- Keep the exposed sharp in view
- Be aware of people around you
- Stop if you feel rushed or distracted
- Focus on your task
- Avoid hand-passing sharps and use verbal alerts when moving sharps
- Watch for sharps in linen, beds, on the floor, or in waste containers

Dispose of Sharps with Care

- Be responsible for the device you use
- Activate safety features after use
- Dispose of devices in rigid sharps containers; do not overfill containers
- Keep fingers away from the opening of sharps containers

A FACILITY'S "CULTURE OF SAFETY" IS IMPORTANT FOR SHARPS INJURY PREVENTION

FACILITIES THAT VALUE SAFETY HAVE FEWER SHARPS INJURIES.

Characteristics of such facilities include:

- Sharps injury prevention is a prominent organizational priority
- Management and staff have a shared commitment to prevent sharps injuries
- Staff members are encouraged to report sharps injuries promptly
- Individual safety accountability is promoted

For more information:
www.cdc.gov/sharpssafety

SHARPS SAFETY *for* HEALTHCARE PROFESSIONALS

YOU MAY BE AT RISK

Every day, more than 1,000 healthcare workers in the hospital setting are injured with a needle or other sharp device.

MOST HEALTHCARE WORKERS ARE AT RISK.

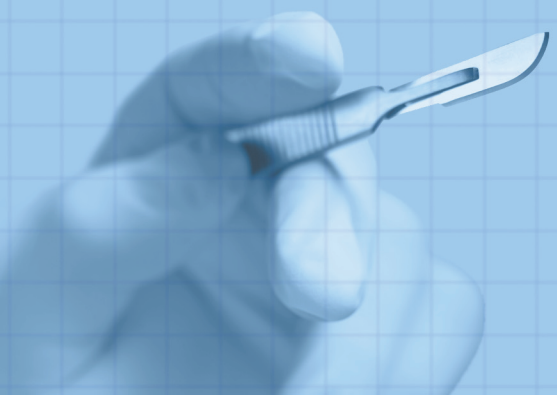
What are your chances of infection from a contaminated sharps injury?

HEPATITIS B: 1 in 5
(if you're not vaccinated)

HEPATITIS C: 1 in 50

HIV: 1 in 300

After getting first aid, report sharps injuries. Report other sharp hazards you observe. You may help prevent someone else from being injured.



SHARPS SAFETY DEVICES CAN REDUCE INJURIES

Types of sharps safety devices that can be used to protect workers:

- Needle-free IV systems
- Sheathed, blunting, or retractable needles
- Blood transfer adapters
- Non-breakable plastic vacuum and capillary tubes
- Sharps disposal containers

GET INVOLVED IN SELECTING AND EVALUATING THE DEVICES YOU USE.

Employers are required to involve frontline workers in selecting devices with safety features.

Choose devices that:

- Come attached with safety features that can not be removed
- Are easy to use with clear instructions
- Do not interfere with patient care
- Can be engaged with one hand
- Enable hands to remain behind the exposed sharp
- Are visibly different when activated

INJURIES CAN OCCUR BEFORE, DURING, OR AFTER USE OF A SHARP

Examples of High-risk situations:

During patient care:

- Inserting or withdrawing a needle
- Inserting needles into IV lines
- Handling or passing sharps

Immediately after sharp use:

- Recapping a used needle
- Transferring or processing specimens

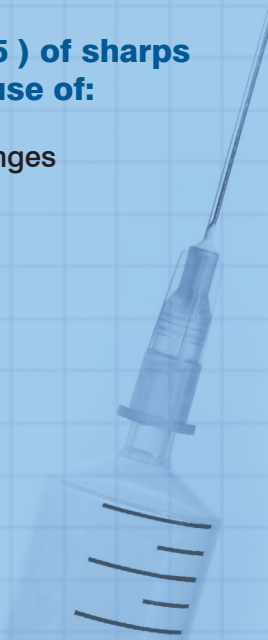
During and after sharp disposal:

- Disposing of sharps into proper containers
- Cleaning up after a procedure
- Sharps left on floors and tables, or found in linen, beds, or waste containers

In hospitals, 80% (4 in 5) of sharps injuries are due to the use of:

- Hypodermic needles/syringes
- Suture needles
- Winged-steel (butterfly-type) needles
- Blood collection needles
- Scalpels
- IV stylets

Many other devices, including glass, also cause sharps injuries.

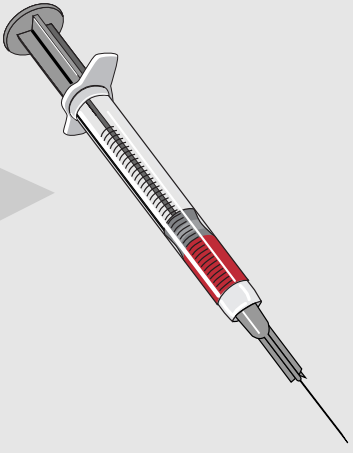


National Institute for Occupational Safety and Health

NIOSH

What *Every Worker Should Know*

How to Protect Yourself From Needlestick Injuries



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Public Health Service
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DEPARTMENT OF HEALTH

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

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Penalty for Private Use $300

DHHS (NIOSH) Publication No. 2000-135

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 injures 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: pubstaft@cdc.gov
Web site: **www.cdc.gov/niosh**

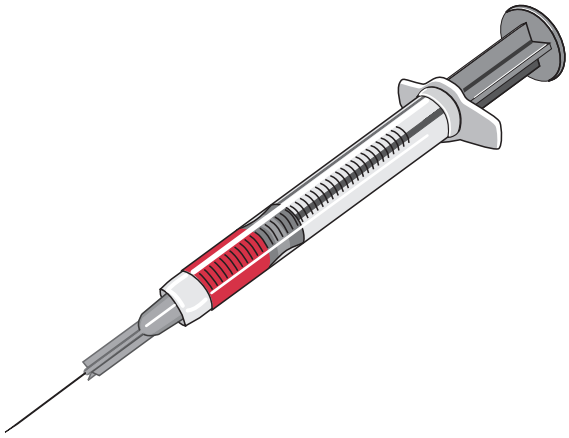
Needlestick injuries can lead to serious or fatal infections. Health care workers who use or may be exposed to needles are at increased risk of needlestick injury. All workers who are at risk should take steps to protect themselves from this significant health hazard.

National Institute for Occupational Safety and Health

NIOSH

ALERT

Preventing Needlestick Injuries in Health Care Settings



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ORDERING INFORMATION

To receive documents or more information about occupational safety and health topics, contact the National Institute for Occupational Safety and Health (NIOSH) at

NIOSH—Publications Dissemination
4676 Columbia Parkway
Cincinnati, OH 45226–1998

Telephone: 1–800–35–NIOSH (1–800–356–4674)
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DHHS (NIOSH) Publication No. 2000–108

November 1999

NIOSH ALERT

Preventing Needlestick Injuries in Health Care Settings

WARNING!

