

ATLANTIC CAPE COMMUNITY COLLEGE

2017-2018

EXPOSURE CONTROL PLAN



## ATLANTIC CAPE COMMUNITY COLLEGE

### EXPOSURE CONTROL PLAN

#### I. Introduction

Occupational Safety and Health Administration (OSHA) estimates that 5.6 million workers in the health care industry and related occupations are at risk of occupational exposure to bloodborne pathogens, including Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and others.

All occupational exposure to blood or other potentially infectious materials (OPIM) place workers at risk for infection with bloodborne pathogens. OSHA defines blood to mean human blood, human blood components, and products made from human blood. 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-containing or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

In recognition of these potential hazards, the New Jersey Public Employees Occupational Safety and Health Act (PEOSHA) has adopted the Occupational Safety and Health Administration (OSHA) regulation [Bloodborne Pathogens 29 Code of Federal Regulations (CFR), Standard 1910.1030] to help protect New Jersey public workers from these health hazards.

The major intent of this regulation is to prevent the transmission of bloodborne diseases within potentially exposed workplace occupations. Standard 1910.1030 is expected to reduce and prevent employee exposure to Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and other bloodborne diseases.

The Occupational Safety and Health Administration estimates Standard 1910.1030 could prevent more than 200 deaths and 9,000 infections per year from HBV alone. Each employer must determine the application of Universal Precautions by performing

an employee exposure evaluation. If employee exposure is recognized, as defined by Standard 1910.1030, then the Standard mandates a number of requirements. One of the major requirements is the development of an Exposure Control Plan (ECP), which mandates training, work practices, engineering controls, personal protective equipment (PPE) and HBV vaccinations. The Standard also mandates practices and procedures for housekeeping, medical evaluation, hazard contamination and record keeping.

The revised PEOSHA Bloodborne Pathogens Standard 1910.1030 was adopted on September 4, 2001.

## **II. Policy Rationale**

Atlantic Cape Community College is committed to providing a safe and healthy work environment for the College community. In pursuit of this endeavor, the following Exposure Control Plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with PEOSHA Bloodborne Pathogens Standard, Title 29 of Code of Federal Regulations 1910.1030.

The ECP is a key document to assist the College in implementing and ensuring compliance with the Standard, thereby protecting the College community.

This ECP includes:

- A. Program Administration
- B. Employee Exposure Determination
- C. Effective Dates
- D. Exposure Control Plan
- E. Engineering Controls
- F. Personal Protective Equipment
- G. Training
- H. Hepatitis B Vaccination
- I. Post Exposure Evaluation
- J. Health Care Professionals
- K. Housekeeping
- L. Labeling
- M. Record Keeping
- N. First Aid Providers

APPENDIX A: Consent For Drawing Blood Specimen(s)

APPENDIX B: Request For Source Individual Evaluation

APPENDIX C: Documentation and Identification Of Source Individual

APPENDIX D: EXPOSURE INCIDENT REPORT

APPENDIX E: EMPLOYEE EXPOSURE FOLLOW-UP RECORD, SOURCE

APPENDIX F: EMPLOYEE MEDICAL EVALUATION & TREATMENT DECLINATION FORM

APPENDIX G: HEPATITIS B VACCINE DECLINATION FORM

APPENDIX H: SHARPS INJURY LOG

APPENDIX I: HEPATITIS B VACCINE INFORMATION, (2 pages)

APPENDIX J: Blood (OPIM) Cleanup Guidelines

APPENDIX K: MMWR REPORT, Updated U.S. Public Health Service Guidelines ...For Post Exposure Prophylaxis. (38 pages)

APPENDIX L: US Department of Labor OSHA Standard 29 CFR 1910.1030 (19 pages)

APPENDIX M : PEOSH Revised Bloodborne Pathogens Standard 29 CFR 1910.1030 (9 pages)

## **A. PROGRAM ADMINISTRATION**

- Atlantic Cape Community College is responsible for the implementation of the ECP. The College Nurse/ Assistant Director, Health Safety and Compliance will review and update the written ECP yearly to include new information or modified tasks and procedures.
- Those employees who may have contact with or exposure to blood, body fluids or other potentially infectious materials are required to comply with the procedures and work practices outlined in this Exposure Control Plan.
- Atlantic Cape Community College will have the responsibility for written housekeeping protocols and will ensure that effective disinfectants are available.

- The College Nurse/Assistant Director, Health Safety and Compliance will be responsible for initial training and required yearly retraining, and making certain the ECP is made available to all employees.
- The Chemical Compliance Officer will be responsible for documentation of training and making certain the ECP is available to PEOSH and NIOSH (National Institute for Occupational Safety and Health).
- Department Heads of Facilities, Athletics, Security, Allied Health, Nursing, HPI, Culinary and Science or their designees will maintain and provide all necessary PPE, engineering controls, labels and red bags or leak proof marked bio-hazard bags as required by the Standard.
- The same Department Heads or designees will ensure that adequate supplies of the aforementioned equipment are available.

## **B. EMPLOYEE EXPOSURE DETERMINATION**

As part of the exposure determination section of the ECP, the following list comprises all job classifications within Atlantic Cape Community College in which all employees or students have a potential for occupational exposure:

- College Nurse
  - a) Needlesticks
  - b) Blood or OPIM exposure
- Security Officers
  - a) First Aid
- Maintenance, Housekeeping and Grounds
  - a) Cleaning and disposal of spills and waste
- Athletic Trainers and Coaches
  - a) First Aid
- Allied Health, HPI, Nursing and Biology Professors, Instructors and Lab Staff
  - a) Needlesticks
  - b) Blood or OPIM exposure
  - c) Animal blood and other OPIM
- Academy of Culinary Arts
  - a) First Aid

NOTE: Good Samaritan acts which result in exposure to blood or other potentially infectious materials from assisting a fellow employee (i.e. nosebleed, cuts, giving CPR, or first aid) are not included in the Bloodborne Standard; however, PEOSHA encourages employers to offer Post-Exposure Evaluation and follow-up in such cases.

### C. EFFECTIVE DATES

The Bloodborne Pathogens Standard was published in the New Jersey Register on July 6, 1993. The Standard including Universal Precautions became operative October 4, 1993.

The dates for completing the different parts of the Standard are:

- Exposure Control Plan: December 3, 1993
- Record Keeping: January 6, 1994
- Information and Training: January 6, 1994
- Methods of Compliance: February 6, 1994 (Except Universal Precautions)
- Hepatitis B Vaccinations, Post Exposure Evaluation and Follow Up: February 6, 1994
- Labels and Signs: February 6, 1994
- Federal Needlestick Safety and Prevention Act November 6, 2000
- PEOSHA revised Standard: September 4, 2001

### D. EXPOSURE CONTROL PLAN

Methods of Implementation and Control

#### 1. Universal Precautions:

**All personnel will utilize Universal Precautions.** Universal Precautions are an infection control method that requires employees and students to assume that all human blood and specified human body fluids and possibly animal blood and body fluids are infectious for HIV, HBV and other bloodborne pathogens and must be treated accordingly.

#### 2. Exposure Control Plan:

Employees covered by the Standard will receive an explanation of this ECP during their initial training session. The ECP may also be reviewed in the refresher training.

All employees will have an opportunity to review this plan at any time during their work shifts by visiting the Atlantic Cape Community College Health & Wellness website. A written copy of this plan will also be available in the security office at each campus. A written copy of this plan will be made available upon request free of charge within 15 days of the request.

The College Nurse will be responsible for updating the ECP at least yearly or when necessary to reflect any new or modified tasks which affect occupational exposure. Additionally, the updated ECP will reflect new or revised employee positions with occupational exposure.

## **E. ENGINEERING CONTROLS AND WORK PRACTICES**

Engineering controls and work practice controls will be used to prevent exposure to bloodborne pathogens. The College will utilize the following engineering and work practice controls in the following situations:

- Biohazard/leak-proof bags or rigid containers with biohazard stickers will be available to all employees when possible contact is eminent.
- Regulated medical waste (RMW): puncture resistant disposal containers for sharp objects, needles, syringes, glass (all types), metal, etc., will be placed at or near the point of use.
- Ventilated laboratory hoods will be used where applicable for control of aerosols.
- Providing either readily available hand-washing stations, or when not available, antiseptic wipes or other waterless hand cleaner. Employees and students will be trained to wash their hands as soon as possible after removing gloves or after contact with unprotected skin by a possibly contaminated substance.
- Labeling
- Equipment decontamination
- Prohibiting eating, drinking, smoking, application of makeup or lip balm, and handling contacts in work areas where there is a likelihood of occupational exposure.
- Prohibiting food or drink to be stored in refrigerator, freezers, shelves, cabinets or on counter tops where blood or other potentially infectious materials are stored or present.
- Mandatory placement of specimens, blood or other potentially infectious materials in a container which prevents leakage during collection, handling, processing, storage, transport or preparation for disposal of these items is mandatory.
- Personnel should examine equipment that may be contaminated with blood or other potentially infectious material prior to servicing or shipment and decontaminating such equipment as necessary. Items will be labeled if not completely decontaminated and a sign indicating adequate decontamination should be posted prior to moving or servicing the equipment.
- The Cross Functional Safe Campus Initiative Advisory Committee of Atlantic Cape Community College identifies the need for changes in engineering controls and work practices and evaluates new products and procedures regularly by legislative changes, OSHA recommendations, and reviewing current literature. This committee is comprised of representatives from areas of the College that provide services to the campus community applicable for institutional emergency management. The College

Nurse and Chemical Compliance Officer are responsible for ensuring that these recommendations are implemented.

## **F. PERSONAL PROTECTIVE EQUIPMENT**

Personal Protective Equipment (PPE) must also be used if occupational exposure remains after instituting engineering controls and work practice controls, or if controls are not feasible. The College Nurse and/or Compliance Officer will provide training in the use of appropriate PPE for the employee's specific job classification and the tasks/procedures they will perform. This equipment will be provided at no cost to the employees and students of Atlantic Cape.

PPE **will be worn** by all college personnel whenever it can be reasonably anticipated that they may have contact with or exposure to blood, feces, urine, or other possibly contaminated body fluids.

Face shields or safety goggles with surgical/dust mask **will be worn** by all personnel when splashes, sprays, spatters or droplets of blood, urine, sweat or any other possibly infectious materials pose a hazard to their face, eyes, nose or mouth.

Appropriate PPE is required for the following tasks; the equipment is listed for each task:

### **TASK EQUIPMENT**

- Housekeeping: cleaning animal and human blood/body fluids/labs/bathrooms/emptying trash, gloves, face masks, shields, tongs where required
- Maintenance/plumbing/grounds: gloves/masks/face shields/goggles (when working on/in bathrooms/sewage) disposable jumpsuits/foot coverings, when needed.
- Security: medical assists-gloves, masks, CPR masks, antibacterial wipes

All equipment will be readily available from shift supervisors at the beginning of each shift in sufficient quantities to last through the workday.

All personnel using PPE must observe the following precautions:

1. Wash hands immediately or as soon as feasible after removal of gloves or other PPE.
2. If a wash facility and appropriate anti-bacterial hand soap are not readily available then alcohol-based hand sanitizer/antibacterial wipes are to be used and disposed of properly.
3. Remove PPE before leaving designated work area or after a garment becomes soiled.

4. Place used PPE in appropriately designated areas or containers when being stored, decontaminated or discarded.
5. If contaminated, place in NJ Regulated Medical Waste (RMW) collection containers.
6. Biohazard bags and labels will be available in each department having employees/students where RMW materials may be generated.
7. Each area where RMW waste may be generated should contain red bio-hazard bags, leak-proof bags with bio-hazard labels or solid bio-hazard containers.
8. Contaminated PPE will be placed inside bio-hazard bags/containers and disposed of through Health Services or lab or campus areas with bio-hazard disposal.
9. Wear appropriate PPE when it can be anticipated that contact with potentially infectious materials may occur and when handling or touching contaminated items of surfaces.
10. Replace any PPE that may become torn, punctured, contaminated frequently or if the ability to function as a barrier becomes compromised.
11. **NEVER** wash or decontaminate disposable gloves or other PPE to be reused.
12. Wear appropriate face and eye protection such as mask with face shield when splashes, sprays, splatters or droplets of blood or other potentially infectious materials pose a hazard to the eyes, nose and mouth.
13. If blood or other potentially infectious material penetrates a garment, this garment(s) must be removed immediately or as soon as feasible.
14. Pull-over type garments must be cut off to avoid contamination to the face in the event the infectious material penetrates to the inner side of the fabric.

## **G. TRAINING**

All employees who have a potential for occupational exposure to bloodborne pathogens (as listed in Section B: Employee Exposure Determination) will receive initial and annual training conducted by the College Nurse.

Training will include the epidemiology of bloodborne pathogens diseases. Standards and fact sheets located in the Record Keeping section and all training aids will be used to inform the College community of the following elements:

- A copy and explanation of the Standard

- Epidemiology and symptoms of bloodborne pathogens
- Modes of transmission
- Methods to recognize exposure tasks and other activities that may involve exposure to potentially infectious materials
- Use and limitations of engineering controls, work practices and PPE
- PPE- types, use, location, handling, decontamination and disposal
- PPE- the basis for selection
- Hepatitis B Vaccination, offered free of charge to those employees who are reasonably anticipated to have occupational exposure to bloodborne pathogens. Training will be given prior to vaccination on its safety, effectiveness, benefits, and methods of administration.
- Emergency procedures for blood spill or other potentially infectious materials
- Exposure incident definition and procedures
- Post-exposure evaluation and follow-up
- Signs and labels and/or color-coding
- Question and answer session
- An Employee Education and Training Record will be completed for each employee upon completion of training, and will be kept in the Health Office. The College Nurse will also keep a record containing the acceptance/declination of the Hepatitis B vaccine for personnel eligible to receive the immunization. This information will be added into the password protected Compliance database. A copy will be sent to Human Resources.

## **H. HEPATITIS B VACCINATION**

The College Nurse will provide information on Hepatitis B vaccinations, addressing its safety, benefits, efficiency, methods of administration and availability at the initial training.

The Hepatitis B vaccination series will be made available at no cost through the Atlantic County Health Department(s) or Atlantic City Health Department for Atlantic City residents

following initial training to all personnel who are reasonably anticipated to have occupational exposure to blood or other potentially infectious materials, unless:

- Personnel has previously received the series, (proof requested)
- Antibody testing reveals that the employee/student is immune
- Medical reasons exist that prevent taking the vaccination
- The employee chooses not to participate

All personnel are encouraged to receive the Hepatitis B vaccination series.

However, if an individual chooses to decline Hepatitis B vaccination, then that individual must sign documentation of refusal that will be kept with all records in Health Services Office.

Highlights of Hepatitis B vaccinations other requirements:

- Participation in pre-screening is not a prerequisite for receiving Hepatitis B vaccinations.
- Hepatitis B vaccination will be provided at a later date even if the employee initially refuses.
- Employee must sign an acceptance/declination sheet.
- Vaccination is to be administered in accordance with USPHS (United States Public Health Service) recommended protocol.

## **I. POST EXPOSURE EVALUATION**

Post Exposure Evaluation and Follow-up, Procedures for Reporting, Documenting and Evaluating the Exposure are addressed in this section.

Should an exposure incident occur, the employee/student should contact his/her immediate supervisor or instructor as soon as possible.

The supervisor will contact the College Nurse, through Security, if after hours.

Each exposure must be documented by the employee or student on an Exposure Incident Report (see Appendix D).

The College Nurse will add any additional information if deemed necessary. If possible, participants should save the offending material in the event testing is deemed appropriate.

Personnel are strongly encouraged to immediately report to the nearest hospital emergency department, urgent care center, or as directed by the College Nurse for a confidential medical evaluation and follow-up.

The hospital is to be advised that the patient is an employee/student of Atlantic Cape Community College and that the exposure is a work-related incident. The following elements will be performed:

- Documentation of the route(s) of exposure, and the circumstances under which the exposure incident occurred, particularly if medical sharps were involved.
- Document brand, type, and size.
- Identification and documentation of the source individual, unless the employer can establish that identification is unfeasible or prohibited by state or local law.

The source individual(s) 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, it shall be established that legally required consent cannot be obtained.

When the source individual's consent is not required, the source individual's blood, if available, shall be tested and the results documented. Or, 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/student, and the exposed employee/student shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

The exposed employee/student's blood shall be collected as soon as feasible and tested after consent is obtained for HBV and HIV serological status.

If the employee/student 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/student elects to have the baseline tested, such testing shall be done as soon as feasible. By law, all test results are confidential.

Post exposure prophylaxis, when medically indicated, as recommended by the U. S. Public Health Service, should be as follows:

1. Counseling
2. Evaluation of any reported illnesses
3. MMWR Report: Post Exposure Prophylaxis (Appendix K)

The College Nurse will ensure that forms required for evaluation: Appendix B "Request for Source Individual Evaluation," Appendix D "Exposure Incident Report," Appendix E "Employee Exposure Follow-up Record, Source," are provided to the employee/student so that they may bring them along with any additional relevant medical information to the

medical evaluation. Original copies of these Appendices will be maintained with the employees' medical records in the Health Office.

The College Nurse and the supervisor or instructor of the exposed individual will review the circumstances of the exposure incident to determine engineering controls in use at the time, work practices followed, and a description of the device being used, to determine if protocols, procedures and/or training need to be revised.

NOTE: New Jersey Law (NJSA 26-5C et.seq.) and Regulation (NJAC 8:57-2) requires information about AIDS (Acquired Immune Deficiency Syndrome) and HIV be kept confidential. While the law requires positive results to be reported to the State Department of Health, the law strictly limits disclosure of HIV related information. When disclosure of HIV related information is authorized by a signed release, the person who has been given the information MUST keep it confidential.

The HIV Confidential Case Report form, the AIDS Adult Confidential Case report form, and the HIV Testing Policy information applicable to New Jersey public sector employees can be obtained by contacting:

The New Jersey State Department of Health  
Data Analysis Unit  
PO Box 363  
Trenton, NJ 08625-0363  
609-984-6204

## **J. HEALTH CARE PROFESSIONALS**

The College Nurse will ensure that the health care professionals responsible for exposed employee's post-exposure evaluation and follow-up receive the following:

- A copy of OSHA's bloodborne pathogens standard.
- A description of the employee's job duties, relevant to the exposure incident.
- Route(s) and circumstances of exposure.
- When possible, source individual's information and if obtained signed "Request for Source Individual Evaluation," relevant medical records, including vaccination status.
- The College Nurse will provide the employee a copy of the evaluating health care professional's written opinion within 15 days after receipt of the same from the health care professional.
- This written opinion will be limited to whether or not the employee has been informed of the results of the medical evaluation and any medical conditions, which may require any further evaluation and/or treatment.

- All other diagnoses must remain confidential and not included in the written report to the College.

## **K. HOUSEKEEPING**

The following procedures are provided:

- Disinfect work surfaces and/or areas of possible contamination with an appropriate disinfectant as soon as feasible, or immediately when overtly contaminated, after a spill of any and all potentially infectious materials.
- Inspect and disinfect, on a regular basis, reusable receptacles such as bins, pails, and cans that have likelihood for becoming contaminated.
- When contamination is visible, clean and decontaminate receptacles immediately.
- **ALWAYS** use mechanical means such as tongs, brush and dustpan to pick up contaminated broken glassware or other sharp object.
- **NEVER** pick up with hands even if gloves are worn.
- Place regulated waste in closable labeled or color-coded containers.
- When storing, handling or transporting, put ALL regulated waste in containers constructed to be leak-proof.
- When discarding contaminated sharp objects, place them in containers that are sealable, puncture resistant, are appropriately color-coded or labeled, and leak proof on sides and bottom.
- Discard all regulated waste according to federal, state and local regulations.

## **L. LABELING**

The Standard requires either florescent red-orange biohazard bags or red-orange biohazard labels be affixed to leak-proof bags/containers to be used. The shift supervisor will ensure warning labels are affixed or red bags are used as required. Employees are to notify the College Compliance Officer and department head if they discover any unlabeled regulated waste.

Sharps disposal containers are inspected by the Compliance Officer and department supervisor. They are maintained and/or replaced by the department supervisor or her designee whenever necessary to prevent overfilling.

## **M. RECORD KEEPING**

### **MEDICAL RECORDS**

Medical records will be maintained for each employee with occupational exposure in accordance with PEOSHA regulation Access to Employee Exposure and Medical Records 29 CFR 1910.1020.

The College Nurse will be responsible for maintenance of the required medical records, and they will be kept in his/her office at the Mays Landing Campus of Atlantic Cape Community College. In addition to the requirements of 29 CFR 1910.1020, the medical records will include:

- The name and last 4 digits of the social security number of the employee
- A copy of the employee's Hepatitis B vaccination and any medical records related to the employee's ability to receive the vaccination
- A copy of all results of examinations, medical tests, and follow-up procedures as required by the Standard
- A copy of all health care professional's written opinion(s) as required by the Standard
- All employee medical records will be held confidential and will not be disclosed or reported without the employee's express written consent to any person within or outside the workplace except as may be required by law
- All records of employees who have had an exposure incident will be held for 30 years after employee leaves the employ of Atlantic Cape Community College
- Employee medical records shall be provided upon request of the employee or to anyone having written consent of the employee within 15 days of that request.

An exposure incident is evaluated to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904). This determination of the recordkeeping activities is done by the Compliance Officer.

In addition to the 1904 Recordkeeping Requirements, all percutaneous injuries from contaminated sharps are also recorded in a Sharps Injury Log. All incidences must include at least the date of injury, type and brand of the involved device, and explanation of how the incident occurred. This log is reviewed as part of the annual program evaluation and maintained for at least five years following the end of the calendar year covered. If a copy is requested by anyone, personal identifiers must be removed from the report.

## TRAINING RECORDS

Original bloodborne pathogens training records will be maintained in the Health Office, and the date will be entered into the Compliance Database. The training records will be made available to the employee within 15 days of request

The training records shall include:

- The dates of training sessions
- The content or summary of the training sessions
- The name(s) and qualifications of the person(s) conducting the training
- The name and job titles of all persons attending the training session will be on the sign in sheet

## **N. FIRST AID PROVIDERS**

- College Nurse
- Security personnel/Designated First Aid Providers/First Responders
- Athletic Trainers, Coaches and Staff

The above listed categories are included in this coverage and all information previously listed and to follow will and do pertain to them. Therefore, pre-exposure training and vaccinations have been given to them, upon their signed acceptance thereof.

In the event of an exposure incident they will advise the College Nurse and Department Head.

The training officer will ensure that all first aid providers receive training and specifics on how to report an exposure incident.

If no pre-exposure vaccination has been given, the College Nurse will ensure that all medical tests are offered and post-exposure prophylaxis per the Standard.

**ATLANTIC CAPE COMMUNITY COLLEGE**

**Appendix A**

**CONSENT FOR DRAWING BLOOD SPECIMEN(S)**

I understand that an incident has occurred which may have resulted in my being exposed to blood or other body fluid, which may be infected with HIV, HPV or other bloodborne pathogens.

It has been explained to me and I understand that under these circumstances it is recommended by the Public Employees Occupational Safety and Health Act (PEOSH) that my blood be tested for bloodborne pathogens. Therefore I freely consent to having samples of my blood drawn for testing purposes.

Employee Signature \_\_\_\_\_ DATE \_\_\_\_\_

Employee Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

Witness Signature \_\_\_\_\_ DATE \_\_\_\_\_

Witness Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

**ATLANTIC CAPE COMMUNITY COLLEGE****Appendix B****REQUEST FOR SOURCE INDIVIDUAL EVALUATION**

Dear (Emergency Room Medical Director, Infection Control Practitioner):

During a recent incident, one of our employees, staff or emergency care providers was involved in an event which may have resulted in an exposure to a Bloodborne Pathogen.

I am asking that you perform an evaluation of the source individual who has produced this letter. Given the circumstances surrounding this event, please determine whether our employee is at risk for infection and/or requires medical follow-up.

Attached is a "Documentation and Identification of Source Individual" which was initiated by the exposed worker. Please complete the source individual section and communicate the findings to the designated medical provider.

The evaluation form has been developed to provide confidentiality assurances for the patient and the exposed worker. Any communication regarding the findings is to be handled at the medical provider level.

We understand that information relative to HIV and AIDS has specific protections under the law and cannot be disclosed or released without written consent of the patient. It is further understood that disclosure obligates persons who receive such information to hold it confidential.

Thank you for your assistance in this very important matter.

Sincerely,

College Nurse  
Health and Wellness Program Officer

**ATLANTIC CAPE COMMUNITY COLLEGE**

**Appendix C**

**CONFIDENTIAL**

**DOCUMENTATION AND IDENTIFICATION  
OF SOURCE INDIVIDUAL**

1. Name of Exposed Employee

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2. Name and phone number of Medical Provider who should be contacted.

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**Incident Information**

3. Date: \_\_\_\_\_

4. Name or medical record number of the individual who is the Source of the Exposure;

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**5. Nature of the Incident**

Contaminated needlestick injury

Blood, body fluid splash onto mucous membrane or non-intact skin

Other

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**Report of Source Individual Evaluation**

6. Chart reviewed by \_\_\_\_\_ 6a. Date \_\_\_\_\_

7. Source Individual Unknown-researched by \_\_\_\_\_ 7a. Date \_\_\_\_\_

8. Testing of Source Individual's blood **CONSENT:**    Obtained     Refused

**9. Check One**

Identification of source individual unfeasible or prohibited by State Law. State why unfeasible. \_\_\_\_\_

Evaluation of the source individual reflected known exposure to Bloodborne Pathogen.

Evaluation of the source individual reflected possible exposure to Bloodborne Pathogen and medical follow-up is recommended.

10. Report completed by \_\_\_\_\_ 10a. Date \_\_\_\_\_

**NOTE:** Report the results of the source individual's blood test to the medical provider named above who will inform the exposed employee. Do not report blood findings to the employer. **HIV and AIDS** related information **cannot** be released without the written consent of the source individual.

**ATLANTIC CAPE COMMUNITY COLLEGE**

**Appendix D**

**EXPOSURE INCIDENT REPORT  
(ROUTES AND CIRCUMSTANCES OF EXPOSURE INCIDENT)**

**Please Print**

1. DATE COMPLETED \_\_\_\_\_

2. EMPLOYEE'S NAME \_\_\_\_\_

3. SS# \_\_\_\_\_

4. HOME PHONE \_\_\_\_\_

5. WORK PHONE \_\_\_\_\_

6. CELL PHONE \_\_\_\_\_

7. D.O.B. \_\_\_\_\_

8. JOB TITLE \_\_\_\_\_

9. EMPLOYEE'S VACCINATION STATUS \_\_\_\_\_

10. DATE OF EXPOSURE \_\_\_\_\_

11. TIME OF EXPOSURE \_\_\_\_\_ 11a. AM \_\_\_ PM \_\_\_

12. LOCATION OF INCIDENT (BE SPECIFIC) \_\_\_\_\_

13. NATURE OF INCIDENT (BE SPECIFIC) \_\_\_\_\_

14. DESCRIBE TASK(S) YOU WERE PERFORMING WHEN THE EXPOSURE OCCURRED  
(BE SPECIFIC)

\_\_\_\_\_  
\_\_\_\_\_

15. WERE YOU WEARING PERSONAL PROTECTIVE EQUIPMENT (PPE)?

YES \_\_\_

NO \_\_\_

IF YES, LIST PPE WORN \_\_\_\_\_

**Appendix D (Continued)**

16. DID PPE FAIL?

YES \_\_\_ IF YES, HOW? \_\_\_\_\_  
NO \_\_\_

17. WHAT BODY FLUIDS,/OTHER POTENTIALLY INFECTIOUS MATERIALS WERE YOU EXPOSED TO? BE SPECIFIC.

\_\_\_\_\_

18. WHAT PART(S) OF YOUR BODY WAS EXPOSED? BE SPECIFIC.

\_\_\_\_\_

19. ESTIMATE THE SIZE OF THE AREA OF YOUR BODY THAT WAS EXPOSED

\_\_\_\_\_

20. DID A FOREIGN BODY, (NEEDLE, METAL, GLASS, ETC) PENETRATE YOUR BODY?

YES \_\_\_ IF YES, WHAT? \_\_\_\_\_  
NO \_\_\_

21. WHERE DID IT PENETRATE YOUR BODY?

\_\_\_\_\_

22. WAS ANY FLUID INJECTED INTO YOUR BODY?

YES \_\_\_ IF YES, WHERE? \_\_\_\_\_ WHEN? \_\_\_\_\_  
NO \_\_\_

23. DID YOU RECEIVE MEDICAL ATTENTION?

YES \_\_\_ IF YES, BY WHOM? \_\_\_\_\_  
NO \_\_\_

24. IDENTIFICATION OF SOURCE INDIVIDUAL(S):

\_\_\_\_\_

25. NAMES:

\_\_\_\_\_

26. ANY/ALL OTHER PERTINENT INFORMATION:

\_\_\_\_\_

\_\_\_\_\_

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**ATLANTIC CAPE COMMUNITY COLLEGE**

**APPENDIX E**

**EMPLOYEE EXPOSURE FOLLOW-UP RECORD, SOURCE**

- 1. EMPLOYEE'S NAME \_\_\_\_\_
- 2. JOB TITLE \_\_\_\_\_
- 3. DATE OF INCIDENT \_\_\_\_\_
- 4. DATE REPORTED \_\_\_\_\_
- 5. TIME OF INCIDENT \_\_\_\_\_ 5a. AM [ ] PM [ ]

**SOURCE INDIVIDUAL FOLLOW-UP**

6. REQUEST MADE TO:

\_\_\_\_\_

7. DATE \_\_\_\_\_ 7a. TIME \_\_\_\_\_ 7b. AM [ ] PM [ ]

**EMPLOYEE FOLLOW-UP**

8. EMPLOYEE'S HEALTH FILE REVIEWED BY \_\_\_\_\_ 8a. DATE \_\_\_\_\_

9. INFORMATION GIVEN ON SOURCE INDIVIDUAL'S BLOOD TEST RESULTS:  
YES [ ] NOT OBTAINED [ ]

**REFERRED TO HEALTH CARE PROFESSIONAL WITH REQUIRED INFORMATION**

10. NAME OF HEALTH CARE PROFESSIONAL \_\_\_\_\_

11. REFERRED BY: \_\_\_\_\_ 11a. DATE \_\_\_\_\_

**BLOOD SAMPLING/TESTING OFFERED**

12. OFFERED BY: \_\_\_\_\_ 12a. DATE \_\_\_\_\_

**VACCINATION OFFERED/RECOMMENDED**

13. OFFERED BY: \_\_\_\_\_ 13a. DATE \_\_\_\_\_

**COUNSELING OFFERED**

14. OFFERED BY: \_\_\_\_\_ 14a. DATE \_\_\_\_\_

**EMPLOYEE ADVISED OF NEED FOR FURTHER EVALUATION OF MEDICAL CONDITION**

15. ADVISED BY: \_\_\_\_\_ 15a. DATE \_\_\_\_\_

#

**ATLANTIC CAPE COMMUNITY COLLEGE**

**APPENDIX F**

**Employee Medical Evaluation and Treatment**

**Declination Form**

**I understand that due to my occupation exposure to blood or other potentially infectious materials, I may be at risk of acquiring a potential infection. I have been given the opportunity to have a medical evaluation and treatment at this time. I understand that by declining this, I continue to be at risk of acquiring a potential infection due to the exposure.**

As per the Exposure Control plan, Atlantic Cape strongly encourages personnel to immediately report to the nearest hospital emergency department, urgent care center, or as directed by the College Nurse for a confidential medical evaluation and follow-up.

I release Atlantic Cape Community College from all liability and responsibility resulting from the exposure to blood and potentially infectious materials.

Employee Signature \_\_\_\_\_ DATE \_\_\_\_\_

Employee Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

Witness Signature \_\_\_\_\_ DATE \_\_\_\_\_

Witness Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

**ATLANTIC CAPE COMMUNITY COLLEGE**

**APPENDIX G**

**HEPATITIS B VACCINE DECLINATION**

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring Hepatitis B Virus (HBV) infection.

I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline 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 and I consent to hold the college harmless in the event that I am exposed to the virus.

If in the future I continue to have occupational exposure to blood or other potentially infectious materials and want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee Signature \_\_\_\_\_ DATE \_\_\_\_\_

Employee Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

Witness Signature \_\_\_\_\_ DATE \_\_\_\_\_

Witness Name \_\_\_\_\_ DATE \_\_\_\_\_  
*Please Print*

**ATLANTIC CAPE COMMUNITY COLLEGE**

**APPENDIX H**

**Sharps Injury Log**

Date	Location where injury occurred (facility name, room #, etc.)	Brief description of how the injury occurred .	Type of device (lancet, syringe, etc.)	Brand name of device

OSHA's Bloodborne Pathogens Standard requires an employer to establish and maintain a Sharps Injury Log for recording all punctures of skin occurring 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 log should include all sharps injuries occurring in a calendar year and it must be retained for 5 years following the end of the year to which it relates.

## APPENDIX I

# HEPATITIS B VACCINE

## WHAT YOU NEED TO KNOW

Many Vaccine Information Statements are available in Spanish and other languages. See [www.immunize.org/vis](http://www.immunize.org/vis).

### 1 What is hepatitis B?

Hepatitis B is a serious disease that affects the liver. It is caused by the hepatitis B virus (HBV). HBV can cause:

**Acute (short-term) illness.** This can lead to:

- loss of appetite
- diarrhea and vomiting
- tiredness
- jaundice (yellow skin or eyes)
- pain in muscles, joints, and stomach

Acute illness is more common among adults. Children who become infected usually do not have acute illness.

**Chronic (long-term) infection.** Some people go on to develop chronic HBV infection. This can be very serious, and often leads to:

- liver damage (cirrhosis)
- liver cancer
- death

Chronic infection is more common among infants and children than among adults. People who are infected can spread HBV to others, even if they don't appear sick.

- In 2005, about 51,000 people became infected with hepatitis B.
- About 1.25 million people in the United States have chronic HBV infection.
- Each year about 3,000 to 5,000 people die from cirrhosis or liver cancer caused by HBV.