Health care workers who use or may be exposed to needles are at increased risk of needlestick injury. Such injuries can lead to serious or fatal infections with bloodborne pathogens such as hepatitis B virus, hepatitis C virus, or human immunodeficiency virus (HIV).

Employers of health care workers should implement the use of improved engineering controls to reduce needlestick injuries:

- Eliminate the use of needles where safe and effective alternatives are available.
- Implement the use of devices with safety features and evaluate their use to determine which are most effective and acceptable.

Needlestick injuries can best be reduced when the use of improved engineering controls is incorporated into a comprehensive program involving workers. Employers should implement the following program elements:

- Analyze needlestick and other sharps-related injuries in your workplace to identify hazards and injury trends.
- Set priorities and strategies for prevention by examining local and national information about risk factors for needlestick injuries and successful intervention efforts.
- Ensure that health care workers are properly trained in the safe use and disposal of needles.
- Modify work practices that pose a needlestick injury hazard to make them safer.
- Promote safety awareness in the work environment.
- Establish procedures for and encourage the reporting and timely followup of *all* needlestick and other sharps-related injuries.
- Evaluate the effectiveness of prevention efforts and provide feedback on performance.

Please tear out and post. Distribute copies to workers. See back of sheet to order complete Alert.

Health care workers should take the following steps to protect themselves and their fellow workers 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.
- Use devices with safety features provided by your employer.
- Avoid recapping needles.
- Plan for safe handling and disposal before beginning any procedure using needles.
- Dispose of used needles promptly in appropriate sharps disposal containers.
- Report all needlestick and other sharps-related injuries promptly to ensure that you receive appropriate followup care.
- Tell your employer about hazards from needles that you observe in your work environment.
- Participate in bloodborne pathogen training and follow recommended infection prevention practices, including 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:

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U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

NIOSH ALERT

Preventing Needlestick Injuries in Health Care Settings

WARNING!

Health care workers who use or may be exposed to needles are at increased risk of needlestick injury. Such injuries can lead to serious or fatal infections with bloodborne pathogens such as hepatitis B virus, hepatitis C virus, or human immunodeficiency virus (HIV).

The National Institute for Occupational Safety and Health (NIOSH) requests assistance in preventing needlestick injuries among health care workers.* These injuries are caused by needles such as hypodermic needles, blood collection needles, intravenous (IV) stylets, and needles used to connect parts of IV delivery systems. These injuries may cause a number of serious and potentially fatal infections with bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV)—the virus that causes acquired immunodeficiency syndrome (AIDS).

These injuries can be avoided by eliminating the unnecessary use of needles, using devices with safety features, and promoting education and safe work practices for handling needles and related systems. These measures should be part of a comprehensive program to prevent the transmission of bloodborne pathogens.

This Alert provides current scientific information about the risk of needlestick injury and the transmission of bloodborne pathogens to health care workers. The document focuses on needlestick injuries as a key element in a broader effort to prevent all sharps-related injuries and associated bloodborne infections. The document describes five cases of health care workers with needlestick-related infections and presents intervention strategies for reducing these risks. Because many needleless devices and safer needle devices have been recently introduced and the field is rapidly evolving, the Alert briefly describes an approach for evaluating these devices.

*In this document, the term *health care worker* includes all workers in the health care setting who use or may be exposed to needles and other sharp devices that may contain blood or other potentially infectious materials. Health care workers include physicians, nurses, laboratory and dental personnel, pre-hospital care providers, and housekeeping, laundry, and maintenance workers.

NIOSH requests that workers, employers, manufacturers, editors of professional journals, safety and health officials, and labor unions implement the recommendations in this Alert and bring them to the attention of all health care workers who use or may be exposed to needles in the workplace.

BACKGROUND

More than 8 million health care workers in the United States work in hospitals and other health care settings. Precise national data are not available on the annual number of needlestick and other percutaneous injuries among health care workers; however, estimates indicate that 600,000 to 800,000 such injuries occur annually [Henry and Campbell 1995; EPINet 1999]. About half of these injuries go unreported [Roy and Robillard 1995; EPINet 1999; CDC 1997a; Osborn et al. 1999]. Data from the EPINet system suggest that at an average hospital, workers incur approximately 30 needlestick injuries per 100 beds per year [EPINet 1999].

Most reported needlestick injuries involve nursing staff; but laboratory staff, physicians, housekeepers, and other health care workers are also injured. Some of these injuries expose workers to bloodborne pathogens that can cause infection. The most important of these pathogens are HBV, HCV, and HIV. Infections with each of these pathogens are potentially life threatening—and preventable.

The emotional impact of a needlestick injury can be severe and long lasting, even when a serious infection is not transmitted. This impact is particularly severe when the injury involves exposure to HIV. In one study of 20 health care workers with an HIV exposure, 11 reported acute severe distress, 7 had persistent moderate distress, and 6 quit their jobs as a result of the exposure [Henry et al. 1990]. Other stress reactions requiring counseling have also been reported [Armstrong et al. 1995]. Not knowing the infection status of the source patient can accentuate the health care worker's stress. In addition to the exposed health care worker, colleagues and family members may suffer emotionally.

HIV

Between 1985 and June 1999, cumulative totals of 55 "documented"[†] cases and 136 "possible"[‡] cases of occupational HIV transmission to U.S. health care workers were reported to the Centers for Disease Control and Prevention (CDC) [CDC 1998a]. Most involved nurses and laboratory technicians. Percutaneous injury (e.g., needlestick) was associated with 49 (89%) of the documented transmissions. Of these, 44 involved hollow-bore needles, most of which were used for blood collection or insertion of an IV catheter.

HIV infection is a complex disease that can be associated with many symptoms. The virus attacks part of the body's immune system, eventually leading to severe infections and other complications—a condition known as AIDS. Despite current therapies

[†]Health care workers who had documented HIV after occupational exposure or had other laboratory evidence of occupational HIV infection.

[‡]Health care workers who were investigated and (1) had no identifiable behavioral or transfusion risks, (2) reported having had percutaneous or mucocutaneous occupational exposures to blood or body fluids or to laboratory solutions containing HIV, but (3) had no documented HIV seroconversion resulting from a specific occupational exposure.

that delay the progression of HIV disease, most health care workers who become infected with HIV are likely to eventually develop AIDS and die.

HBV

Information from national hepatitis surveillance is used to estimate the number of HBV infections in health care workers. In 1995, an estimated 800 health care workers became infected with HBV [CDC unpublished data]. This figure represented a 95% decline from the 17,000 new infections estimated in 1983. The decline was largely due to the widespread immunization of health care workers with the hepatitis B vaccine and the use of universal precautions and other measures required by the Occupational Safety and Health Administration (OSHA) bloodborne pathogens standard [29 CFR[§] 1910.1030].