Hepatitis B virus is spread through contact with the blood or other body fluids of an infected person. A person can become infected by:

- contact with a mother's blood and body fluids at the time of birth;
- contact with blood and body fluids through breaks in the skin such as bites, cuts, or sores;
- contact with objects that could have blood or body fluids on them such as toothbrushes or razors;
- having unprotected sex with an infected person;
- sharing needles when injecting drugs;
- being stuck with a used needle on the job.

### 2 Hepatitis B vaccine: Why get vaccinated?

**Hepatitis B vaccine can prevent hepatitis B, and the serious consequences of HBV infection, including liver cancer and cirrhosis.**

Routine hepatitis B vaccination of U.S. children began in 1991. Since then, the reported incidence of acute hepatitis B among children and adolescents has dropped by more than 95% – and by 75% in all age groups.

Hepatitis B vaccine is made from a part of the hepatitis B virus. It cannot cause HBV infection.

Hepatitis B vaccine is usually given as a series of 3 or 4 shots. This vaccine series gives long-term protection from HBV infection, possibly lifelong.

### 3 Who should get hepatitis B vaccine and when?

#### Children and Adolescents

- All children should get their first dose of hepatitis B vaccine at birth and should have completed the vaccine series by 6-18 months of age.
- Children and adolescents through 18 years of age who did not get the vaccine when they were younger should also be vaccinated.

#### Adults

- All unvaccinated adults at risk for HBV infection should be vaccinated. This includes:
  - sex partners of people infected with HBV,
  - men who have sex with men,
  - people who inject street drugs,
  - people with more than one sex partner,
  - people with chronic liver or kidney disease,
  - people with jobs that expose them to human blood,
  - household contacts of people infected with HBV,
  - residents and staff in institutions for the developmentally disabled,
  - kidney dialysis patients,

- people who travel to countries where hepatitis B is common,
- people with HIV infection.
- Anyone else who wants to be protected from HBV infection may be vaccinated.

#### 4 Who should NOT get hepatitis B vaccine?

- Anyone with a life-threatening allergy to baker's yeast, or to any other component of the vaccine, should not get hepatitis B vaccine. Tell your provider if you have any severe allergies.
- Anyone who has had a life-threatening allergic reaction to a previous dose of hepatitis B vaccine should not get another dose.
- Anyone who is moderately or severely ill when a dose of vaccine is scheduled should probably wait until they recover before getting the vaccine.

Your provider can give you more information about these precautions.

Pregnant women who need protection from HBV infection may be vaccinated.

#### 5 Hepatitis B vaccine risks

Hepatitis B is a very safe vaccine. Most people do not have any problems with it.

The following mild problems have been reported:

- Soreness where the shot was given (up to about 1 person in 4).
- Temperature of 99.9°F or higher (up to about 1 person in 15).

Severe problems are extremely rare. Severe allergic reactions are believed to occur about once in 1.1 million doses.

A vaccine, like any medicine, *could* cause a serious reaction. But the risk of a vaccine causing serious harm, or death, is extremely small. More than 100 million people have gotten hepatitis B vaccine in the United States.

#### 6 What if there is a moderate or severe reaction?

What should I look for?

- Any unusual condition, such as a high fever or behavior changes. Signs of a serious allergic

reaction can include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, a fast heart beat or dizziness.

What should I do?

- Call a doctor, or get the person to a doctor right away.
- Tell your doctor what happened, the date and time it happened, and when the vaccination was given.
- Ask your doctor, nurse, or health department to report the reaction by filing a Vaccine Adverse Event Reporting System (VAERS) form.

Or you can file this report through the VAERS web site at [www.vaers.hhs.gov](http://www.vaers.hhs.gov), or by calling 1-800-822-7967.

*VAERS does not provide medical advice.*

#### 7 The National Vaccine Injury Compensation Program

In the event that you or your child has a serious reaction to a vaccine, a federal program has been created to help pay for the care of those who have been harmed.

For details about the National Vaccine Injury Compensation Program, call 1-800-338-2382 or visit their website at [www.hrsa.gov/vaccinecompensation](http://www.hrsa.gov/vaccinecompensation).

#### 8 How can I learn more?

- Ask your doctor or nurse. They can give you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
  - Call 1-800-232-4636 (1-800-CDC-INFO)
  - Visit CDC websites at:
    - [www.cdc.gov/ncidod/diseases/hepatitis](http://www.cdc.gov/ncidod/diseases/hepatitis)
    - [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)
    - [www.cdc.gov/travel](http://www.cdc.gov/travel)



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

Vaccine Information Statement (Interim)  
Hepatitis B (7/18/07) 42 U.S.C. § 300aa-26

**ATLANTIC CAPE COMMUNITY COLLEGE**

**APPENDIX J**

**Blood (OPIM) Cleanup Guidelines**

For safety purposes and to prevent the spread of disease, blood and/or other bodily fluids should be cleaned up and properly disposed, the area disinfected, and the incident and clean up recorded in the following manner:

- Blood clean up should be performed only by those employees who are current in their Bloodborne Pathogens training. Be careful not to step on the blood when entering the spill area.
- The individual cleaning the blood spill needs to use the proper protective equipment (PPE), (e.g. nitrile gloves; goggles, mask & suit for larger spills).
- A micro-encapsulation absorbent material (solidifier) may be applied to pooled blood so that the bulk of contamination can be removed to a biohazard red bag before decontamination. Use the solidifier according to manufacturer’s directions.
- With gloves on, place the solidified blood into a red biohazard bag.
- Spray the disinfectant that is included in clean up kit on area of spill. Wipe area with the paper towels in kit and dispose of in red bag. A solution of 1 oz bleach plus 9 oz water (10% bleach solution) may also be used as a disinfectant. Let the disinfectant sit on the spill area for 15 minutes, and then wipe up.
- For larger spills outdoors, 10% bleach solution can be used after solidified blood is removed, disinfectant applied and wiping is performed.
- Inspect the blood spill area closely making sure that there is nothing missed and that the cleanup process is complete.
- Remove gloves and dispose of in the biohazard red bag. Tie the red bag, place ID sticker on, and dispose of in the biohazard disposal area on the campus. (ML- Health Office, WACC- HPI, CMCC- Chem lab storage area.
- Wash hands with antiseptic soap and water for several minutes.
- Caution should be used to not get blood on skin, or in eyes, nose, mouth. If exposure does occur, contact your supervisor right away. The College Nurse or designee will provide directions per the Exposure Control Plan.

Contacts: College Nurse 609-343-5112, or 4835 Chemical Compliance 609-343-4956

\_\_\_\_\_

**Date:** \_\_\_\_\_ **Time:** \_\_\_\_\_

**Campus:** \_\_\_\_\_

**Location:** \_\_\_\_\_

**Description of Spill:** \_\_\_\_\_

**Employee performing clean-up:**

(print) \_\_\_\_\_ (sign) \_\_\_\_\_

**Red bag disposal location:**                      **ML**                      **WACC**                      **CMCC**

## ATLANTIC CAPE COMMUNITY COLLEGE

### APPENDIX K

#### US PUBLIC HEALTH SERVICE GUIDELINES FOR THE MANAGEMENT OF OCCUPATIONAL EXPOSURES TO HBS, HCV AND HIV AND RECOMMENDATIONS FOR POSTEXPOSURE PROPHYLAXIS

##### **Summary**

*This report updates and consolidates all previous U.S. Public Health Service recommendations for the management of health-care personnel (HCP) who have occupational exposure to blood and other body fluids that might contain hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV).*

*Recommendations for HBV postexposure management include initiation of the hepatitis B vaccine series to any susceptible, unvaccinated person who sustains an occupational blood or body fluid exposure. Postexposure prophylaxis (PEP) with hepatitis B immune globulin (HBIG) and/or hepatitis B vaccine series should be considered for occupational exposures after evaluation of the hepatitis B surface antigen status of the source and the vaccination and vaccine-response status of the exposed person. Guidance is provided to clinicians and exposed HCP for selecting the appropriate HBV PEP.*

*Immune globulin and antiviral agents (e.g., interferon with or without ribavirin) are not recommended for PEP of hepatitis C. For HCV postexposure management, the HCV status of the source and the exposed person should be determined, and for HCP exposed to an HCV positive source, follow-up HCV testing should be performed to determine if infection develops.*

*Recommendations for HIV PEP include a basic 4-week regimen of two drugs (zidovudine [ZDV] and lamivudine [3TC]; 3TC and stavudine [d4T]; or didanosine [ddI] and d4T) for most HIV exposures and an expanded regimen that includes the addition of a third drug for HIV exposures that pose an increased risk for transmission. When the source person's virus is known or suspected to be resistant to one or more of the drugs considered for the PEP regimen, the selection of drugs to which the source person's virus is unlikely to be resistant is recommended. In addition, this report outlines several special circumstances (e.g., delayed exposure report, unknown source person, pregnancy in the exposed person, resistance of the source virus to antiretroviral agents, or toxicity of the PEP regimen) when consultation with local experts and/or the National Clinicians' Post-Exposure Prophylaxis Hotline ([PEPline] 1-888-448-4911) is advised.*

*Occupational exposures should be considered urgent medical concerns to ensure timely postexposure management and administration of HBIG, hepatitis B vaccine, and/or HIV PEP.*

##### **INTRODUCTION**

Avoiding occupational blood exposures is the primary way to prevent transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) in health-care settings (1). However, hepatitis B immunization and postexposure management are integral components of a complete program to prevent infection following bloodborne pathogen exposure and are important elements of workplace safety (2).

The U.S. Public Health Service (PHS) has published previous guidelines for the management of HIV exposures that included considerations for postexposure prophylaxis (PEP) (3--5). Since publication of the 1998 HIV exposure guidelines (5), several new antiretroviral agents have been approved by the Food and Drug Administration (FDA), and more information is available about the use and safety of HIV PEP (6--11). In addition, questions exist regarding considerations about PEP regimens when the source person's virus is known or suspected to be resistant to one or more of the antiretroviral agents that might be used for PEP. Concern also has arisen about the use of PEP when it is not warranted. Data indicate that some health-care personnel (HCP) take a full course of HIV PEP after exposures that do not confer an HIV transmission risk (10,11).

In September 1999, a meeting of a PHS interagency working group\* and expert consultants was convened by CDC. The PHS working group decided to issue updated recommendations for the management of occupational exposure to HIV. In addition, the report was to include recommendations for the management of occupational HBV and HCV exposures so that a single document could comprehensively address the management of occupational exposures to bloodborne pathogens. This report updates and consolidates the previous PHS guidelines and recommendations for occupational HBV, HCV, and HIV exposure management for HCP. Specific practice recommendations for the management of occupational bloodborne pathogen exposures are outlined to assist health-care institutions with the implementation of these PHS guidelines (Appendices A and B). As relevant information becomes available, updates of these recommendations will be published. Recommendations for nonoccupational (e.g., sexual, pediatric, and perinatal) HBV, HCV, and HIV exposures are not addressed in these guidelines and can be found elsewhere ([12--15](#)).

### **Definition of Health-Care Personnel and Exposure**

In this report, health-care personnel (HCP) are defined as persons (e.g., employees, students, contractors, attending clinicians, public-safety workers, or volunteers) whose activities involve contact with patients or with blood or other body fluids from patients in a health-care, laboratory, or public-safety setting. The potential exists for blood and body fluid exposure to other workers, and the same principles of exposure management could be applied to other settings. An exposure that might place HCP at risk for HBV, HCV, or HIV infection is defined as a percutaneous injury (e.g., a needlestick or cut with a sharp object) or contact of mucous membrane or nonintact skin (e.g., exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other body fluids that are potentially infectious ([16,17](#)).

In addition to blood and body fluids containing visible blood, semen and vaginal secretions also are considered potentially infectious. Although semen and vaginal secretions have been implicated in the sexual transmission of HBV, HCV, and HIV, they have not been implicated in occupational transmission from patients to HCP. The following fluids also are considered potentially infectious: cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. The risk for transmission of HBV, HCV, and HIV infection from these fluids is unknown; the potential risk to HCP from occupational exposures has not been assessed by epidemiologic studies in health-care settings. Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they contain blood. The risk for transmission of HBV, HCV, and HIV infection from these fluids and materials is extremely low.

Any direct contact (i.e., contact without barrier protection) to concentrated virus in a research laboratory or production facility is considered an exposure that requires clinical evaluation. For human bites, the clinical evaluation must include the possibility that both the person bitten and the person who inflicted the bite were exposed to bloodborne pathogens. Transmission of HBV or HIV infection only rarely has been reported by this route ([18--20](#)) (CDC, unpublished data, 1998).

## **BACKGROUND**

This section provides the rationale for the postexposure management and prophylaxis recommendations presented in this report. Additional details concerning the risk for occupational bloodborne pathogen transmission to HCP and management of occupational bloodborne pathogen exposures are available elsewhere ([5,12,13,21-24](#)).

### **Occupational Transmission of HBV**

#### ***Risk for Occupational Transmission of HBV***

HBV infection is a well recognized occupational risk for HCP (25). The risk of HBV infection is primarily related to the degree of contact with blood in the work place and also to the hepatitis B e antigen (HBeAg) status of the source person. In studies of HCP who sustained injuries from needles contaminated with blood containing HBV, the risk of developing clinical hepatitis if the blood was both hepatitis B surface antigen (HBsAg)- and HBeAg-positive was 22%--31%; the risk of developing serologic evidence of HBV infection was 37%--62%. By comparison, the risk of developing clinical hepatitis from a needle contaminated with HBsAg-positive, HBeAg-negative blood was 1%--6%, and the risk of developing serologic evidence of HBV infection, 23%--37% (26).

Although percutaneous injuries are among the most efficient modes of HBV transmission, these exposures probably account for only a minority of HBV infections among HCP. In several investigations of nosocomial hepatitis B

outbreaks, most infected HCP could not recall an overt percutaneous injury (27,28), although in some studies, up to one third of infected HCP recalled caring for a patient who was HBsAg-positive (29,30). In addition, HBV has been demonstrated to survive in dried blood at room temperature on environmental surfaces for at least 1 week (31). Thus, HBV infections that occur in HCP with no history of nonoccupational exposure or occupational percutaneous injury might have resulted from direct or indirect blood or body fluid exposures that inoculated HBV into cutaneous scratches, abrasions, burns, other lesions, or on mucosal surfaces (32--34). The potential for HBV transmission through contact with environmental surfaces has been demonstrated in investigations of HBV outbreaks among patients and staff of hemodialysis units (35--37).

Blood contains the highest HBV titers of all body fluids and is the most important vehicle of transmission in the health-care setting. HBsAg is also found in several other body fluids, including breast milk, bile, cerebrospinal fluid, feces, nasopharyngeal washings, saliva, semen, sweat, and synovial fluid (38). However, the concentration of HBsAg in body fluids can be 100--1000--fold higher than the concentration of infectious HBV particles. Therefore, most body fluids are not efficient vehicles of transmission because they contain low quantities of infectious HBV, despite the presence of HBsAg.

In serologic studies conducted in the United States during the 1970s, HCP had a prevalence of HBV infection approximately 10 times higher than the general population (39--42). Because of the high risk of HBV infection among HCP, routine preexposure vaccination of HCP against hepatitis B and the use of standard precautions to prevent exposure to blood and other potentially infectious body fluids have been recommended since the early 1980s (43). Regulations issued by the Occupational Safety and Health Administration (OSHA) (2) have increased compliance with these recommendations. Since the implementation of these recommendations, a sharp decline has occurred in the incidence of HBV infection among HCP.

#### ***PEP for HBV***

##### **Efficacy of PEP for HBV.**

The effectiveness of hepatitis B immune globulin (HBIG) and/or hepatitis B vaccine in various postexposure settings has been evaluated by prospective studies. For perinatal exposure to an HBsAg-, HBeAg-positive mother, a regimen combining HBIG and initiation of the hepatitis B vaccine series at birth is 85%--95% effective in preventing HBV infection (44,45). Regimens involving either multiple doses of HBIG alone or the hepatitis B vaccine series alone are 70%--75% effective in preventing HBV infection (46). In the occupational setting, multiple doses of HBIG initiated within 1 week following percutaneous exposure to HBsAg-positive blood provides an estimated 75% protection from HBV infection (47--49). Although the postexposure efficacy of the combination of HBIG and the hepatitis B vaccine series has not been evaluated in the occupational setting, the increased efficacy of this regimen observed in the perinatal setting, compared with HBIG alone, is presumed to apply to the occupational setting as well. In addition, because persons requiring PEP in the occupational setting are generally at continued risk for HBV exposure, they should receive the hepatitis B vaccine series.

##### **Safety of PEP for HBV.**

Hepatitis B vaccines have been found to be safe when administered to infants, children, or adults (12,50). Through the year 2000, approximately 100 million persons have received hepatitis B vaccine in the United States. The most common side effects from hepatitis B vaccination are pain at the injection site and mild to moderate fever (50--55). Studies indicate that these side effects are reported no more frequently among persons vaccinated than among those receiving placebo (51,52).