About one-third to one-half of persons with acute HBV infection develop symptoms of hepatitis such as jaundice, fever, nausea, and abdominal pain. Most acute infections resolve, but 5% to 10% of patients develop chronic infection with HBV that carries an estimated 20% lifetime risk of dying from cirrhosis and 6% risk of dying from liver cancer [Shapiro 1995].

HCV

Hepatitis C virus infection is the most common chronic bloodborne infection in the United States, affecting approximately 4 million people [CDC 1998b]. Although the prevalence of HCV infection among health care workers is similar to that in the general population (1% to 2%) [CDC 1998b], health care workers clearly have an increased occupational risk for HCV infection. In a study that evaluated risk factors for infection, a history of unintentional needlestick injury was independently associated with HCV infection [Polish et al. 1993]. The number of health care workers who have acquired HCV occupationally is not known. However, of the total acute HCV infections that have occurred annually (ranging from 100,000 in 1991 to 36,000 in 1996), 2% to 4% have been in health care workers exposed to blood in the workplace [Alter 1995, 1997; CDC unpublished data].

HCV infection often occurs with no symptoms or only mild symptoms. But unlike HBV, chronic infection develops in 75% to 85% of patients, with active liver disease developing in 70%. Of the patients with active liver disease, 10% to 20% develop cirrhosis, and 1% to 5% develop liver cancer [CDC 1998b].

RISK OF INFECTION AFTER A NEEDLESTICK INJURY

After a needlestick exposure to an infected patient, a health care worker's risk of infection depends on the pathogen involved, the immune status of the worker, the severity of the needlestick injury, and the availability and use of appropriate postexposure prophylaxis.

HIV

To estimate the rate of HIV transmission, data were combined from more than 20 worldwide prospective studies of health care workers exposed to HIV-infected blood through a percutanous injury. In all, 21 infections followed 6,498 exposures for an *average* transmission rate of 0.3% per

[§]*Code of Federal Regulations*. See CFR in references.

injury [Gerberding 1994; Ippolito et al. 1999]. A retrospective case-control study of health care workers who had percutaneous exposures to HIV found that the risk of HIV transmission was increased when the worker was exposed to a larger quantity of blood from the patient, as indicated by (1) a visibly bloody device, (2) a procedure that involved placing a needle in a patient's vein or artery, or (3) a deep injury [Cardo et al. 1997]. Preliminary data suggest that such high-risk needlestick injuries may have a substantially greater risk of disease transmission per injury [Bell 1997].

Post-exposure prophylaxis for HIV is recommended for health care workers occupationally exposed to HIV under certain circumstances [CDC 1998c]. Limited data suggest that such prophylaxis may considerably reduce the chance of becoming infected with HIV [Cardo et al. 1997]. However, the drugs used for HIV post-exposure prophylaxis have many adverse side effects [CDC 1998c]. Currently no vaccine exists to prevent HIV infection, and no treatment exists to cure it [CDC 1998d].

HBV

The rate of HBV transmission to susceptible health care workers ranges from 6% to 30% after a single needlestick exposure to an HBV-infected patient [CDC 1997b]. However, such exposures are a risk only for health care workers who are not immune to HBV. Health care workers who have antibodies to HBV either from pre-exposure vaccination or prior infection are not at risk. In addition, if a susceptible worker is exposed to HBV, post-exposure prophylaxis with hepatitis B immune globulin and initiation of hepatitis B vaccine is more than 90% effective in preventing HBV infection.

HCV

Prospective studies of health care workers exposed to HCV through a needlestick or other percutaneous injury have found that the incidence of anti-HCV seroconversion (indicating infection) averages 1.8% (range, 0% to 7%) per injury [Alter 1997; CDC 1998b]. Currently no vaccine exists to prevent HCV infection, and neither immunoglobulin nor antiviral therapy is recommended as post-exposure prophylaxis [CDC 1998b]. However, recommendations for treatment of early infections are rapidly evolving. Health care workers with known exposure should be monitored for seroconversion and referred for medical follow-up if seroconversion occurs.

Summary

Although exposure to HBV poses a high risk for infection, administration of pre-exposure vaccination or post-exposure prophylaxis to workers can dramatically reduce this risk. Such is not the case with HCV and HIV. Preventing the needlestick injury is the best approach to preventing these diseases in health care workers, and it is an important part of any bloodborne pathogen prevention program in the workplace.

HOW DO NEEDLESTICK INJURIES OCCUR?

Devices Associated with Needlestick Injuries

Health care workers use many types of needles and other sharp devices to

provide patient care. However, data from hospitals participating in the CDC National Surveillance System for Hospital Health Care Workers (NaSH) and from hospitals included in the EPINet research database show that only a few needles and other sharp devices are associated with the majority of injuries [International Health Care Worker Safety Center 1997; EPINet 1999; CDC unpublished data 1999]. Of nearly 5,000 percutaneous injuries reported by hospitals participating in NaSH between June 1995 and July 1999, 62% were associated with hollow-bore needles—primarily hypodermic needles attached to disposable syringes (29%) and winged-steel (butterfly-type) needles (13%). Figure 1 shows the extent to which these and other sharp devices contributed to the burden of percutaneous injuries in NaSH hospitals. Data from hospitals participating in EPINet show a similar distribution of injuries by device type [EPINet 1999].

Activities Associated with Needlestick Injuries

Whenever a needle or other sharp device is exposed, injuries can occur. Data from NaSH show that approximately 38% of percutaneous injuries occur during use and 42% occur after use and before disposal. Causes of percutaneous injuries with hollow-bore needles are shown in Figure 2.

The circumstances leading to a needlestick injury depend partly on the type and design of the device used. For example, needle devices that must be taken apart or manipulated after use (e.g., prefilled cartridge syringes and phlebotomy needle/vacuum tube assemblies) are an obvious hazard and have been associated with increased injury rates [Jagger et al. 1988]. In addition, needles attached to a length of flexible tubing (e.g., winged-steel needles and needles attached to IV tubing) are sometimes difficult to place in sharps containers and thus present another injury hazard. Injuries involving needles attached to IV tubing may occur when a health care worker inserts or withdraws a needle from an IV port or tries to temporarily remove the needlestick hazard by inserting the needle into a drip chamber, IV port or bag, or even bedding.

In addition to risks related to device characteristics, needlestick injuries have been related to certain work practices such as

- recapping,
- transferring a body fluid between containers, and
- failing to properly dispose of used needles in puncture-resistant sharps containers.

Past studies of needlestick injuries have shown that 10% to 25% occurred when recapping a used needle [Ruben et al. 1983; Krasinski et al. 1987; McCormick and Maki 1981; McCormick et al. 1991; Yassi and McGill 1991]. Although recapping by hand has been discouraged for some time and is prohibited under the OSHA bloodborne pathogens standard [29 CFR 1910.1030] unless no alternative exists, 5% of needlestick injuries in NaSH hospitals are still related to this practice (Figure 2). Injury may occur when a health care worker attempts to transfer blood or other body fluids from a syringe to a specimen container (such as a vacuum tube) and misses the target. Also, if used needles or other sharps are left in the work area or are discarded in a sharps container that is not puncture resistant, a needlestick injury may result.

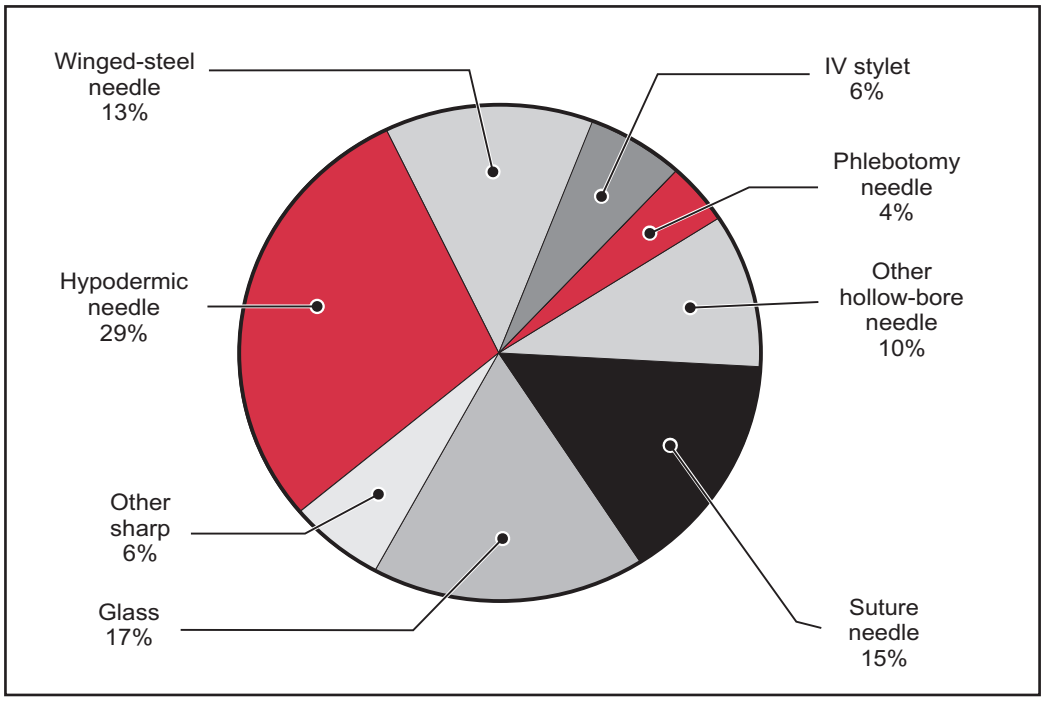

Figure 1. Hollow-bore needles and other devices associated with percutaneous injuries in NaSH hospitals, by % total percutaneous injuries (n=4,951), June 1995–July 1999. (Source: CDC [1999].)

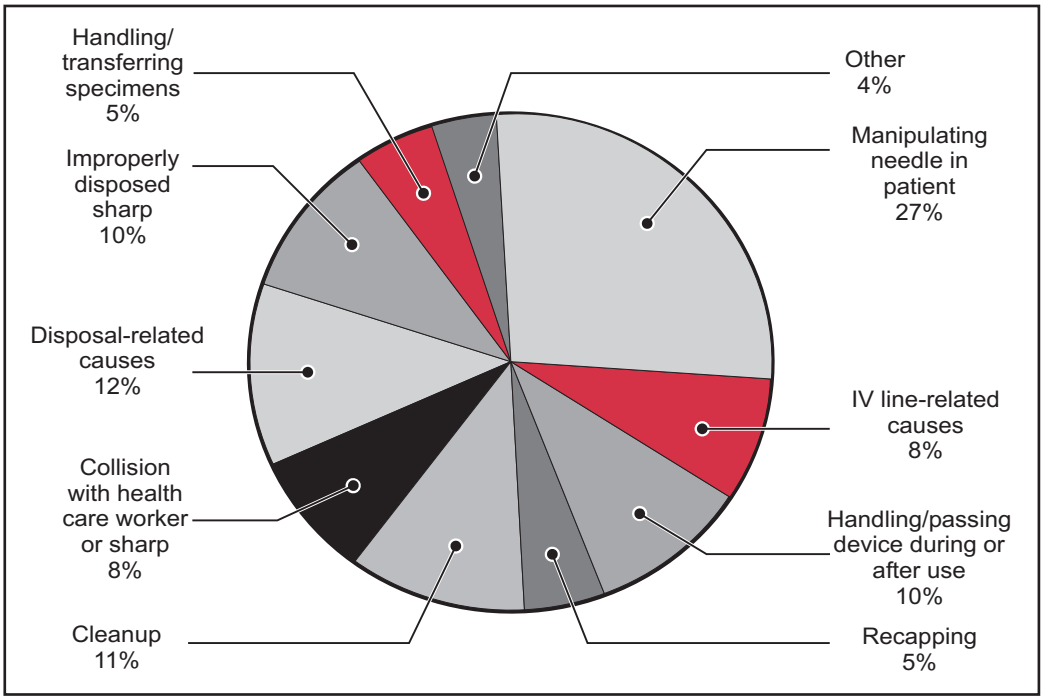

Figure 2. Causes of percutaneous injuries with hollow-bore needles in NaSH hospitals, by % total percutaneous injuries (n=3,057), June 1995–July 1999. (Source: CDC [1999].)

OSHA, FDA, AND STATE REGULATIONS**

OSHA

The current Federal standard for addressing needlestick injuries among health care workers is the OSHA bloodborne pathogens standard [29 CFR 1910.1030; 56 Fed. Reg.†† 64004 (1991)], which has been in effect since 1992. The standard applies to all occupational exposures to blood or other potentially infectious materials. Notable elements of this standard require the following:

- A written exposure control plan designed to eliminate or minimize worker exposure to bloodborne pathogens
- Compliance with universal precautions (an infection control principle that treats all human blood and other potentially infectious materials as infectious)
- Engineering controls and work practices to eliminate or minimize worker exposure
- Personal protective equipment (if engineering controls and work practices do not eliminate occupational exposures)
- Prohibition of bending, recapping, or removing contaminated needles and other sharps unless such an act is required by a specific procedure or has no feasible alternative
- Prohibition of shearing or breaking contaminated needles (OSHA defines *contaminated* as the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface)
- Free hepatitis B vaccinations offered to workers with occupational exposure to bloodborne pathogens
- Worker training in appropriate engineering controls and work practices
- Post-exposure evaluation and followup, including post-exposure prophylaxis when appropriate

OSHA also intends to act to reduce the number of injuries that health care workers receive from needles and other sharp medical objects [OSHA 1999a]. First, the agency has revised the compliance directive (guidance to be used in the field) accompanying its 1992 bloodborne pathogens standard [29 CFR 1910.1030] to reflect newer and safer technologies now available and to increase the employer's responsibility to evaluate and use effective, safer technologies [OSHA 1999b]. Second, the agency has proposed a requirement in the revised recordkeeping rule that all injuries resulting from contaminated needles and sharps be recorded on OSHA logs used by employers to record injuries and illnesses. Finally, OSHA will take steps to amend its bloodborne pathogens standard by placing needlestick and sharps injuries on its regulatory agenda.