Approximately 45 reports have been received by the Vaccine Adverse Event Reporting System (VAERS) of alopecia (hair loss) in children and adults after administration of plasma-derived and recombinant hepatitis B vaccine; four persons sustained hair loss following vaccination on more than one occasion (56). Hair loss was temporary for approximately two thirds of persons who experienced hair loss. An epidemiologic study conducted in the Vaccine Safety Datalink found no statistical association between alopecia and receipt of hepatitis B vaccine in children (CDC, unpublished data, 1998). A low rate of anaphylaxis has been observed in vaccine recipients based on reports to VAERS; the estimated incidence is 1 in 600,000 vaccine doses distributed. Although none of the persons who developed anaphylaxis died, anaphylactic reactions can be life-threatening; therefore, further vaccination with hepatitis B vaccine is contraindicated in persons with a history of anaphylaxis after a previous dose of vaccine.

Hepatitis B immunization programs conducted on a large scale in Taiwan, Alaska, and New Zealand have observed no association between vaccination and the occurrence of serious adverse events. Furthermore, in the United States, surveillance of adverse events following hepatitis B vaccination has demonstrated no association between hepatitis B vaccine and the occurrence of serious adverse events, including Guillain-Barré syndrome, transverse myelitis, multiple sclerosis, optic neuritis, and seizures (57--59) (CDC, unpublished data, 1991). However, several case reports and case series have claimed an association between hepatitis B vaccination and such syndromes and diseases as multiple sclerosis, optic neuritis, rheumatoid arthritis, and other autoimmune diseases (57,60--66). Most of these reported adverse events have occurred in adults, and no report has compared the frequency of the purported vaccine-associated syndrome/disease with the frequency in an unvaccinated population. In addition, recent case-control studies have demonstrated no association between hepatitis B vaccination and development or short-term risk of relapse of multiple sclerosis (67,68), and reviews by international panels of experts have concluded that available data do not demonstrate a causal association between hepatitis B vaccination and demyelinating diseases, including multiple sclerosis (69).

HBIG is prepared from human plasma known to contain a high titer of antibody to HBsAg (anti-HBs). The plasma from which HBIG is prepared is screened for HBsAg and antibodies to HIV and HCV. The process used to prepare HBIG inactivates and eliminates HIV from the final product. Since 1996, the final product has been free of HCV RNA as determined by the polymerase chain reaction (PCR), and, since 1999, all products available in the United States have been manufactured by methods that inactivate HCV and other viruses. No evidence exists that HBV, HCV, or HIV have ever been transmitted by HBIG commercially available in the United States (70,71).

Serious adverse effects from HBIG when administered as recommended have been rare. Local pain and tenderness at the injection site, urticaria and angioedema might occur; anaphylactic reactions, although rare, have been reported following the injection of human immune globulin (IG) preparations (72). Persons with a history of anaphylactic reaction to IG should not receive HBIG.

#### **PEP for HBV During Pregnancy.**

No apparent risk exists for adverse effects to developing fetuses when hepatitis B vaccine is administered to pregnant women (CDC, unpublished data, 1990). The vaccine contains noninfectious HBsAg particles and should pose no risk to the fetus. HBV infection during pregnancy might result in severe disease for the mother and chronic infection for the newborn. Therefore, neither pregnancy nor lactation should be considered a contraindication to vaccination of women. HBIG is not contraindicated for pregnant or lactating women.

#### **Occupational Transmission of HCV**

##### ***Risk for Occupational Transmission of HCV***

HCV is not transmitted efficiently through occupational exposures to blood. The average incidence of anti-HCV seroconversion after accidental percutaneous exposure from an HCV-positive source is 1.8% (range: 0%--7%) (73--76), with one study indicating that transmission occurred only from hollow-bore needles compared with other sharps (75). Transmission rarely occurs from mucous membrane exposures to blood, and no transmission in HCP has been documented from intact or nonintact skin exposures to blood (77,78). Data are limited on survival of HCV in the environment. In contrast to HBV, the epidemiologic data for HCV suggest that environmental contamination with blood containing HCV is not a significant risk for transmission in the health-care setting (79,80), with the possible exception of the hemodialysis setting where HCV transmission related to environmental contamination and poor infection-control practices have been implicated (81--84). The risk for transmission from exposure to fluids or tissues other than HCV-infected blood also has not been quantified but is expected to be low.

##### ***Postexposure Management for HCV***

In several studies, researchers have attempted to assess the effectiveness of IG following possible exposure to non-A, non-B hepatitis. These studies have been difficult to interpret because they lack uniformity in diagnostic criteria and study design, and, in all but one study, the first dose of IG was administered before potential exposure (48,85,86). In an experiment designed to model HCV transmission by needlestick exposure in the health-care setting, high anti-HCV titer IG administered to chimpanzees 1 hour after exposure to HCV-positive blood did not prevent transmission of infection (87). In 1994, the Advisory Committee on Immunization Practices (ACIP) reviewed available data regarding the prevention of HCV infection with IG and concluded that using IG as PEP for hepatitis C was not supported (88).

This conclusion was based on the following facts:

- No protective antibody response has been identified following HCV infection.

- Previous studies of IG use to prevent posttransfusion non-A, non-B hepatitis might not be relevant in making recommendations regarding PEP for hepatitis C.
- Experimental studies in chimpanzees with IG containing anti-HCV failed to prevent transmission of infection after exposure.

No clinical trials have been conducted to assess postexposure use of antiviral agents (e.g., interferon with or without ribavirin) to prevent HCV infection, and antivirals are not FDA-approved for this indication. Available data suggest that an established infection might need to be present before interferon can be an effective treatment. Kinetic studies suggest that the effect of interferon on chronic HCV infection occurs in two phases. During the first phase, interferon blocks the production or release of virus from infected cells. In the second phase, virus is eradicated from the infected cells (89); in this later phase, higher pretreatment alanine aminotransferase (ALT) levels correlate with an increasing decline in infected cells, and the rapidity of the decline correlates with viral clearance. In contrast, the effect of antiretrovirals when used for PEP after exposure to HIV is based on inhibition of HIV DNA synthesis early in the retroviral replicative cycle.

In the absence of PEP for HCV, recommendations for postexposure management are intended to achieve early identification of chronic disease and, if present, referral for evaluation of treatment options. However, a theoretical argument is that intervention with antivirals when HCV RNA first becomes detectable might prevent the development of chronic infection. Data from studies conducted outside the United States suggest that a short course of interferon started early in the course of acute hepatitis C is associated with a higher rate of resolved infection than that achieved when therapy is begun after chronic hepatitis C has been well established (90--92). These studies used various treatment regimens and included persons with acute disease whose peak ALT levels were 500--1,000 IU/L at the time therapy was initiated (2.6--4 months after exposure).

No studies have evaluated the treatment of acute infection in persons with no evidence of liver disease (i.e., HCV RNA-positive <6 months duration with normal ALT levels); among patients with chronic HCV infection, the efficacy of antivirals has been demonstrated only among patients who also had evidence of chronic liver disease (i.e., abnormal ALT levels). In addition, treatment started early in the course of chronic HCV infection (i.e., 6 months after onset of infection) might be as effective as treatment started during acute infection (13). Because 15%--25% of patients with acute HCV infection spontaneously resolve their infection (93), treatment of these patients during the acute phase could expose them unnecessarily to the discomfort and side effects of antiviral therapy.

Data upon which to base a recommendation for therapy of acute infection are insufficient because a) no data exist regarding the effect of treating patients with acute infection who have no evidence of disease, b) treatment started early in the course of chronic infection might be just as effective and would eliminate the need to treat persons who will spontaneously resolve their infection, and c) the appropriate regimen is unknown.

## **Occupational Transmission of HIV**

### ***Risk for Occupational Transmission of HIV***

In prospective studies of HCP, the average risk of HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3% (95% confidence interval [CI] = 0.2%--0.5%) (94) and after a mucous membrane exposure, approximately 0.09% (95% CI = 0.006%--0.5%) (95). Although episodes of HIV transmission after nonintact skin exposure have been documented (96), the average risk for transmission by this route has not been precisely quantified but is estimated to be less than the risk for mucous membrane exposures (97). The risk for transmission after exposure to fluids or tissues other than HIV-infected blood also has not been quantified but is probably considerably lower than for blood exposures (98).

As of June 2000, CDC had received voluntary reports of 56 U.S. HCP with documented HIV seroconversion temporally associated with an occupational HIV exposure. An additional 138 episodes in HCP are considered possible occupational HIV transmissions. These workers had a history of occupational exposure to blood, other infectious body fluids, or laboratory solutions containing HIV, and no other risk for HIV infection was identified, but HIV seroconversion after a specific exposure was not documented (99).

Epidemiologic and laboratory studies suggest that several factors might affect the risk of HIV transmission after an occupational exposure. In a retrospective case-control study of HCP who had percutaneous exposure to HIV, the risk for HIV infection was found to be increased with exposure to a larger quantity of blood from the source person as

indicated by a) a device visibly contaminated with the patient's blood, b) a procedure that involved a needle being placed directly in a vein or artery, or c) a deep injury (100). The risk also was increased for exposure to blood from source persons with terminal illness, possibly reflecting either the higher titer of HIV in blood late in the course of AIDS or other factors (e.g., the presence of syncytia-inducing strains of HIV). A laboratory study that demonstrated that more blood is transferred by deeper injuries and hollow-bore needles lends further support for the observed variation in risk related to blood quantity (101).

The use of source person viral load as a surrogate measure of viral titer for assessing transmission risk has not yet been established. Plasma viral load (e.g., HIV RNA) reflects only the level of cell-free virus in the peripheral blood; latently infected cells might transmit infection in the absence of viremia. Although a lower viral load (e.g., <1,500 RNA copies/mL) or one that is below the limits of detection probably indicates a lower titer exposure, it does not rule out the possibility of transmission.

Some evidence exists regarding host defenses possibly influencing the risk for HIV infection. A study of HIV-exposed but uninfected HCP demonstrated an HIV-specific cytotoxic T-lymphocyte (CTL) response when peripheral blood mononuclear cells were stimulated *in vitro* with HIV-specific antigens (102). Similar CTL responses have been observed in other groups who experienced repeated HIV exposure without resulting infection (103--108). Among several possible explanations for this observation is that the host immune response sometimes might prevent establishment of HIV infection after a percutaneous exposure; another is that the CTL response simply might be a marker for exposure. In a study of 20 HCP with occupational exposure to HIV, a comparison was made of HCP treated with zidovudine (ZDV) PEP and those not treated. The findings from this study suggest that ZDV blunted the HIV-specific CTL response and that PEP might inhibit early HIV replication (109).

#### ***Rationale for HIV PEP***

Considerations that influence the rationale and recommendations for PEP include

- the pathogenesis of HIV infection, particularly the time course of early infection;
- the biological plausibility that infection can be prevented or ameliorated by using antiretroviral drugs;
- direct or indirect evidence of the efficacy of specific agents used for prophylaxis; and
- the risk and benefit of PEP to exposed HCP.

The following discussion considers each of these concerns.

#### **Role of Pathogenesis in Considering Antiretroviral Prophylaxis.**

Information about primary HIV infection indicates that systemic infection does not occur immediately, leaving a brief window of opportunity during which postexposure antiretroviral intervention might modify or prevent viral replication. In a primate model of simian immunodeficiency virus (SIV) infection, infection of dendritic-like cells occurred at the site of inoculation during the first 24 hours following mucosal exposure to cell-free virus. Over the subsequent 24--48 hours, migration of these cells to regional lymph nodes occurred, and virus was detectable in the peripheral blood within 5 days (110). Theoretically, initiation of antiretroviral PEP soon after exposure might prevent or inhibit systemic infection by limiting the proliferation of virus in the initial target cells or lymph nodes.

#### **Efficacy of Antiretrovirals for PEP in Animal Studies.**

Data from animal studies have been difficult to interpret, in part, because of problems identifying an animal model that is comparable to humans. In early studies, differences in controlled variables (e.g., choice of viral strain [based on the animal model used], inoculum size, route of inoculation, time of prophylaxis initiation, and drug regimen) made extrapolation of the results to humans difficult. Recently, refinements in methodology have facilitated more relevant studies; in particular, the viral inocula used in animal studies have been reduced to levels more analogous to human exposures but sufficient to cause infection in control animals (111--113). These studies provide encouraging evidence of postexposure chemoprophylactic efficacy.

Studies among primates and in murine and feline animal models have demonstrated that larger viral inocula decrease prophylactic efficacy (114--117). In addition, delaying initiation, shortening the duration, or decreasing the antiretroviral dose of PEP, individually or in combination, decreased prophylactic efficacy (113,118--124). For example, when (R)-9-(2-phosphonylmethoxypropyl) adenine (tenofovir) was administered 48 hours before, 4 hours after, or 24 hours after intravenous SIV inoculation to long-tailed macaques, a 4-week regimen prevented infection in all treated animals (122). A subsequent study confirmed the efficacy of tenofovir PEP when administered 24 hours

after intravenous inoculation of a dose of SIV that uniformly results in infection in untreated macaques. In the same study, protection was incomplete if the tenofovir administration was delayed to 48 or 72 hours postexposure or if the total duration of treatment was curtailed to 3 or 10 days (123).

#### **Efficacy of Antiretrovirals for PEP in Human Studies.**

Little information exists from which the efficacy of PEP in humans can be assessed. Seroconversion is infrequent following an occupational exposure to HIV-infected blood; therefore, several thousands of exposed HCP would need to enroll in a prospective trial to achieve the statistical power necessary to directly demonstrate PEP efficacy (125). In the retrospective case-control study of HCP, after controlling for other risk factors for HIV transmission, use of ZDV as PEP was associated with a reduction in the risk of HIV infection by approximately 81% (95% CI = 43%--94%) (100). Although the results of this study suggest PEP efficacy, its limitations include the small number of cases studied and the use of cases and controls from different cohorts.

In a multicenter trial in which ZDV was administered to HIV-infected pregnant women and their infants, the administration of ZDV during pregnancy, labor, and delivery and to the infant reduced transmission by 67% (126). Only part of the protective effect of ZDV was explained by reduction of the HIV viral load in the maternal blood, suggesting that ZDV prophylaxis, in part, involves a mechanism other than the reduction of maternal viral burden (127,128). Since 1998, studies have highlighted the importance of PEP for prevention of perinatal HIV transmission. In Africa, the use of ZDV in combination with lamivudine (3TC) decreased perinatal HIV transmission by 50% when administered during pregnancy, labor, and for 1 week postpartum, and by 37% when started at the onset of labor and continued for 1 week postpartum (129). Studies in the United States and Uganda also have demonstrated that rates of perinatal HIV transmission have been reduced with the use of abbreviated PEP regimens started intrapartum or during the first 48--72 hours of life (130--132).

The limitations of all of these studies with animals and humans must be considered when reviewing evidence of PEP efficacy. The extent to which data from animal studies can be extrapolated to humans is largely unknown, and the exposure route for mother-to-infant HIV transmission is not similar to occupational exposures; therefore, these findings might not be directly applicable to PEP in HCP.

#### **Reports of Failure of PEP.**

Failure of PEP to prevent HIV infection in HCP has been reported in at least 21 instances (78,133--139). In 16 of the cases, ZDV was used alone as a single agent; in two cases, ZDV and didanosine (ddI) were used in combination (133,138); and in three cases,  $\geq 3$  drugs were used for PEP (137--139). Thirteen of the source persons were known to have been treated with antiretroviral therapy before the exposure. Antiretroviral resistance testing of the virus from the source person was performed in seven instances, and in four, the HIV infection transmitted was found to have decreased sensitivity to ZDV and/or other drugs used for PEP. In addition to possible exposure to an antiretroviral-resistant strain of HIV, other factors that might have contributed to these apparent failures might include a high titer and/or large inoculum exposure, delayed initiation and/or short duration of PEP, and possible factors related to the host (e.g., cellular immune system responsiveness) and/or to the source person's virus (e.g., presence of syncytia-forming strains) (133). Details regarding the cases of PEP failure involving combinations of antiretroviral agents are included in this report ([Table 1](#)).

#### ***Antiretroviral Agents for PEP***

Antiretroviral agents from three classes of drugs are available for the treatment of HIV infection. These agents include the nucleoside reverse transcriptase inhibitors (NRTIs), nonnucleoside reverse transcriptase inhibitors (NNRTIs), and protease inhibitors (PIs). Only antiretroviral agents that have been approved by FDA for treatment of HIV infection are discussed in these guidelines.

Determining which agents and how many to use or when to alter a PEP regimen is largely empiric. Guidelines for the treatment of HIV infection, a condition usually involving a high total body burden of HIV, include recommendations for the use of three drugs (140); however, the applicability of these recommendations to PEP remains unknown. In HIV-infected patients, combination regimens have proved superior to monotherapy regimens in reducing HIV viral load, reducing the incidence of opportunistic infections and death, and delaying onset of drug resistance (141,142). A combination of drugs with activity at different stages in the viral replication cycle (e.g., nucleoside analogues with a PI) theoretically could offer an additional preventive effect in PEP, particularly for occupational exposures that pose an increased risk of transmission. Although the use of a three-drug regimen might be justified for exposures that pose

an increased risk of transmission, whether the potential added toxicity of a third drug is justified for lower-risk exposures is uncertain. Therefore, the recommendations at the end of this document provide guidance for two- and three-drug PEP regimens that are based on the level of risk for HIV transmission represented by the exposure.