FDA

Under the regulations of the Food and Drug Administration (FDA) application clearance process [FDA 1995], the manufacturers of

**Because of recent changes and pending legislation in the area of needlestick injury prevention, readers are urged to check with current Federal as well as State regulations.

††*Federal Register*. See Fed. Reg. in references.

medical devices (including needles used in patient care) must meet requirements for appropriate registration and for listing, labeling, and good manufacturing practices for design and production. The process for receiving clearance or approval to market a device requires device manufacturers to (1) demonstrate that a new device is substantially equivalent to a legally marketed device or (2) document the safety and effectiveness of the new device for patient care through a more involved premarket approval process. FDA has also released two advisories pertaining to sharps and the risk of bloodborne pathogen transmission in the health care setting [FDA 1992; FDA et al. 1999].

State Regulations

Currently, three States have adopted and more than two dozen are considering legislation to require additional regulatory actions addressing bloodborne pathogen exposures to health care workers. The recent California standard [State of California 1998] has several requirements that go beyond those currently required by OSHA. These requirements include stronger language for the use of needleless systems for certain procedures or (where needleless systems are not available) the use of needles with engineered sharps injury protection for certain procedures.

CASE REPORTS

The following case reports briefly describe the experiences of five health care workers who developed serious infections after occupational exposures to bloodborne pathogens. Their cases illustrate a number of the preventable hazardous conditions and practices that can lead to needlestick injuries.

Case 1

A hospitalized patient with AIDS became agitated and tried to remove the intravenous (IV) catheters in his arm. Several hospital staff members struggled to restrain the patient. During the struggle, an IV infusion line was pulled, exposing the connector needle that was inserted into the access port of the IV catheter. A nurse at the scene recovered the connector needle at the end of the IV line and was attempting to reinsert it when the patient kicked her arm, pushing the needle into the hand of a second nurse. The nurse who sustained the needlestick injury tested negative for HIV that day, but she tested HIV positive several months later [American Health Consultants 1992a].

Case 2

A physician was drawing blood from a patient in an examination room of an HIV clinic. Because the room had no sharps disposal container, she recapped the needle using the one-handed technique. While the physician was sorting waste materials from lab materials, the cap fell off the phlebotomy needle, which subsequently penetrated her right index finger. The physician's baseline HIV test was negative. She began post-exposure prophylaxis with zidovudine but discontinued it after 10 days because of adverse side effects. Approximately 2 weeks after the needlestick, the physician developed flu-like symptoms consistent with HIV infection. She was found to be seropositive for HIV when tested 3 months after the needlestick exposure [American Health Consultants 1992b].

Case 3

After performing phlebotomy on a patient with AIDS, a health care worker sustained a deep needlestick injury with the used phlebotomy needle. Blood from the collection tube also spilled into the space between the wrist and cuff of the health care worker's gloves, contaminating her chapped hands. The health care worker removed the gloves and washed her hands immediately. She had a negative baseline HIV test and refused zidovudine prophylaxis. Because her patient was not known to have HCV infection and did not have clinical evidence of liver disease, the health care worker did not receive baseline testing for exposure to HCV. Eight months after the incident, the health care worker was hospitalized with acute hepatitis. She was found to be seropositive for HIV 9 months after the incident. Sixteen months after the incident, she tested positive for anti-HCV antibodies and was diagnosed with chronic HCV infection. Her clinical condition continued to deteriorate, and she died 28 months after the needlestick injury [Ridzon et al. 1997].

Case 4

During bronchoscopy to determine the cause of shortness of breath in a patient infected with HBV, a health care worker sustained a percutaneous injury with a 25-gauge needle while extracting tissue from biopsy forceps. The worker did not receive post-exposure prophylaxis with hepatitis B immune globulin or hepatitis B vaccine. Approximately 15 weeks after the needlestick injury, the worker noted fatigue, malaise, and jaundice. Later, he was found to have abnormal liver enzymes and a positive test for hepatitis B surface antigen, consistent with acute hepatitis B infection. The patient who underwent bronchoscopy was diagnosed with *Pneumocystis carinii* pneumonia and died 8 months later after he was diagnosed with disseminated Kaposi's sarcoma and overwhelming opportunistic infection. The injured worker had an uncomplicated medical course, and his liver enzymes and his health eventually returned to normal. He later tested negative for hepatitis B surface antigen and positive for hepatitis B surface antibody, indicating recovery from his HBV infection. On followup 15 months after the needlestick injury, the worker also tested HIV negative; serum from the deceased patient was not available for antibody testing [Gerberding et al 1985].

Case 5

In 1972, a nurse sustained a needlestick injury to her finger while removing a hypodermic needle from a patient's arm. At the time of the injury, the source patient had apparent acute non-A, non-B hepatitis. The nurse developed hepatitis 6 weeks after the needlestick injury. Her liver enzymes remained elevated for nearly a year. Later examination of serum samples from the nurse and the source patient showed that both persons were infected with HCV. The initial serum sample from the nurse in 1972 was negative for anti-HCV antibody, but the sample obtained 6 weeks after the needlestick injury was seropositive. Although the nurse was clinically well at the time of the report, she remained seropositive for HCV [Seeff 1991].

USE OF IMPROVED ENGINEERING CONTROLS IN A PREVENTION STRATEGY

Comprehensive Programs to Prevent Needlestick Injuries

Safety and health issues can best be addressed in the setting of a comprehensive prevention program that considers all aspects of the work environment and that has employee involvement as well as management commitment. Implementing the use of improved engineering controls is one component of such a comprehensive program. Since many devices with needlestick prevention features are new, this section primarily addresses their use, including desirable characteristics, examples, and data supporting their effectiveness. However, other prevention strategy factors that must be addressed include modification of hazardous work practices, administrative changes to address needle hazards in the environment (e.g., prompt removal of filled sharps disposal boxes), safety education and awareness, feedback on safety improvements, and action taken on continuing problems. Several authors have noted the importance of a comprehensive approach [Krasinski et al. 1987; Hanrahan and Reutter 1997; DeJoy et al. 1995; Ramos-Gomez et al. 1997; Gershon et al. 1995]. The critical role of appropriate training has been emphasized by several recent reports of increased patient bloodstream infections associated with improper care of needleless IV systems, primarily in the home health care setting [Cookson et al. 1998; Danzig et al. 1995; Do et al. 1999; Kellerman et al. 1996]. These data emphasize the need for patient safety surveillance and thorough training as well as occupational injury surveillance when implementing the use of a new medical device.

Case Study of a Successful Comprehensive Prevention Program

The value of a comprehensive approach is illustrated by its success in a recent report by Dale et al. [1998]. Between 1993 and 1996, the phlebotomy service at a major institution decreased the needlestick injury rate among its 200 full-time phlebotomists from 1.5 to 0.2 per 10,000 venipunctures performed. In comparison, a national survey from 1990 to 1992 found a median needlestick injury rate of about 0.94 per 10,000 venipunctures [Howanitz and Schifman 1994]. A retrospective review of the events contributing to the success of the phlebotomy service included changes in worker education and work practices, the implementation of devices with safety features, and encouragement of injury reporting. These interventions as well as the implementation of CDC published guidelines and the OSHA bloodborne pathogens standard were associated with the observed steady decline in the injury rate. The authors noted that an important factor contributing to this success was a thorough understanding of the injuries that occurred among their staff.

Desirable Characteristics of Devices with Safety Features

Improved engineering controls are often among the most effective approaches to reducing occupational hazards and therefore are an important element of a needlestick prevention program. Such controls include eliminating the unnecessary use of needles and implementing devices with safety features. A number of sources have identified the desirable characteristics of safety devices [OSHA 1999c;

FDA 1992; Jagger et al. 1988; Chiarello 1995; Quebbeman and Short 1995; Pugliese 1998; Fisher 1999; ECRI 1999]. These characteristics include the following:

- The device is needleless.
- The safety feature is an integral part of the device.
- The device preferably works passively (i.e., it requires no activation by the user). If user activation is necessary, the safety feature can be engaged with a single-handed technique and allows the worker's hands to remain behind the exposed sharp.
- The user can easily tell whether the safety feature is activated.
- The safety feature cannot be deactivated and remains protective through disposal.
- The device performs reliably.
- The device is easy to use and practical.
- The device is safe and effective for patient care.

Although each of these characteristics is desirable, some are not feasible, applicable or available for certain health care situations. For example, needles will always be necessary where alternatives for skin penetration are not available. Also, a safety feature that requires activation by the user might be preferable to one that is passive in some cases. Each device must be considered on its own merit and ultimately on its ability to reduce workplace injuries. The desirable characteristics listed here should thus serve only as a guideline for device design and selection.

Examples of Safety Device Designs

Figure 3 shows examples of syringes with safety features. These and other examples of safety device designs are listed as follows:

- Needleless connectors for IV delivery systems (e.g., blunt cannula for use with prepierced ports and valved connectors that accept tapered or luer ends of IV tubing)
- Protected needle IV connectors (e.g., the IV connector needle is permanently recessed in a rigid plastic housing that fits over IV ports)
- Needles that retract into a syringe or vacuum tube holder
- Hinged or sliding shields attached to phlebotomy needles, winged-steel needles, and blood gas needles
- Protective encasements to receive an IV stylet as it is withdrawn from the catheter
- Sliding needle shields attached to disposable syringes and vacuum tube holders
- Self-blunting phlebotomy and winged-steel needles (a blunt cannula seated inside the phlebotomy needle is advanced beyond the needle tip before the needle is withdrawn from the vein—see Figure 3)
- Retractable finger/heel-stick lancets

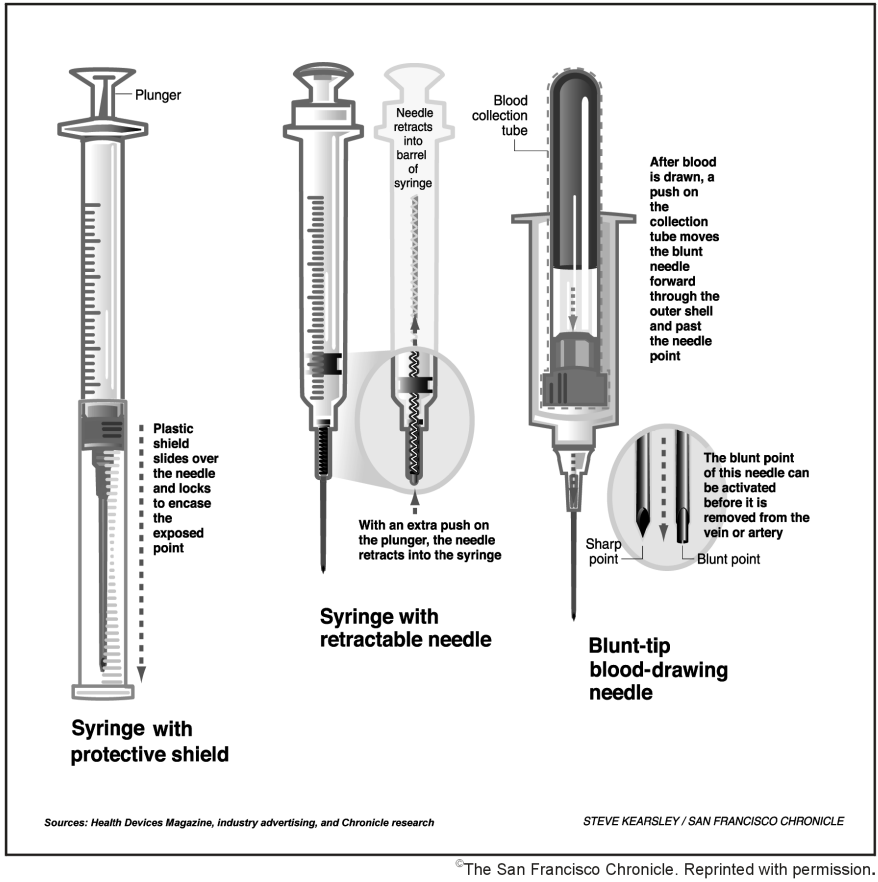

Figure 3. Three examples of syringes with safety features. (These drawings are presented for educational purposes and do not imply endorsement of a particular product by NIOSH.)

Evidence of Effectiveness

Accumulating evidence indicates that devices with safety features reduce needlestick injuries:

- Needleless or protected-needle IV systems decreased needlestick injuries related to IV connectors by 62% to 88% [Gartner 1992; Yassi et al. 1995; Lawrence et al. 1997].
- 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 [CDC 1997a].
- Phlebotomy injuries were reduced by 82% with a needle shield, but a recapping device had minimal impact [Billiet et al. 1991].

- Safer IV catheters that encase the needle after use reduced needlestick injuries related to IV insertion by 83% in three hospitals [Jagger 1996].