NRTI combinations that can be considered for PEP include ZDV and 3TC, 3TC and stavudine (d4T), and ddI and d4T. In previous PHS guidelines, a combination of ZDV and 3TC was considered the first choice for PEP regimens (3). Because ZDV and 3TC are available in a combination formulation (Combivir™, manufactured by Glaxo Wellcome, Inc., Research Triangle Park, NC), the use of this combination might be more convenient for HCP. However, recent data suggest that mutations associated with ZDV and 3TC resistance might be common in some areas (143). Thus, individual clinicians might prefer other NRTIs or combinations based on local knowledge and experience in treating HIV infection and disease.

The addition of a third drug for PEP following high-risk exposures is based on demonstrated effectiveness in reducing viral burden in HIV-infected persons. Previously, indinavir (IDV) or nelfinavir (NFV) were recommended as first-choice agents for inclusion in an expanded PEP regimen (5). Since the publication of the 1998 PEP guidelines, efavirenz (EFV), an NNRTI; abacavir (ABC), a potent NRTI; and Kaletra™, a PI, have been approved by FDA. Although side effects might be common with the NNRTIs, EFV might be considered for expanded PEP regimens, especially when resistance to PIs in the source person's virus is known or suspected. ABC has been associated with dangerous hypersensitivity reactions but, with careful monitoring, may be considered as a third drug for PEP. Kaletra, a combination of lopinavir and ritonavir, is a potent HIV inhibitor that, with expert consultation, may be considered in an expanded PEP regimen.

#### **Toxicity and Drug Interactions of Antiretroviral Agents.**

When administering PEP, an important goal is completion of a 4-week PEP regimen when PEP is indicated. Therefore, the toxicity profile of antiretroviral agents, including the frequency, severity, duration, and reversibility of side effects, is a relevant consideration. All of the antiretroviral agents have been associated with side effects (Table 2). However, studies of adverse events have been conducted primarily with persons who have advanced disease (and longer treatment courses) and who therefore might not reflect the experience in persons who are uninfected (144).

Several primary side effects are associated with antiretroviral agents (Table 2). Side effects associated with many of the NRTIs are chiefly gastrointestinal (e.g., nausea or diarrhea); however, ddI has been associated with cases of fatal and nonfatal pancreatitis among HIV-infected patients treated for >4 weeks. The use of PIs has been associated with new onset diabetes mellitus, hyperglycemia, diabetic ketoacidosis, exacerbation of preexisting diabetes mellitus, and dyslipidemia (145--147). Nephrolithiasis has been associated with IDV use; however, the incidence of this potential complication might be limited by drinking at least 48 ounces (1.5 L) of fluid per 24-hour period (e.g., six 8-ounce glasses of water throughout the day) (148). NFV has been associated with the development of diarrhea; however, this side effect might respond to treatment with antimotility agents that can be prescribed for use, if necessary, at the time the drug is recommended for PEP. The NNRTIs have been associated with severe skin reactions, including life-threatening cases of Stevens-Johnson syndrome and toxic epidermal necrolysis. Hepatotoxicity, including fatal hepatic necrosis, has occurred in patients treated with nevirapine (NVP); some episodes began during the first few weeks of therapy (FDA, unpublished data, 2000). EFV has been associated with central nervous system side effects, including dizziness, somnolence, insomnia, and abnormal dreaming.

All of the approved antiretroviral agents might have potentially serious drug interactions when used with certain other drugs (Appendix C). Careful evaluation of concomitant medications used by an exposed person is required before PEP is prescribed, and close monitoring for toxicity is also needed. Further information about potential drug interactions can be found in the manufacturer's package insert.

#### **Toxicity Associated with PEP.**

Information from the National Surveillance System for Health Care Workers (NaSH) and the HIV Postexposure Registry indicates that nearly 50% of HCP experience adverse symptoms (e.g., nausea, malaise, headache, anorexia, and headache) while taking PEP and that approximately 33% stop taking PEP because of adverse signs and symptoms (6, 7, 10, 11). Some studies have demonstrated that side effects and discontinuation of PEP are more common among HCP taking three-drug combination regimens for PEP compared with HCP taking two-drug combination regimens (7, 10). Although similar rates of side effects were observed among persons who took PEP after sexual or drug use exposures to HIV in the San Francisco Post-Exposure Prevention Project, 80% completed 4 weeks of therapy (149).

Participants in the San Francisco Project were followed at 1, 2, 4, 26, and 52 weeks postexposure and received medication adherence counseling; most participants took only two drugs for PEP.

Serious side effects, including nephrolithiasis, hepatitis, and pancytopenia have been reported with the use of combination drugs for PEP (6,7,150,151). One case of NVP-associated fulminant liver failure requiring liver transplantation and one case of hypersensitivity syndrome have been reported in HCP taking NVP for HIV PEP (152). Including these two cases, from March 1997 through September 2000, FDA received reports of 22 cases of serious adverse events related to NVP taken for PEP (153). These events included 12 cases of hepatotoxicity, 14 cases of skin reaction (including one documented and two possible cases of Stevens-Johnson syndrome), and one case of rhabdomyolysis; four cases involved both hepatotoxicity and skin reaction, and one case involved both rhabdomyolysis and skin reaction.

### **Resistance to Antiretroviral Agents.**

Known or suspected resistance of the source virus to antiretroviral agents, particularly to agents that might be included in a PEP regimen, is a concern for persons making decisions about PEP. Resistance to HIV infection occurs with all of the available antiretroviral agents, and cross-resistance within drug classes is frequent (154). Recent studies have demonstrated an emergence of drug-resistant HIV among source persons for occupational exposures (143,155). A study conducted at seven U.S. sites during 1998--1999 found that 16 (39%) of 41 source persons whose virus was sequenced had primary genetic mutations associated with resistance to RTIs, and 4 (10%) had primary mutations associated with resistance to PIs (143). In addition, occupational transmission of resistant HIV strains, despite PEP with combination drug regimens, has been reported (137,139). In one case, a hospital worker became infected after an HIV exposure despite a PEP regimen that included ddI, d4T, and NVP (139). The transmitted HIV contained two primary genetic mutations associated with resistance to NNRTIs (the source person was taking EFV at the time of the exposure). Despite recent studies and case reports, the relevance of exposure to a resistant virus is still not well understood.

Empiric decisions about the presence of antiretroviral drug resistance are often difficult to make because patients generally take more than one antiretroviral agent. Resistance should be suspected in source persons when they are experiencing clinical progression of disease or a persistently increasing viral load, and/or decline in CD4 T-cell count, despite therapy or a lack of virologic response to therapy. However, resistance testing of the source virus at the time of an exposure is not practical because the results will not be available in time to influence the choice of the initial PEP regimen. Furthermore, in this situation, whether modification of the PEP regimen is necessary or will influence the outcome of an occupational exposure is unknown. No data exist to suggest that modification of a PEP regimen after receiving results from resistance testing (usually a minimum of 1--2 weeks) improves efficacy of PEP.

### **Antiretroviral Drugs During Pregnancy.**

Data are limited on the potential effects of antiretroviral drugs on the developing fetus or neonate (156). Carcinogenicity and/or mutagenicity is evident in several in vitro screening tests for ZDV and all other FDA-licensed NRTIs. The relevance of animal data to humans is unknown; however, because teratogenic effects were observed in primates at drug exposures similar to those representing human therapeutic exposure, the use of EFV should be avoided in pregnant women (140). IDV is associated with infrequent side effects in adults (i.e., hyperbilirubinemia and renal stones) that could be problematic for a newborn. Because the half-life of IDV in adults is short, these concerns might be relevant only if the drug is administered shortly before delivery.

In a recent study in France of perinatal HIV transmission, two cases of progressive neurologic disease and death were reported in uninfected infants exposed to ZDV and 3TC (157). Laboratory studies of these children suggested mitochondrial dysfunction. In a careful review of deaths in children followed in U.S. perinatal HIV cohorts, no deaths attributable to mitochondrial disease have been found (158).

Recent reports of fatal and nonfatal lactic acidosis in pregnant women treated throughout gestation with a combination of d4T and ddI have prompted warnings about use of these drugs during pregnancy (159). Although the case-patients were HIV-infected women taking the drugs for >4 weeks, pregnant women and their providers should be advised to consider d4T and ddI only when the benefits of their use outweigh the risks.

**PEP Use in Hospitals in the United States.** Analysis of data from NaSH provides information on the use of PEP following occupational exposures in 47 hospitals in the United States. A total of 11,784 exposures to blood and body

fluids was reported from June 1996 through November 2000 (CDC, unpublished data, 2001). For all exposures with known sources, 6% were to HIV-positive sources, 74% to HIV-negative sources, and 20% to sources with an unknown HIV status. Sixty-three percent of HCP exposed to a known HIV-positive source started PEP, and 54% of HCP took it for at least 20 days, whereas 14% of HCP exposed to a source person subsequently found to be HIV-negative initiated PEP, and 3% of those took it for at least 20 days. Information recorded about HIV exposures in NaSH indicates that 46% of exposures involving an HIV-positive source warranted only a two-drug PEP regimen (i.e., the exposure was to mucous membranes or skin or was a superficial percutaneous injury and the source person did not have end-stage AIDS or acute HIV illness); however, 53% of these exposed HCP took  $\geq 3$  drugs (CDC, unpublished data, 2000).

Similarly, the National Clinicians' Post-Exposure Prophylaxis Hotline (PEpline) reported that PEpline staff recommended stopping or not starting PEP for approximately one half of the HCP who consulted them about exposures (D. Bangsberg, San Francisco General Hospital, unpublished data, September 1999). The observation that some HCP exposed to HIV-negative source persons take PEP from several days to weeks following their exposures suggests that strategies be employed such as the use of a rapid HIV antibody assay, which could minimize exposure to unnecessary PEP (11). A recent study demonstrated that use of a rapid HIV test for evaluation of source persons after occupational exposures not only resulted in decreased use of PEP, but also was cost-effective compared with use of the standard enzyme immunoassay (EIA) test for source persons subsequently found to be HIV-negative (160).

### **RECOMMENDATIONS FOR THE MANAGEMENT OF HCP POTENTIALLY EXPOSED TO HBV, HCV, or HIV**

Exposure prevention remains the primary strategy for reducing occupational bloodborne pathogen infections; however, occupational exposures will continue to occur. Health-care organizations should make available to their personnel a system that includes written protocols for prompt reporting, evaluation, counseling, treatment, and follow-up of occupational exposures that might place HCP at risk for acquiring a bloodborne infection. HCP should be educated concerning the risk for and prevention of bloodborne infections, including the need to be vaccinated against hepatitis B (17,21,161--163). Employers are required to establish exposure-control plans that include postexposure follow-up for their employees and to comply with incident reporting requirements mandated by the 1992 OSHA bloodborne pathogen standard (2). Access to clinicians who can provide postexposure care should be available during all working hours, including nights and weekends. HBIG, hepatitis B vaccine, and antiretroviral agents for HIV PEP should be available for timely administration (i.e., either by providing access on-site or by creating linkages with other facilities or providers to make them available off-site). Persons responsible for providing postexposure management should be familiar with evaluation and treatment protocols and the facility's plans for accessing HBIG, hepatitis B vaccine, and antiretroviral drugs for HIV PEP.

HCP should be educated to report occupational exposures immediately after they occur, particularly because HBIG, hepatitis B vaccine, and HIV PEP are most likely to be effective if administered as soon after the exposure as possible. HCP who are at risk for occupational exposure to bloodborne pathogens should be familiarized with the principles of postexposure management as part of job orientation and ongoing job training.

#### **Hepatitis B Vaccination**

Any person who performs tasks involving contact with blood, blood-contaminated body fluids, other body fluids, or sharps should be vaccinated against hepatitis B (2,21). Prevacination serologic screening for previous infection is not indicated for persons being vaccinated because of occupational risk, unless the hospital or health-care organization considers screening cost-effective.

Hepatitis B vaccine should always be administered by the intramuscular route in the deltoid muscle with a needle 1--1.5 inches long. Hepatitis B vaccine can be administered at the same time as other vaccines with no interference with antibody response to the other vaccines (164). If the vaccination series is interrupted after the first dose, the second dose should be administered as soon as possible. The second and third doses should be separated by an interval of at least 2 months. If only the third dose is delayed, it should be administered when convenient. HCP who have contact with patients or blood and are at ongoing risk for percutaneous injuries should be tested 1--2 months after completion of the 3-dose vaccination series for anti-HBs (21). Persons who do not respond to the primary vaccine series (i.e., anti-HBs <10 mIU/mL) should complete a second 3-dose vaccine series or be evaluated to determine if they are HBsAg-positive. Revaccinated persons should be retested at the completion of the second vaccine series. Persons who do not respond to an initial 3-dose vaccine series have a 30%--50% chance of responding to a second 3-dose series (165).

Persons who prove to be HBsAg-positive should be counseled regarding how to prevent HBV transmission to others and regarding the need for medical evaluation ([12,163,166](#)). Nonresponders to vaccination who are HBsAg-negative should be considered susceptible to HBV infection and should be counseled regarding precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or probable parenteral exposure to HBsAg-positive blood. Booster doses of hepatitis B vaccine are not necessary, and periodic serologic testing to monitor antibody concentrations after completion of the vaccine series is not recommended. Any blood or body fluid exposure sustained by an unvaccinated, susceptible person should lead to the initiation of the hepatitis B vaccine series.

### **Treatment of an Exposure Site**

Wounds and skin sites that have been in contact with blood or body fluids should be washed with soap and water; mucous membranes should be flushed with water. No evidence exists that using antiseptics for wound care or expressing fluid by squeezing the wound further reduces the risk of bloodborne pathogen transmission; however, the use of antiseptics is not contraindicated. The application of caustic agents (e.g., bleach) or the injection of antiseptics or disinfectants into the wound is not recommended.

### **Exposure Report**

If an occupational exposure occurs, the circumstances and postexposure management should be recorded in the exposed person's confidential medical record (usually on a form the facility designates for this purpose) ([Box 1](#)). In addition, employers should follow all federal (including OSHA) and state requirements for recording and reporting occupational injuries and exposures.

### **Evaluation of the Exposure and the Exposure Source**

#### ***Evaluation of the Exposure***

The exposure should be evaluated for the potential to transmit HBV, HCV, and HIV based on the type of body substance involved and the route and severity of the exposure ([Box 2](#)). Blood, fluid containing visible blood, or other potentially infectious fluid (including semen; vaginal secretions; and cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids) or tissue can be infectious for bloodborne viruses. Exposures to these fluids or tissue through a percutaneous injury (i.e., needlestick or other penetrating sharps-related event) or through contact with a mucous membrane are situations that pose a risk for bloodborne virus transmission and require further evaluation. For HCV and HIV, exposure to a blood-filled hollow needle or visibly bloody device suggests a higher risk exposure than exposure to a needle that was most likely used for giving an injection. In addition, any direct contact (i.e., personal protective equipment either was not present or was ineffective in protecting skin or mucous membranes) with concentrated virus in a research laboratory or production facility is considered an exposure that requires clinical evaluation.

For skin exposure, follow-up is indicated only if it involves exposure to a body fluid previously listed and evidence exists of compromised skin integrity (e.g., dermatitis, abrasion, or open wound). In the clinical evaluation for human bites, possible exposure of both the person bitten and the person who inflicted the bite must be considered. If a bite results in blood exposure to either person involved, postexposure follow-up should be provided.

#### ***Evaluation of the Exposure Source***

The person whose blood or body fluid is the source of an occupational exposure should be evaluated for HBV, HCV, and HIV infection ([Box 3](#)). Information available in the medical record at the time of exposure (e.g., laboratory test results, admitting diagnosis, or previous medical history) or from the source person, might confirm or exclude bloodborne virus infection.

If the HBV, HCV, and/or HIV infection status of the source is unknown, the source person should be informed of the incident and tested for serologic evidence of bloodborne virus infection. Procedures should be followed for testing source persons, including obtaining informed consent, in accordance with applicable state and local laws. Any persons determined to be infected with HBV, HCV, or HIV should be referred for appropriate counseling and treatment. Confidentiality of the source person should be maintained at all times.

Testing to determine the HBV, HCV, and HIV infection status of an exposure source should be performed as soon as possible. Hospitals, clinics and other sites that manage exposed HCP should consult their laboratories regarding the most appropriate test to use to expedite obtaining these results. An FDA-approved rapid HIV-antibody test kit should be considered for use in this situation, particularly if testing by EIA cannot be completed within 24--48 hours.

Repeatedly reactive results by EIA or rapid HIV-antibody tests are considered to be highly suggestive of infection, whereas a negative result is an excellent indicator of the absence of HIV antibody. Confirmation of a reactive result by Western blot or immunofluorescent antibody is not necessary to make initial decisions about postexposure management but should be done to complete the testing process and before informing the source person. Repeatedly reactive results by EIA for anti-HCV should be confirmed by a supplemental test (i.e., recombinant immunoblot assay [RIBA™] or HCV PCR). Direct virus assays (e.g., HIV p24 antigen EIA or tests for HIV RNA or HCV RNA) for routine HIV or HCV screening of source persons are not recommended.