Other studies also document substantial reductions in needlestick injuries with the proper use of needleless systems or newer safety needle devices used in a comprehensive program to prevent needlestick injuries [NCCC and DVA 1997; Zafar et al. 1997].

Although the focus in this section is on needle devices with safety features, sharps disposal containers are also important engineering controls to consider in a comprehensive needlestick injury prevention program. NIOSH [1998] recently reviewed the proper location, use, and benefits of sharps disposal containers.

As illustrated by the examples listed here, many devices with safety features decrease the frequency of needlestick injuries, but for many reasons they do not completely eliminate the risk. In some cases, the safety feature cannot be activated until after the needle is removed from the patient. Or the needle may be inadvertently dislodged during a procedure, thereby exposing the unprotected sharp. Some health care workers fail to activate the safety feature, or the safety feature may fail. With some devices, users can bypass safety features. For example, even with some needleless IV delivery systems, a needle can be used to connect parts of the system. Understanding the factors that influence the safety of a device and promoting practices that will maximize prevention effectiveness are therefore important components in prevention planning.

CONCLUSIONS

Needlestick injuries are an important and continuing cause of exposure to serious and fatal diseases among health care workers. Greater collaborative efforts by all stakeholders are needed to prevent needlestick injuries and the tragic consequences that can result. Such efforts are best accomplished through a comprehensive program that addresses institutional, behavioral, and device-related factors that contribute to the occurrence of needlestick injuries in health care workers. Critical to this effort are the elimination of needle-bearing devices where safe and effective alternatives are available and the development, evaluation, and use of needle devices with safety features.

RECOMMENDATIONS

Selecting and Evaluating Needle Devices with Safety Features

An increasing number and variety of needle devices with safety features are now available, but many of these devices have had only limited use in the workplace. Thus health care organizations and workers may find it difficult to select appropriate devices. Although these devices are designed to enhance the safety of health care workers, they should be evaluated to ensure that

— the safety feature works effectively and reliably,

— the device is acceptable to the health care worker, and

— the device does not adversely affect patient care.

As employers implement the use of needle devices with safety features, they can use several guidelines to select and evaluate these products. These guidelines are derived partly from publications and other resources offering plans, evaluation forms, and related information in this new area [Chiarello 1995; Fisher 1999; SEIU 1998; EPINet 1999; Pugliese and Salahuddin 1999]. While health care settings are implementing the use of needle devices with safety features, they should seek help from the appropriate professional organizations, trade groups, and manufacturers in obtaining information about devices and procedures suitable for specific settings (e.g. dental offices). Other information sources are listed in later sections of the Alert (see *References, Additional Information,* and *Suggested Readings*). In addition, OSHA received nearly 400 responses to its recent public request for information about preventing occupational exposure to bloodborne pathogens from percutaneous injuries [63 Fed. Reg. 48250 (1998); OSHA 1999c]. This information includes numerous reports about the successful implementation of needlestick injury prevention programs, and it may be useful to medical institutions as they establish injury tracking systems, prevention approaches, and the use of safer devices.

The major elements of a process for selecting and evaluating needle devices with safety features are listed here briefly:

1. Form a multidisciplinary team that includes workers to (1) develop, implement, and evaluate a plan to reduce needlestick injuries in the institution and (2) evaluate needle devices with safety features.

2. Identify priorities based on assessments of how needlestick injuries are occurring, patterns of device use in the institution, and local and national data on injury and disease transmission trends. Give the highest priority to needle devices with safety features that will have the greatest impact on preventing occupational infection (e.g., hollow-bore needles used in veins and arteries).

3. When selecting a safer device, identify its intended scope of use in the health care facility and any special technique or design factors that will influence its safety, efficiency, and user acceptability. Seek published, Internet, or other sources of data on the safety and overall performance of the device.

4. Conduct a product evaluation, making sure that the participants represent the scope of eventual product users. The following steps will contribute to a successful product evaluation:

   - Train health care workers in the correct use of the new device.

   - Establish clear criteria and measures to evaluate the device with regard to both health care worker safety and patient care. (Safety feature evaluation forms are available from the references cited earlier.)

   - Conduct onsite followup to obtain informal feedback, identify problems, and provide additional guidance.

5. Monitor the use of a new device after it is implemented to determine the need for additional training, solicit informal feedback on health care worker experience with the device (e.g., using a suggestion box), and identify possible adverse effects of the device on patient care.

Ongoing review of current devices and options will be necessary. As with any evolving technology, the process will be dynamic, and with experience, improved devices with safety features will emerge.

Recommendations for Employers

To protect health care workers from needlestick injuries, employers must provide a safe working environment that includes safer needle devices and effective safety programs. Many types of needle devices are associated with needlestick injuries, and these injuries can occur in many ways. Thus a combination of prevention strategies must be considered. Employers should take the following steps to implement a program for reducing needlestick injuries and to involve workers in this effort.

1. Employers of health care workers should implement the use of improved engineering controls to reduce needlestick injuries:

   - *Eliminate the use of needle devices where safe and effective alternatives are available.* The most obvious example of unnecessary needle use is the use of exposed needles to access or connect parts of an IV delivery system. For nearly a decade, needleless IV delivery systems and protected needles have been available to remove or isolate this hazard. Examine information about your own institution to identify other unnecessary needle use.

   - *Implement the use of needle devices with safety features and evaluate their use to determine which are most effective and acceptable*. Many devices are now available with safety features that isolate an exposed needle after use. An evaluation approach and references are provided in this document.

2. Needlestick injury reduction can best be accomplished when the use of improved engineering controls is incorporated into a comprehensive program involving workers:

   - *Analyze needlestick and other sharps-related injuries in your workplace to identify hazards and injury trends.* Data from injury reporting should be compiled and assessed to identify (1) where, how, with what devices, and when injuries are occurring and (2) the groups of health care workers being injured.

   - *Set priorities and prevention strategies by examining local and national information about risk factors for needlestick injuries and successful intervention efforts.* Procedures and devices that have contributed to disease transmission (e.g., devices used to access a vein or artery) should receive the highest priority for intervention. Look to local and national resources for information about the types of devices and work practices that have been successful in reducing injuries.

   - *Ensure that health care workers are properly trained in the safe use and disposal of needles.* Health care workers and students in the health professions should be trained to use needle devices properly and to maximize their personal protection throughout the handling of these

devices. As safer devices are introduced, worker training is essential to ensure proper use [Ihrig et al. 1997].

- *Modify work practices that pose a needlestick injury hazard to make them safer.* Hazards that can be eliminated by modifying work practices include injuries due to recapping, failing to dispose of a needle device properly, passing or transferring such a device, and transferring blood or body fluids from a device into a specimen container. Also, specimen collection can be coordinated to reduce the number of times needles are used on a patient, thereby reducing both worker risk and patient discomfort. In some cases, the use of devices with safety features will reduce or eliminate these risks. In all cases, involving health care workers will help identify and resolve safety issues. Employers should thus review current procedures for reporting and addressing hazards related to needles and other sharps.