If the exposure source is unknown or cannot be tested, information about where and under what circumstances the exposure occurred should be assessed epidemiologically for the likelihood of transmission of HBV, HCV, or HIV. Certain situations as well as the type of exposure might suggest an increased or decreased risk; an important consideration is the prevalence of HBV, HCV, or HIV in the population group (i.e., institution or community) from which the contaminated source material is derived. For example, an exposure that occurs in a geographic area where injection-drug use is prevalent or involves a needle discarded in a drug-treatment facility would be considered epidemiologically to have a higher risk for transmission than an exposure that occurs in a nursing home for the elderly. Testing of needles or other sharp instruments implicated in an exposure, regardless of whether the source is known or unknown, is not recommended. The reliability and interpretation of findings in such circumstances are unknown, and testing might be hazardous to persons handling the sharp instrument.

Examples of information to consider when evaluating an exposure source for possible HBV, HCV, or HIV infection include laboratory information (e.g., previous HBV, HCV, or HIV test results or results of immunologic testing [e.g., CD4+ T-cell count]) or liver enzymes (e.g., ALT), clinical symptoms (e.g., acute syndrome suggestive of primary HIV infection or undiagnosed immunodeficiency disease), and history of recent (i.e., within 3 months) possible HBV, HCV, or HIV exposures (e.g., injection-drug use or sexual contact with a known positive partner). Health-care providers should be aware of local and state laws governing the collection and release of HIV serostatus information on a source person, following an occupational exposure.

If the source person is known to have HIV infection, available information about this person's stage of infection (i.e., asymptomatic, symptomatic, or AIDS), CD4+ T-cell count, results of viral load testing, current and previous antiretroviral therapy, and results of any genotypic or phenotypic viral resistance testing should be gathered for consideration in choosing an appropriate PEP regimen. If this information is not immediately available, initiation of PEP, if indicated, should not be delayed; changes in the PEP regimen can be made after PEP has been started, as appropriate. Reevaluation of exposed HCP should be considered within 72 hours postexposure, especially as additional information about the exposure or source person becomes available.

If the source person is HIV seronegative and has no clinical evidence of AIDS or symptoms of HIV infection, no further testing of the person for HIV infection is indicated. The likelihood of the source person being in the "window period" of HIV infection in the absence of symptoms of acute retroviral syndrome is extremely small.

### **Management of Exposures to HBV**

For percutaneous or mucosal exposures to blood, several factors must be considered when making a decision to provide prophylaxis, including the HBsAg status of the source and the hepatitis B vaccination and vaccine-response status of the exposed person. Such exposures usually involve persons for whom hepatitis B vaccination is recommended. Any blood or body fluid exposure to an unvaccinated person should lead to initiation of the hepatitis B vaccine series.

The hepatitis B vaccination status and the vaccine-response status (if known) of the exposed person should be reviewed. A summary of prophylaxis recommendations for percutaneous or mucosal exposure to blood according to the HBsAg status of the exposure source and the vaccination and vaccine-response status of the exposed person is included in this report ([Table 3](#)).

When HBIG is indicated, it should be administered as soon as possible after exposure (preferably within 24 hours). The effectiveness of HBIG when administered >7 days after exposure is unknown. When hepatitis B vaccine is indicated, it should also be administered as soon as possible (preferably within 24 hours) and can be administered simultaneously with HBIG at a separate site (vaccine should always be administered in the deltoid muscle).

For exposed persons who are in the process of being vaccinated but have not completed the vaccination series, vaccination should be completed as scheduled, and HBIG should be added as indicated ([Table 3](#)). Persons exposed to HBsAg-positive blood or body fluids who are known not to have responded to a primary vaccine series should receive a single dose of HBIG and reinitiate the hepatitis B vaccine series with the first dose of the hepatitis B vaccine as soon as possible after exposure. Alternatively, they should receive two doses of HBIG, one dose as soon as possible after exposure, and the second dose 1 month later. The option of administering one dose of HBIG and reinitiating the vaccine series is preferred for nonresponders who did not complete a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.

### **Management of Exposures to HCV**

Individual institutions should establish policies and procedures for testing HCP for HCV after percutaneous or mucosal exposures to blood and ensure that all personnel are familiar with these policies and procedures. The following are recommendations for follow-up of occupational HCV exposures:

- For the source, perform testing for anti-HCV.
- For the person exposed to an HCV-positive source
- --- perform baseline testing for anti-HCV and ALT activity; and
- --- perform follow-up testing (e.g., at 4--6 months) for anti-HCV and ALT activity (if earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4--6 weeks).
- Confirm all anti-HCV results reported positive by enzyme immunoassay using supplemental anti-HCV testing (e.g., recombinant immunoblot assay [RIBA™]) ([13](#)).

Health-care professionals who provide care to persons exposed to HCV in the occupational setting should be knowledgeable regarding the risk for HCV infection and appropriate counseling, testing, and medical follow-up. IG and antiviral agents are not recommended for PEP after exposure to HCV-positive blood. In addition, no guidelines exist for administration of therapy during the acute phase of HCV infection. However, limited data indicate that antiviral therapy might be beneficial when started early in the course of HCV infection. When HCV infection is identified early, the person should be referred for medical management to a specialist knowledgeable in this area.

### ***Counseling for HCP Exposed to Viral Hepatitis***

HCP exposed to HBV- or HCV-infected blood do not need to take any special precautions to prevent secondary transmission during the follow-up period ([12, 13](#)); however, they should refrain from donating blood, plasma, organs, tissue, or semen. The exposed person does not need to modify sexual practices or refrain from becoming pregnant. If an exposed woman is breast feeding, she does not need to discontinue.

No modifications to an exposed person's patient-care responsibilities are necessary to prevent transmission to patients based solely on exposure to HBV- or HCV-positive blood. If an exposed person becomes acutely infected with HBV, the person should be evaluated according to published recommendations for infected HCP ([165](#)). No recommendations exist regarding restricting the professional activities of HCP with HCV infection ([13](#)). As recommended for all HCP, those who are chronically infected with HBV or HCV should follow all recommended infection-control practices, including standard precautions and appropriate use of hand washing, protective barriers, and care in the use and disposal of needles and other sharp instruments ([162](#)).

### **Management of Exposures to HIV**

#### ***Clinical Evaluation and Baseline Testing of Exposed HCP***

HCP exposed to HIV should be evaluated within hours (rather than days) after their exposure and should be tested for HIV at baseline (i.e., to establish infection status at the time of exposure). If the source person is seronegative for HIV, baseline testing or further follow-up of the exposed person normally is not necessary. Serologic testing should be made available to all HCP who are concerned that they might have been occupationally infected with HIV. For purposes of considering HIV PEP, the evaluation also should include information about medications the exposed person might be taking and any current or underlying medical conditions or circumstances (i.e., pregnancy, breast feeding, or renal or hepatic disease) that might influence drug selection.

#### ***PEP for HIV***

The following recommendations ([Table 4](#) and [Table 5](#)) apply to situations when a person has been exposed to a source person with HIV infection or when information suggests the likelihood that the source person is HIV-infected. These

recommendations are based on the risk for HIV infection after different types of exposure and on limited data regarding efficacy and toxicity of PEP. Because most occupational HIV exposures do not result in the transmission of HIV, potential toxicity must be carefully considered when prescribing PEP. To assist with the initial management of an HIV exposure, health-care facilities should have drugs for an initial PEP regimen selected and available for use. When possible, these recommendations should be implemented in consultation with persons who have expertise in antiretroviral therapy and HIV transmission ([Box 4](#)).

#### **Timing and Duration of PEP.**

PEP should be initiated as soon as possible. The interval within which PEP should be initiated for optimal efficacy is not known. Animal studies have demonstrated the importance of starting PEP soon after an exposure (*111,112,118*). If questions exist about which antiretroviral drugs to use or whether to use a basic or expanded regimen, starting the basic regimen immediately rather than delaying PEP administration is probably better. Although animal studies suggest that PEP probably is substantially less effective when started more than 24--36 hours postexposure (*112,119,122*), the interval after which no benefit is gained from PEP for humans is undefined.

Therefore, if appropriate for the exposure, PEP should be started even when the interval since exposure exceeds 36 hours. Initiating therapy after a longer interval (e.g., 1 week) might be considered for exposures that represent an increased risk for transmission. The optimal duration of PEP is unknown. Because 4 weeks of ZDV appeared protective in occupational and animal studies (*100,123*), PEP probably should be administered for 4 weeks, if tolerated.

#### **Use of PEP When HIV Infection Status of Source Person is Unknown.**

If the source person's HIV infection status is unknown at the time of exposure, use of PEP should be decided on a case-by-case basis, after considering the type of exposure and the clinical and/or epidemiologic likelihood of HIV infection in the source ([Table 4](#) and [Table 5](#)). If these considerations suggest a possibility for HIV transmission and HIV testing of the source person is pending, initiating a two-drug PEP regimen until laboratory results have been obtained and later modifying or discontinuing the regimen accordingly is reasonable. The following are recommendations regarding HIV postexposure prophylaxis:

- If indicated, start PEP as soon as possible after an exposure.
- Reevaluation of the exposed person should be considered within 72 hours postexposure, especially as additional information about the exposure or source person becomes available.
- Administer PEP for 4 weeks, if tolerated.
- If a source person is determined to be HIV-negative, PEP should be discontinued.

#### **PEP for Pregnant HCP.**

If the exposed person is pregnant, the evaluation of risk of infection and need for PEP should be approached as with any other person who has had an HIV exposure. However, the decision to use any antiretroviral drug during pregnancy should involve discussion between the woman and her health-care provider(s) regarding the potential benefits and risks to her and her fetus.

Certain drugs should be avoided in pregnant women. Because teratogenic effects were observed in primate studies, EFV is not recommended during pregnancy. Reports of fatal lactic acidosis in pregnant women treated with a combination of d4T and ddI have prompted warnings about these drugs during pregnancy. Because of the risk of hyperbilirubinemia in newborns, IDV should not be administered to pregnant women shortly before delivery.

#### **Recommendations for the Selection of Drugs for HIV PEP**

Health-care providers must strive to balance the risk for infection against the potential toxicity of the agent(s) used when selecting a drug regimen for HIV PEP. Because PEP is potentially toxic, its use is not justified for exposures that pose a negligible risk for transmission ([Table 4](#) and [Table 5](#)). Also, insufficient evidence exists to support recommending a three-drug regimen for all HIV exposures. Therefore, two regimens for PEP are provided ([Appendix C](#)): a "basic" two-drug regimen that should be appropriate for most HIV exposures and an "expanded" three-drug regimen that should be used for exposures that pose an increased risk for transmission ([Table 4](#) and [Table 5](#)). When possible, the regimens should be implemented in consultation with persons who have expertise in antiretroviral treatment and HIV transmission.

Most HIV exposures will warrant a two-drug regimen using two nucleoside analogues (e.g., ZDV and 3TC; or 3TC and d4T; or d4T and ddI). The addition of a third drug should be considered for exposures that pose an increased risk for transmission. Selection of the PEP regimen should consider the comparative risk represented by the exposure and information about the exposure source, including history of and response to antiretroviral therapy based on clinical response, CD4+ T-cell counts, viral load measurements, and current disease stage. When the source person's virus is known or suspected to be resistant to one or more of the drugs considered for the PEP regimen, the selection of drugs to which the source person's virus is unlikely to be resistant is recommended; expert consultation is advised. If this information is not immediately available, initiation of PEP, if indicated, should not be delayed; changes in the PEP regimen can be made after PEP has been started, as appropriate. Reevaluation of the exposed person should be considered within 72 hours postexposure, especially as additional information about the exposure or source person becomes available.

### ***Follow-up of HCP Exposed to HIV***

#### **Postexposure Testing.**

HCP with occupational exposure to HIV should receive follow-up counseling, postexposure testing, and medical evaluation, regardless of whether they receive PEP. HIV-antibody testing should be performed for at least 6 months postexposure (e.g., at 6 weeks, 12 weeks, and 6 months). Extended HIV follow-up (e.g., for 12 months) is recommended for HCP who become infected with HCV following exposure to a source coinfecting with HIV and HCV. Whether extended follow-up is indicated in other circumstances (e.g., exposure to a source coinfecting with HIV and HCV in the absence of HCV seroconversion or for exposed persons with a medical history suggesting an impaired ability to develop an antibody response to acute infection) is unclear. Although rare instances of delayed HIV seroconversion have been reported (167,168), the infrequency of this occurrence does not warrant adding to the anxiety level of the exposed persons by routinely extending the duration of postexposure follow-up. However, this recommendation should not preclude a decision to extend follow-up in an individual situation based on the clinical judgement of the exposed person's health-care provider. HIV testing should be performed on any exposed person who has an illness that is compatible with an acute retroviral syndrome, regardless of the interval since exposure. When HIV infection is identified, the person should be referred to a specialist knowledgeable in the area of HIV treatment and counseling for medical management.

HIV-antibody testing with EIA should be used to monitor for seroconversion. The routine use of direct virus assays (e.g., HIV p24 antigen EIA or tests for HIV RNA) to detect infection in exposed HCP generally is not recommended (169). The high rate of false-positive results of these tests in this setting could lead to unnecessary anxiety and/or treatment (170,171). Despite the ability of direct virus assays to detect HIV infection a few days earlier than EIA, the infrequency of occupational seroconversion and increased costs of these tests do not warrant their routine use in this setting.

- HIV-antibody testing should be performed for at least 6 months postexposure.
- Direct virus assays for routine follow-up of HCP are not recommended.
- HIV testing should be performed on any exposed person who has an illness compatible with an acute retroviral syndrome.

#### **Monitoring and Management of PEP Toxicity.**

If PEP is used, HCP should be monitored for drug toxicity by testing at baseline and again 2 weeks after starting PEP. The scope of testing should be based on medical conditions in the exposed person and the toxicity of drugs included in the PEP regimen. Minimally, lab monitoring for toxicity should include a complete blood count and renal and hepatic function tests. Monitoring for evidence of hyperglycemia should be included for HCP whose regimens include any PI; if the exposed person is receiving IDV, monitoring for crystalluria, hematuria, hemolytic anemia, and hepatitis also should be included. If toxicity is noted, modification of the regimen should be considered after expert consultation; further diagnostic studies may be indicated.

Exposed HCP who choose to take PEP should be advised of the importance of completing the prescribed regimen. Information should be provided to HCP about potential drug interactions and the drugs that should not be taken with PEP, the side effects of the drugs that have been prescribed, measures to minimize these effects, and the methods of clinical monitoring for toxicity during the follow-up period. HCP should be advised that the evaluation of certain symptoms should not be delayed (e.g., rash, fever, back or abdominal pain, pain on urination or blood in the urine, or symptoms of hyperglycemia [increased thirst and/or frequent urination]).

HCP who fail to complete the recommended regimen often do so because of the side effects they experience (e.g., nausea and diarrhea). These symptoms often can be managed with antimotility and antiemetic agents or other medications that target the specific symptoms without changing the regimen. In other situations, modifying the dose interval (i.e., administering a lower dose of drug more frequently throughout the day, as recommended by the manufacturer), might facilitate adherence to the regimen. Serious adverse events should be reported to FDA's MedWatch Program.

### **Counseling and Education.**

Although HIV infection following an occupational exposure occurs infrequently, the emotional effect of an exposure often is substantial (172--174). In addition, HCP are given seemingly conflicting information. Although HCP are told that a low risk exists for HIV transmission, a 4-week regimen of PEP might be recommended, and they are asked to commit to behavioral measures (e.g., sexual abstinence or condom use) to prevent secondary transmission, all of which influence their lives for several weeks to months (172). Therefore, access to persons who are knowledgeable about occupational HIV transmission and who can deal with the many concerns an HIV exposure might generate for the exposed person is an important element of postexposure management. HIV-exposed HCP should be advised to use the following measures to prevent secondary transmission during the follow-up period, especially the first 6--12 weeks after the exposure when most HIV-infected persons are expected to seroconvert: exercise sexual abstinence or use condoms to prevent sexual transmission and to avoid pregnancy; and refrain from donating blood, plasma, organs, tissue, or semen. If an exposed woman is breast feeding, she should be counseled about the risk of HIV transmission through breast milk, and discontinuation of breast feeding should be considered, especially for high-risk exposures. Additionally, NRTIs are known to pass into breast milk, as is NVP; whether this also is true for the other approved antiretroviral drugs is unknown.

The patient-care responsibilities of an exposed person do not need to be modified, based solely on an HIV exposure, to prevent transmission to patients. If HIV seroconversion is detected, the person should be evaluated according to published recommendations for infected HCP (175).

Exposed HCP should be advised to seek medical evaluation for any acute illness that occurs during the follow-up period. Such an illness, particularly if characterized by fever, rash, myalgia, fatigue, malaise, or lymphadenopathy, might be indicative of acute HIV infection but also might be indicative of a drug reaction or another medical condition.

For exposures for which PEP is considered appropriate, HCP should be informed that a) knowledge about the efficacy of drugs used for PEP is limited; b) experts recommend combination drug regimens because of increased potency and concerns about drug-resistant virus; c) data regarding toxicity of antiretroviral drugs in persons without HIV infection or in pregnant women are limited; d) although the short-term toxicity of antiretroviral drugs is usually limited, serious adverse events have occurred in persons taking PEP; and e) any or all drugs for PEP may be declined or stopped by the exposed person. HCP who experience HIV occupational exposures for which PEP is not recommended should be informed that the potential side effects and toxicity of taking PEP outweigh the negligible risk of transmission posed by the type of exposure.

### ***Guidelines for counseling and educating HCP with HIV exposure include***

- Exposed HCP should be advised to use precautions to prevent secondary transmission during the follow-up period.
- For exposures for which PEP is prescribed, HCP should be informed about possible drug toxicities and the need for monitoring, and possible drug interactions.

### **Occupational Exposure Management Resources**

Several resources are available that provide guidance to HCP regarding the management of occupational exposures. These resources include PEpline; the Needlestick! website; the Hepatitis Hotline; CDC (receives reports of occupationally acquired HIV infections and failures of PEP); the HIV Antiretroviral Pregnancy Registry; FDA (receives reports of unusual or severe toxicity to antiretroviral agents); and the HIV/AIDS Treatment Information Service ([Box 5](#)).

\*This interagency working group comprised representatives of CDC, the Food and Drug Administration (FDA), the Health Resources and Services Administration, and the National Institutes of Health. Information included in these recommendations may not represent FDA approval or approved labeling

for the particular product or indications in question. Specifically, the terms "safe" and "effective" may not be synonymous with the FDA-defined legal standards for product approval.

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**TABLE 1. Reported instances of failure of combination drug postexposure prophylaxis to prevent HIV infection in health-care personnel exposed to HIV-infected blood**

Report no.	Source of injury	Regimen*	Hours to first dose	Days to onset of retroviral illness	Days to seroconversions <sup>†</sup>	Source patient on antiretrovirals
1 <sup>‡</sup>	Biopsy needle	ZDV, ddl	0.50	23	23	yes
2 <sup>‡</sup>	Hollow needle	ZDV, ddl**	1.50	45	97	no
3 <sup>‡</sup>	Large-bore hollow needle	3-drugs <sup>††</sup>	1.50	40	55	yes <sup>§</sup>
4 <sup>‡</sup>	Hollow needle	ZDV, 3TC ddl, IDV	0.67	70	83	yes***
5 <sup>¶</sup>	Unknown sharp	ddl, d4T NVP <sup>¶¶</sup>	2.00	42	100	yes***

\* ZDV = zidovudine, ddl = didanosine, 3TC = lamivudine, IDV = indinavir, d4T = stavudine, and NVP = nevirapine

<sup>†</sup> By enzyme immunoassay for HIV-1 antibody and Western blot.

<sup>‡</sup> Jochimsen EM. Failures of zidovudine postexposure prophylaxis. *Am J Med* 1997;102(suppl 5B):52-5.

<sup>§</sup> Lot F, Abiteboul D. Occupational HIV infection in France [Abstract WP-25]. In: Keynote addresses and abstracts of the 4th ICOH International Conference on Occupational Health for Health Care Workers. Montreal, Canada, 1999.

\*\* Report 2: ZDV and ddl taken for 48 hours then changed to ZDV alone.

<sup>††</sup> Report 3: ZDV, 3TC, and IDV taken for 48 hours then changed to d4T, 3TC, and IDV.

<sup>§</sup> HIV isolate tested and determined to be sensitive to antiretroviral agent(s).

<sup>¶</sup> Perdue B, Wolderufael D, Mellors J, Quinn T, Margolick J. HIV-1 transmission by a needlestick injury despite rapid initiation of four-drug postexposure prophylaxis [Abstract 210]. In: Program and abstracts of the 6th Conference on Retroviruses and Opportunistic Infections. Chicago, IL: Foundation for Retrovirology and Human Health in scientific collaboration with the National Institute of Allergy and Infectious Diseases and CDC, 1999:107.

\*\*\* HIV isolate tested and determined to be resistant to antiretroviral agent(s).

<sup>¶¶</sup> Beltrami EM, Luo C-C, Dela Torre N, Cardo DM. HIV transmission after an occupational exposure despite postexposure prophylaxis with a combination drug regimen [Abstract P-S2-62]. In: Program and abstracts of the 4th Decennial International Conference on Nosocomial and Healthcare-Associated Infections in conjunction with the 10th Annual Meeting of SHEA. Atlanta, GA: CDC, 2000:125-6.

<sup>¶¶</sup> Report 5: ZDV and 3TC taken for one dose then changed to ddl, d4T, and NVP; ddl was discontinued after 3 days because of severe vomiting.

**TABLE 2. Primary side effects associated with antiretroviral agents**

<b>Antiretroviral class/agent</b>	<b>Primary side effects and toxicities</b>
<b>Nucleoside reverse transcriptase inhibitors (NRTIs)</b>	
Zidovudine (Retrovir™; ZDV; AZT)	anemia, neutropenia, nausea, headache, insomnia, muscle pain, and weakness
Lamivudine (EpiVir™; 3TC)	abdominal pain, nausea, diarrhea, rash, and pancreatitis
Stavudine (Zerit™; d4T)	peripheral neuropathy, headache, diarrhea, nausea, insomnia, anorexia, pancreatitis, increased liver function tests (LFTs), anemia, and neutropenia
Didanosine (Videx™; ddl)	pancreatitis, lactic acidosis, neuropathy, diarrhea, abdominal pain, and nausea
Abacavir (Ziagen™; ABC)	nausea, diarrhea, anorexia, abdominal pain, fatigue, headache, insomnia, and hypersensitivity reactions
<b>Nonnucleoside reverse transcriptase inhibitors (NNRTIs)</b>	
Nevirapine (Viramune™; NVP)	rash (including cases of Stevens-Johnson syndrome), fever, nausea, headache, hepatitis, and increased LFTs
Delavirdine (Rescriptor™; DLV)	rash (including cases of Stevens-Johnson syndrome), nausea, diarrhea, headache, fatigue, and increased LFTs
Efavirenz (Sustiva™; EFV)	rash (including cases of Stevens-Johnson syndrome), insomnia, somnolence, dizziness, trouble concentrating, and abnormal dreaming
<b>Protease inhibitors (PIs)</b>	
Indinavir (Crixivan™; IDV)	nausea, abdominal pain, nephrolithiasis, and indirect hyperbilirubinemia
Nelfinavir (Viracept™; NFV)	diarrhea, nausea, abdominal pain, weakness, and rash
Ritonavir (Norvir™; RTV)	weakness, diarrhea, nausea, circumoral paresthesia, taste alteration, and increased cholesterol and triglycerides
Saquinavir (Fortovase™; SQV)	diarrhea, abdominal pain, nausea, hyperglycemia, and increased LFTs
Amprenavir (Agenerase™; AMP)	nausea, diarrhea, rash, circumoral paresthesia, taste alteration, and depression
Lopinavir/Ritonavir (Kaletra™)	diarrhea, fatigue, headache, nausea, and increased cholesterol and triglycerides

**BOX 1. Recommendations for the contents of the occupational exposure report**

- date and time of exposure;
- details of the procedure being performed, including where and how the exposure occurred; if related to a sharp device, the type and brand of device and how and when in the course of handling the device the exposure occurred;
- details of the exposure, including the type and amount of fluid or material and the severity of the exposure (e.g., for a percutaneous exposure, depth of injury and whether fluid was injected; for a skin or mucous membrane exposure, the estimated volume of material and the condition of the skin [e.g., chapped, abraded, intact]);
- details about the exposure source (e.g., whether the source material contained HBV, HCV, or HIV; if the source is HIV-infected, the stage of disease, history of antiretroviral therapy, viral load, and antiretroviral resistance information, if known);
- details about the exposed person (e.g., hepatitis B vaccination and vaccine-response status); and
- details about counseling, postexposure management, and follow-up.

**BOX 2. Factors to consider in assessing the need for follow-up of occupational exposures**

- **Type of exposure**
  - Percutaneous injury
  - Mucous membrane exposure
  - Nonintact skin exposure
  - Bites resulting in blood exposure to either person involved
- **Type and amount of fluid/tissue**
  - Blood
  - Fluids containing blood
  - Potentially infectious fluid or tissue (semen; vaginal secretions; and cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids)
  - Direct contact with concentrated virus
- **Infectious status of source**
  - Presence of HBsAg
  - Presence of HCV antibody
  - Presence of HIV antibody
- **Susceptibility of exposed person**
  - Hepatitis B vaccine and vaccine response status
  - HBV, HCV, and HIV immune status

**BOX 3. Evaluation of occupational exposure sources****Known sources**

- Test known sources for HBsAg, anti-HCV, and HIV antibody
  - Direct virus assays for routine screening of source patients are **not** recommended
  - Consider using a rapid HIV-antibody test
  - If the source person is **not** infected with a bloodborne pathogen, baseline testing or further follow-up of the exposed person is **not** necessary
- For sources whose infection status remains unknown (e.g., the source person refuses testing), consider medical diagnoses, clinical symptoms, and history of risk behaviors
- Do not test discarded needles for bloodborne pathogens

**Unknown sources**

- For unknown sources, evaluate the likelihood of exposure to a source at high risk for infection
  - Consider likelihood of bloodborne pathogen infection among patients in the exposure setting

**TABLE 3. Recommended postexposure prophylaxis for exposure to hepatitis B virus**

Vaccination and antibody response status of exposed workers*	Treatment		
	Source HBsAg <sup>†</sup> positive	Source HBsAg <sup>†</sup> negative	Source unknown or not available for testing
<b>Unvaccinated</b>	HBIG <sup>‡</sup> x 1 and initiate HB vaccine series <sup>§</sup>	Initiate HB vaccine series	Initiate HB vaccine series
<b>Previously vaccinated</b>			
Known responder**	No treatment	No treatment	No treatment
Known nonresponder <sup>¶</sup>	HBIG x 1 and initiate revaccination or HBIG x 2 <sup>§</sup>	No treatment	If known high risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs <sup>¶</sup> 1. If adequate,** no treatment is necessary 2. If inadequate, <sup>¶</sup> administer HBIG x 1 and vaccine booster	No treatment	Test exposed person for anti-HBs 1. If adequate, <sup>¶</sup> no treatment is necessary 2. If inadequate, <sup>¶</sup> administer vaccine booster and recheck titer in 1–2 months

\* Persons who have previously been infected with HBV are immune to reinfection and do not require postexposure prophylaxis.

<sup>†</sup> Hepatitis B surface antigen.

<sup>‡</sup> Hepatitis B immune globulin; dose is 0.06 mL/kg intramuscularly.

<sup>§</sup> Hepatitis B vaccine.

\*\* A responder is a person with adequate levels of serum antibody to HBsAg (i.e., anti-HBs  $\geq 10$  mIU/mL).

<sup>¶</sup> A nonresponder is a person with inadequate response to vaccination (i.e., serum anti-HBs  $< 10$  mIU/mL).

<sup>§</sup> The option of giving one dose of HBIG and reinitiating the vaccine series is preferred for nonresponders who have not completed a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.

<sup>¶</sup> Antibody to HBsAg.

TABLE 4. Recommended HIV postexposure prophylaxis for percutaneous injuries

Exposure type	Infection status of source				
	HIV-Positive Class 1*	HIV-Positive Class 2*	Source of unknown HIV status <sup>†</sup>	Unknown source <sup>‡</sup>	HIV-Negative
Less severe <sup>§</sup>	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors <sup>¶</sup>	Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings where exposure to HIV-infected persons is likely	No PEP warranted
More severe <sup>  </sup>	Recommend expanded 3-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors <sup>¶</sup>	Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings where exposure to HIV-infected persons is likely	No PEP warranted

\* HIV-Positive, Class 1 — asymptomatic HIV infection or known low viral load (e.g., <1,500 RNA copies/mL). HIV-Positive, Class 2 — symptomatic HIV infection, AIDS, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of postexposure prophylaxis (PEP) should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

<sup>†</sup> Source of unknown HIV status (e.g., deceased source person with no samples available for HIV testing).

<sup>‡</sup> Unknown source (e.g., a needle from a sharps disposal container).

<sup>§</sup> Less severe (e.g., solid needle and superficial injury).

\*\* The designation "consider PEP" indicates that PEP is optional and should be based on an individualized decision between the exposed person and the treating clinician.

<sup>¶</sup> If PEP is offered and taken and the source is later determined to be HIV-negative, PEP should be discontinued.

<sup>||</sup> More severe (e.g., large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient's artery or vein).

TABLE 5. Recommended HIV postexposure prophylaxis for mucous membrane exposures and nonintact skin\* exposures

Exposure type	Infection status of source				
	HIV-Positive Class 1 <sup>†</sup>	HIV-Positive Class 2 <sup>†</sup>	Source of unknown HIV status <sup>‡</sup>	Unknown source <sup>§</sup>	HIV-Negative
Small volume**	Consider basic 2-drug PEP <sup>¶</sup>	Recommend basic 2-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP <sup>¶</sup> for source with HIV risk factors <sup>  </sup>	Generally, no PEP warranted; however, consider basic 2-drug PEP <sup>¶</sup> in settings where exposure to HIV-infected persons is likely	No PEP warranted
Large volume <sup>¶¶</sup>	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP <sup>¶</sup> for source with HIV risk factors <sup>  </sup>	Generally, no PEP warranted; however, consider basic 2-drug PEP <sup>¶</sup> in settings where exposure to HIV-infected persons is likely	No PEP warranted

\* For skin exposures, follow-up is indicated only if there is evidence of compromised skin integrity (e.g., dermatitis, abrasion, or open wound).

<sup>†</sup> HIV-Positive, Class 1 — asymptomatic HIV infection or known low viral load (e.g., <1,500 RNA copies/mL). HIV-Positive, Class 2 — symptomatic HIV infection, AIDS, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of postexposure prophylaxis (PEP) should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

<sup>‡</sup> Source of unknown HIV status (e.g., deceased source person with no samples available for HIV testing).

<sup>§</sup> Unknown source (e.g., splash from inappropriately disposed blood).

\*\* Small volume (i.e., a few drops).

<sup>¶</sup> The designation, "consider PEP," indicates that PEP is optional and should be based on an individualized decision between the exposed person and the treating clinician.

<sup>¶¶</sup> If PEP is offered and taken and the source is later determined to be HIV-negative, PEP should be discontinued.

<sup>||</sup> Large volume (i.e., major blood splash).

**BOX 4. Situations for which expert\* consultation for HIV postexposure prophylaxis is advised**

- Delayed (i.e., later than 24–36 hours) exposure report
  - the interval after which there is no benefit from postexposure prophylaxis (PEP) is undefined
- Unknown source (e.g., needle in sharps disposal container or laundry)
  - decide use of PEP on a case-by-case basis
  - consider the severity of the exposure and the epidemiologic likelihood of HIV exposure
  - do not test needles or other sharp instruments for HIV
- Known or suspected pregnancy in the exposed person
  - does not preclude the use of optimal PEP regimens
  - do not deny PEP solely on the basis of pregnancy
- Resistance of the source virus to antiretroviral agents
  - influence of drug resistance on transmission risk is unknown
  - selection of drugs to which the source person's virus is unlikely to be resistant is recommended, if the source person's virus is known or suspected to be resistant to  $\geq 1$  of the drugs considered for the PEP regimen
  - resistance testing of the source person's virus at the time of the exposure is not recommended
- Toxicity of the initial PEP regimen
  - adverse symptoms, such as nausea and diarrhea are common with PEP
  - symptoms often can be managed without changing the PEP regimen by prescribing antimotility and/or antiemetic agents
  - modification of dose intervals (i.e., administering a lower dose of drug more frequently throughout the day, as recommended by the manufacturer), in other situations, might help alleviate symptoms

\*Local experts and/or the National Clinicians' Post-Exposure Prophylaxis Hotline (PEPline [1-888-448-4911]).

**BOX 5. Occupational exposure management resources****National Clinicians' Postexposure Prophylaxis Hotline (PEpline)**

Run by University of California–San Francisco/San Francisco General Hospital staff; supported by the Health Resources and Services Administration Ryan White CARE Act, HIV/AIDS Bureau, AIDS Education and Training Centers, and CDC.

Phone: (888) 448-4911  
Internet: <<http://www.ucsf.edu/hivcntr>>

**Needlestick!**

A website to help clinicians manage and document occupational blood and body fluid exposures. Developed and maintained by the University of California, Los Angeles (UCLA), Emergency Medicine Center, UCLA School of Medicine, and funded in part by CDC and the Agency for Healthcare Research and Quality.

Internet: <<http://www.needlestick.mednet.ucla.edu>>

**Hepatitis Hotline.**

Phone: (888) 443-7232  
Internet: <<http://www.cdc.gov/hepatitis>>

**Reporting to CDC:** Occupationally acquired HIV infections and failures of PEP.

Phone: (800) 893-0485

**HIV Antiretroviral Pregnancy Registry.**

Phone:(800) 258-4263  
Fax: (800) 800-1052  
Address:  
1410 Commonwealth Drive  
Suite 215  
Wilmington, NC 28405  
Internet:  
<[http://www.glaxowellcome.com/preg\\_reg/antiretroviral](http://www.glaxowellcome.com/preg_reg/antiretroviral)>

## ATLANTIC CAPE COMMUNITY COLLEGE

### APPENDIX L

#### UNITED STATES DEPARTMENT OF LABOR OSHA STANDARD 29 CFR 1910.1030

##### 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 hot 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 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(f)(6)**

***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.***

**1910.1030(h)(4)(i)**

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

**1910.1030(h)(4)(ii)**

If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director, at least three months prior to their disposal and transmit them to the Director, if required by the Director to do so, within that three month period.