- *Promote safety awareness in the work environment.* Many needlestick injuries result from unexpected circumstances such as sudden movement by a patient or collision with a coworker or needle device. Health care workers should be trained to be constantly alert to the injury potential when an exposed needle or other sharp device is being used. A number of job-related factors influence the adoption of safety behaviors by health care workers [Dejoy et al. 1995; Murphy et al. 1996; Gershon et al. 1995]. These workers often place patient needs before their personal safety. They are less likely to perform a safety measure they perceive to interfere with patient care or to require added steps. Therefore, employers must address both the hazards that contribute to needlestick injuries and the institutional barriers and attitudes that affect safe work practices [Hanrahan and Reutter 1997].

- *Establish procedures for and encourage the reporting and timely followup of **all** needlestick and other sharps-related injuries.* Reporting of needlestick injuries is essential to (1) ensure that all health care workers receive appropriate post-exposure medical management and (2) provide a record for assessing needlestick hazards in the work environment.

- *Evaluate the effectiveness of prevention efforts and provide feedback on performance.* Employers need to ensure that health care workers are adopting the recommended prevention strategies and that the changes they make have the desired effect. Thus they should provide a forum to assess worker perceptions, evaluate compliance, and identify problems.

Recommendations for Workers

To protect themselves and their coworkers, health care workers should be aware of the hazards posed by needlestick injuries and should use safety devices and improved work practices as follows:

1. Avoid the use of needles where safe and effective alternatives are available.

2. Help your employer select and evaluate devices with safety features.

3. Use devices with safety features provided by your employer.

4. Avoid recapping needles.

5. Plan safe handling and disposal before beginning any procedure using needles.

6. Dispose of used needle devices promptly in appropriate sharps disposal containers.

7. Report all needlestick and other sharps-related injuries promptly to ensure that you receive appropriate followup care.

8. Tell your employer about hazards from needles that you observe in your work environment.

9. Participate in bloodborne pathogen training and follow recommended infection prevention practices, including hepatitis B vaccination.

ADDITIONAL INFORMATION

For additional information about needlestick injuries, call 1–800–35–NIOSH (1–800–356–4674); or visit the NIOSH Web site at www.cdc.gov/niosh

The following Web sites provide additional information about needlestick injuries and safer needle devices:

- University of Virginia's International Health Care Workers Safety Center and its EPINet needlestick injury data collection system: www.med.virginia.edu/~epinet (or call 804–982–0702)
- San Francisco General Hospital's Trauma Foundation, Training for Development of Innovative Control Technology (TDICT) Project: www.tdict.org (or call 412–821–8209)
- OSHA Web page: www.osha.gov; for needlestick information, www.osha-slc.gov/SLTC/needlestick/index.html (or call the OSHA Publications Office at 202–693–1888)
- CDC Web page: www.cdc.gov; for hepatitis information, www.cdc.gov/ncidod/diseases/hepatitis/index.htm; for hospital infections, www.cdc.gov/ncidod/hip/default.htm; and for HIV information, www.cdc.gov/nchstp/hiv_aids/dhap.htm
- FDA medical device safety alerts: www.fda.gov/cdrh/safety.html

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Please direct comments, questions, or requests for additional information to the following:

Director, Division of Safety Research
National Institute for Occupational Safety and Health
1095 Willowdale Road
Morgantown, WV 26505

Telephone, 304–285–5894; or call 1–800–35–NIOSH (1–800–356–4674).

We greatly appreciate your assistance in protecting the health of U.S. workers.

Linda Rosenstock, M.D., M.P.H.
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Centers for Disease Control and Prevention

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SAFE SHARPS DOCUMENTATION SCREENING SHEET

Include any Safe Sharps Documentation Screening Sheet(s) after this appendix title divider.

SAFE SHARPS DOCUMENTATION SCREENING SHEET

This survey will be utilized to evaluate a device with an engineered sharps injury prevention feature. Your feedback on this product is important in order to identify safer devices that allow us to better serve our workforce at Drexel University and the Drexel University College of Medicine. All of your responses are confidential. Once they are collected, there is no connection between your name and the survey you complete. Your responses will be combined with others in order to determine the acceptability of this new device.

Item Description _____ Manufacture _____

Department _____ Job Title _____ Date _____

Please circle the most appropriate answer for each question (1 Strongly Disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree). Not applicable (NA) may be used if the question does not apply to this product.

During Use:		<Disagree - Agree>					
1	I can activate the safety feature using one-handed technique.	1	2	3	4	5	NA
2	The safety feature obstructs my vision of the sharp tip.	1	2	3	4	5	NA
3	When using this product, you must use the safety feature.	1	2	3	4	5	NA
4	This product requires more time to use than a non-safety device.	1	2	3	4	5	NA
5	The safety feature works well with a wide variety of hand sizes.	1	2	3	4	5	NA
6	The device is easy to handle while wearing gloves.	1	2	3	4	5	NA
7	This device interferes with uses that require a needle.	1	2	3	4	5	NA
8	This device offers a good view of any aspirated fluid.	1	2	3	4	5	NA
9	This device will work with all required syringe and needle sizes.	1	2	3	4	5	NA

After Use:		<Disagree - Agree>					
10	There is a clear and unmistakable change (audible or visible) that occurs when the safety feature is activated.	1	2	3	4	5	NA
11	The safety feature operates reliably.	1	2	3	4	5	NA
12	The exposed sharp is permanently blunted or covered after use and prior to disposal.	1	2	3	4	5	NA
13	This device is more difficult to process after use than non-safety devices.	1	2	3	4	5	NA
14	This device is sufficient for our clinical practice's needs.	1	2	3	4	5	NA

Training:		<Disagree - Agree>					
15	The user needs extensive training for correct operation.	1	2	3	4	5	NA
16	The design of the device suggests proper use.	1	2	3	4	5	NA
17	It is easy to skip a crucial step in proper use of the device.	1	2	3	4	5	NA

Are there other questions you feel should be asked regarding the safety use of this product?

_____

REASON FOR DECLINE OF SAFE CONFIGURATION LETTER

Employers shall solicit information from non-managerial employees responsible for direct patient care who are potentially exposed to injuries from contaminated sharps. A letter must be written in the event a sharps device, that is commercially available in an engineered safety configuration, cannot be used due to its impedance of patient care or restrictive nature during a medical procedure. This letter must be written by a user responsible for direct patient care stating the reason of decline of the device available in the safety configuration. Cost cannot be a prohibitive issue for not utilizing engineered sharps available in a safety configuration.

This letter shall be written and dated on official letterhead by a user of the device. The type, brand, size, and model shall be documented in this letter.

Please include this letter(s) after this appendix title divider.

Please submit a copy of this letter(s) to the Department of Environmental Health and Safety.