**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 1904.

**1910.1030(h)(5)(iii)**

The sharps injury log shall be maintained for the period required by 29 CFR 1904.6.

**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)**

Paragraph (g)(2) Information and Training and (h) Recordkeeping 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, shall take effect July 6, 1992.

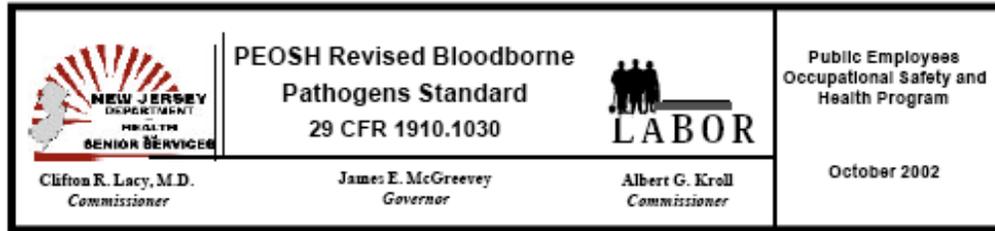
[56 FR 64004, Dec. 06, 1991, as amended at 57 FR 12717, April 13, 1992; 57 FR 29206, July 1, 1992; 61 FR 5507, Feb. 13, 1996; 66 FR 5325 Jan., 18, 2001; 71 FR 16672 and 16673, April 3, 2006; 73 FR 75586, Dec. 12, 2008]

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=10051](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10051)

# ATLANTIC CAPE COMMUNITY COLLEGE

## APPENDIX M

### PEOSH REVISED BLOODBORNE PATHOGENS STANDARD 29 CFR 1910.1030



#### WHAT IS THE REVISED PEOSH BLOODBORNE PATHOGENS STANDARD?

Many workers risk on-the-job contact with blood and other body fluids. These materials may contain pathogens, organisms that can cause serious disease. Of major concern are the hepatitis B virus (HBV), the hepatitis C virus (HCV), and the human immunodeficiency virus (HIV), the cause of Acquired Immunodeficiency Syndrome (AIDS).

On July 6, 1993, the federal OSHA standard, *29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens*, was adopted under the New Jersey Public Employees Occupational Safety and Health (PEOSH) Act. This standard protects workers in the public sector in New Jersey who come in contact with blood or other potentially infectious materials.

As a result of the Federal Needlestick Safety and Prevention Act (November 6, 2000), OSHA published the revised Bloodborne Pathogens Standard on January 18, 2001 for the private sector. PEOSH began enforcement of the revised standard on September 4, 2001 for the public sector. The revisions to the standard include:

- Additional definitions (e.g., engineering controls);

- New requirements in the Exposure Control Plan (described on page 2);
- Solicitation of input from non-managerial employees; and
- Maintaining a sharps injury log.

#### WHO IS COVERED?

The standard covers all public employees who may have contact with blood or other potentially infectious materials because of their work. Employees most likely to be covered include, but are not limited to:

- Health care workers (e.g.: medical and dental personnel, school nurses);
- Emergency medical services employees;
- Firefighters (including volunteers);
- Police officers;
- Corrections officers;
- Some laundry and housekeeping staff;
- Lifeguards; and
- Workers in institutions for the developmentally disabled.

### WHAT ARE OTHER POTENTIALLY INFECTIOUS MATERIALS?

The standard defines other potentially infectious materials as the body fluids listed below:

- Semen and vaginal secretions;
- Fluid from the brain, spine, lungs, and amniotic sac;
- Fluid around joints, the heart, and the abdominal lining;
- Saliva in dental procedures;
- All body fluids that are visibly contaminated with blood;
- All body fluids when you cannot tell which type they are.

Also considered as potentially infectious materials are:

- Any unfixed human tissue or organs other than skin;
- Animals or cells infected with HIV or HBV for medical research. (Hepatitis C could also be included.)

### HOW ARE EMPLOYEES EXPOSED?

Occupational exposures occur when employees perform tasks that can cause blood or other potentially infectious materials to enter their bodies. These exposures happen through:

- Cuts, cracks, or abrasions in the skin;
- Splashing, or spraying into the eyes, mouth, or nose;
- Puncture wounds from contaminated sharps (needles, broken glass).

### WHAT ARE THE MAJOR REQUIREMENTS OF THE STANDARD?

- Employee exposure control plan;
- Methods to prevent exposure;
- Hepatitis B vaccinations;
- Medical evaluation and follow-up;
- Employee training;
- Recordkeeping;
- Special precautions for HIV and HBV research laboratories. (Hepatitis C could also be included.)

#### The Exposure Control Plan (ECP)

Employers must prepare a written plan that includes the following:

- The job classification tasks and procedures in which employees have occupational exposure;
- The schedule and methods for implementing the requirements of the revised standard;
- Procedures for documenting the circumstances surrounding an employee's exposure.

The ECP must be accessible to employees. It also must be reviewed and updated at least annually or more often if work tasks or control methods change. The updated ECP must also reflect changes in technology that may eliminate or reduce exposure to bloodborne pathogens. This includes documentation of non-managerial employee input regarding the selection of medical devices.

## Methods to Prevent Exposure

The standard describes the following methods to prevent occupational exposure to bloodborne pathogens:

### *Universal Precautions*

Handle all human blood or other potentially infectious materials as if they were contaminated. This approach is known as “universal precautions”.

### *Engineering Controls*

Use engineering controls whenever possible. These are methods that contain or remove the hazard, such as sharps disposal containers, self sheathing needles, safer medical devices such as sharps with engineered sharps injury protections (SESIPs) and needleless systems.

### *Work Practice Procedures*

Use work practice procedures that reduce the chances of exposure. Employers must provide the necessary equipment to implement them. These procedures include:

- Immediately wash hands (and other parts of the body as needed) following any contact with blood or other potentially infectious materials. This may not be possible for certain jobs, such as police work or emergency medical services. In these cases, employers must provide antiseptic hand cleansers, and paper or cloth towels. Employees must wash with running water and soap as soon as they can after the exposure.
- Wash hands as soon as possible after removing gloves or other protective equipment.
- Do not recap, break or bend by hand any contaminated needles. Put used needles and other sharps into special containers

until they can be processed or discarded. These containers must be closable, puncture-resistant and leakproof. They should be labeled and put close to the area where sharps are used. Containers should never be overfilled.

- Do not eat, drink, smoke, apply makeup or lip balm, or handle contact lenses in areas where exposure might occur. Don't store food or drinks in potentially contaminated areas like refrigerators used to store lab specimens.
- Use methods to prevent splashing, spraying, or splattering when doing any procedures involving blood or other potentially infectious materials. Don't use your mouth for suctioning or pipetting.
- Use leakproof containers for collecting, handling, processing, storing, carrying, or shipping blood specimens or other potentially infectious materials.
- Label or use color codes on containers and refrigerators used for storage, carrying, or shipping. (See the standard for information on using the biohazard symbol.)
- Decontaminate any equipment before it is sent out for repair.

### *Personal Protective Equipment*

Wear personal protective equipment when exposure cannot be avoided by other means. This equipment includes gloves, face shields, goggles, gowns, lab coats, mouthpieces, pocket masks, and resuscitation bags. Employers must provide the equipment free of charge. (They must also provide alternatives to employees who are allergic to latex gloves.) Personal protective equipment must be accessible and available in sizes to fit each employee. It should be removed and put in designated containers for cleaning, repair or disposal if it becomes contaminated or

damaged. Employers are required to clean and repair equipment that can be reused. This includes lab coats that are used as personal protective equipment.

#### *Housekeeping Requirements*

- Establish written procedures and schedules for regular cleaning of the worksite and for disinfecting contaminated surfaces and materials.
- Do not pick up potentially contaminated broken glassware. Use tongs, forceps, or a brush and dust pan.
- Only use containers made for storing, carrying, and shipping sharps.
- Handle contaminated laundry as little as possible and wear gloves (and other protective equipment if necessary). It must be stored and transported in labeled, leakproof containers.
- Follow state laws for handling and disposing of regulated waste. Contact the New Jersey Department of Environmental Protection, Resource, Recovery and Technical Program, P.O. Box 414, 401 East State Street, Trenton, NJ 08625-0414. (609) 984-6985.

#### **Hepatitis B Vaccinations**

- Employers must offer free hepatitis B vaccinations to all employees who have anticipated exposure to blood or other potentially infectious materials. The first dose of the 3-dose vaccine must be given within ten working days after employees begin jobs that have potential for exposure. Employees may decline the vaccination, but must sign a "declination" statement if they do so.
- The Centers for Disease Control and Prevention (CDC) recommend that health-

care personnel (HCP), (e.g., employees, students, attending clinicians, public safety workers, or volunteers) who have contact with patients or blood **and are at ongoing risk for percutaneous injuries** (e.g., a needlestick or cut from a sharp object contaminated with blood) should be tested 1-2 months after completion of the 3-dose vaccination series for antibodies for hepatitis B surface antigen (anti-HBs). For further information consult PEOSH Publication No. 21, "OSHA Revises the Bloodborne Pathogens Standard" available on the PEOSH website: [www.state.nj.us/health/eoh/peoshweb](http://www.state.nj.us/health/eoh/peoshweb) or contact the PEOSH Program at (609) 984-1863.

#### **Medical Evaluation and Follow-up For Exposed Employees**

Employers are required to offer free, confidential medical evaluation and follow-up to all employees who receive an occupational exposure to blood or other potentially infectious materials. These services must include:

- A written report of how the exposure occurred;
- Testing the source person if possible;
- Testing the exposed employee's blood if she or he consents; and
- Post-exposure treatment and counseling.

#### **Employee Training About Potential Hazards**

Employers are required to provide initial training for employees who have anticipated occupational exposure. This training must cover all of the major parts of the standard and be repeated annually. Employees must also have access to a copy of the standard and the exposure control plan.

Employers must provide additional training when changes in tasks or procedures affect the employee's occupational exposure.

### **Recordkeeping**

Confidential records about employee exposures, medical evaluation, and follow-up must be kept for the length of employment plus thirty years. Records showing that employee training has occurred must be kept for three years. A sharps injury log for the recording of percutaneous injuries from contaminated sharps must also be maintained.

### **Special Precautions for HIV and HBV Research Laboratories**

Additional procedures, employee training and equipment are required for HIV and HBV research laboratories. Consult the standard for details.

*This information bulletin provides a general overview of the New Jersey PEOSH Bloodborne Pathogens Standard. Consult the standard itself for complete information.*

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The PEOSH Program has developed a model Exposure Control Plan which is intended to serve as an employer compliance guide to the Bloodborne Pathogens Standard. The model plan is available from the PEOSH Program Internet site at <http://www.state.nj.us/health/eoh/peoshweb/bbp.pdf>

## WEB SITE RESOURCE LIST

**New Jersey Department of Health and Senior Services  
Public Employees Occupational Safety and Health Program  
PO Box 360, 7<sup>th</sup> Floor  
Trenton, NJ 08625-0360  
(609) 984-1863**  
<http://www.state.nj.us/health/eoh/peoshweb>

**New Jersey Department of Labor  
Public Employees Occupational Safety and Health Program  
PO Box 386  
Trenton, NJ 08625-0386  
(609) 292-0767  
(800) 624-1644**  
<http://www.state.nj.us/labor/wps/psosh/osh/training/training.htm>

**NOTE:** This appendix contains web sites that can be used for the purposes of information and research. The examples of effective engineering controls in this appendix do not include all those on the market, but are simply representative of the devices available. **PEOSH does not approve, endorse, register, or certify any medical devices.** Inclusion in this list does not indicate PEOSH approval, endorsement, registration, or certification. The final determination of compliance with PEOSH standards takes into account all factors pertaining to the use of such devices at a particular worksite.

### EFFECTIVE ENGINEERING CONTROLS

#### **ECRI**

**Available:** <http://healthcare.ecri.org>  
ECRI, designated as an Evidence-based Practice Center by the U.S. Agency for Healthcare Research and Quality, is a nonprofit international health services research organization.

#### **Food and Drug Administration (FDA) Safety Alerts**

**Available:** <http://www.fda.gov/cdrh/safety.html>  
Link page for Safety Alerts and Advisories that warn of the risk of injuries from medical devices.

#### **International Health Care Worker Safety Center, University of Virginia**

**Available:** <http://www.people.virginia.edu/~epinet/products.html>  
Features a list of safety devices with manufacturers and specific project names.

#### **National Institute for Occupational Safety and Health (NIOSH)**

##### **Sharps Disposal Containers**

**Available:** <http://www.cdc.gov/niosh/sharps1.html>

Features information on selecting, evaluating, and using sharps disposal containers.

#### **Occupational Safety and Health Administration (OSHA)**

##### **Glass Capillary Tubes: Joint Safety Advisory About Potential Risks**

**Available:** <http://www.cdc.gov/niosh/capssaq.html>

Describes safer alternatives to conventional glass capillary tubes.

#### **Occupational Safety and Health Administration (OSHA)**

##### **Needlestick Injuries**

**Available:** <http://www.osha-slc.gov/SLTC/needlestick/index.html>

Features recent news, recognition, evaluation, controls, compliance, and links to information on effective engineering controls.

#### **SHARPS Injury Control Program**

**Available:** <http://www.dhs.ca.gov/ohb/sharps/default.htm>

Established by Senate Bill 2005 to study sharps injuries in hospitals, skilled nursing facilities, and home health agencies in California. Features a Beta version of Safety Enhanced Device Database Listing by Manufacturer.

**Training for Development of Innovative Control Technologies (TDICT) Project**  
 Available: <http://www.tdict.org/criteria.html>  
 Features "Safety Feature Evaluation Forms" for specific devices.

**US DEPARTMENT OF HEALTH & HUMAN SERVICES (DHHS): CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC) GUIDELINES AND RECOMMENDATIONS**

**CDC Prevention Guidelines Database**  
 Available: <http://aepo-xdv-www.epo.cdc.gov/wonder/PrevGuid/PrevGuid.shtml>  
 Provides access to the CDC Prevention Guidelines Database, which is a compilation of all of the official guidelines and recommendations published by the CDC for the prevention of diseases, disabilities, and injuries.

**Morbidity and Mortality Weekly Report (MMWR)**

Available: <http://www2.cdc.gov/mmwr/mmwr.html>  
 Provides access to the MMWR, a series which is prepared by the CDC. Contains comprehensive information on policy statements for prevention and treatment that are within the CDC's scope of responsibility, for example, recommendations from the Advisory Committee on Immunization Practice (ACIP).

The following are CDC guidelines and recommendations on HIV, Hepatitis B, and Hepatitis C:

*Guideline for infection control in health care personnel, 1998.*  
 Available: <http://www.cdc.gov/ncidod/hip/GUIDE/InfectControl98.pdf>

*Recommendations for Prevention and Control of Hepatitis C Virus (HCV) Infection and HCV-Related Chronic Disease. Publication date 10/16/1998.*  
 Available: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00055154.htm>

*Public Health Service Guidelines for the Management of Health-Care Worker Exposures to HIV and Recommendations for Postexposure Prophylaxis. Publication date 5/15/1998.*

Available: <http://www.cdc.gov/eop/mmwr/preview/mmwrhtml/00052722.htm>

*Appendix - First-Line Drugs for HIV Postexposure Prophylaxis (PEP). Publication date 5/15/1998.*

Available: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00052801.htm>

*Immunization of Health-Care Workers: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). Publication date 12/26/1997.*

*(Provides recommendations for Hepatitis B).*  
 Available: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00050577.htm>

*Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis. Publication date 6/29/2001.*

Available: <http://www.cdc.gov/mmwr/PDF/rr/rr5011.pdf>

**VACCINE SAFETY**

**Centers for Disease Control and Prevention (CDC)**

Available: <http://www.cdc.gov/nip/vaccsafe/>  
 The National Immunization Program (NIP) of the CDC features information on vaccine safety.

**Food and Drug Administration (FDA)**  
 Available: [http://www.fda.gov/fdac/features/095\\_vacc.html](http://www.fda.gov/fdac/features/095_vacc.html) and

<http://www.fda.gov/cber/vaers.vaers.htm>  
 The first site features information on how the FDA ensures vaccine safety. The second site features information on the Vaccine Adverse Event Reporting System (VAERS), a cooperative program for vaccine safety of the FDA and CDC.

**Immunization Action Coalition (IAC)**

Available: <http://www.immunize.org/>

The IAC is a nonprofit organization working to increase immunization rates and prevent disease. Features Vaccine Information Statements, free print materials, and other hepatitis and immunization sites.

**Infectious Diseases Society of America (IDSA)**

Available: <http://www.idsociety.org/vaccine/index.html>

The Vaccine Initiative is a project of the IDSA and the Pediatric Infectious Diseases Society. Features information on vaccination and vaccination-related issues.

**Institute for Vaccine Safety, Johns Hopkins School of Public Health**

Available: <http://www.vaccinesafety.edu/>

The purpose of the Institute is to obtain and distribute information on the safety of recommended immunizations.

**National Institutes of Health (NIH)**

Available: <http://www.niaid.nih.gov/publications/vaccine/undvacc.htm>

Features a 40 page brochure "Understanding Vaccines."

**World Health Organization (WHO)**

Available: <http://www.who.int/gpv-safety/>

Features a vaccine safety home page which offers links to vaccine safety-related information.

