

OCCUPATIONAL EXPOSURE TO INFECTIOUS BLOOD-BORNE DISEASES

Two significant viral diseases existing within the occupational setting today are hepatitis B and acquired immune deficiency syndrome (AIDS). These are transmitted by the HBV and HIV viruse, respectively. Hepatitis B is the major infectious occupational health hazard in the health-care industry and serves as a model for transmission of blood-borne pathogens. Due to lack of a vaccine or a cure, infection from HIV virus presents severe consequences though it is less infectious and prevalent than HBV.

The cumulative epidemiologic data indicate that transmission of HBV and HIV requires direct, intimate contact with or parental (non-intentional) inoculation of blood or blood products, semen, or tissues. Although the possibility of rare or low-risk alternative modes of transmission cannot be totally excluded, the primary occupational risks of HBV and HIV infection are associated with parental and mucous membrane exposure to blood, body fluid, and/or tissues,

Workers exposed to blood, body fluids, or tissues can be protected from HBV and HIV infection by imposing barriers like engineering controls, work practices, and protective equipment that are readily available, commonly used, and minimally intrusive.

The U.S. Department of Labor (OSHA) and the U.S. Department of Health and Human Services have produced a series of eight recommendation categories intended to minimize the occupational transmission of HBV and HIV. These eight categories are discussed below.

Evaluation of Potential Exposures

Exposure or potential exposure to HBV and HIV should be defined in terms of actual or potential skin, mucous membrane, or parenteral contact with blood, body fluids, and/or tissues. The employer should evaluate all working conditions and the specific tasks that workers are expected to encounter because of employment. This evaluation should lead to the classification of work-related tasks. These tasks are listed in three categories of exposure.

Category I: Tasks that involve exposure to blood, body fluids, or tissues.

Category II: Tasks that involve no exposure to blood, body fluids, or tissues, but employment may require performing unplanned Category I tasks.

Category III: Tasks that involve no exposure to blood, body fluids, or tissues.

Category I tasks require the use of appropriate protective measures by every employee engaged in such tasks.

Category II tasks require the availability of appropriate protective measure for use by every employee engaged in such tasks. An example in this Category would include law enforcement personnel and firefighters who may be called upon to perform and assist in first aid or may be potentially exposed in another way.

When it is determined that Category I and II tasks do not exist within the workplace, no specific personal hygiene or protective measures are required. Employers should ensure that workers are aware of the risk factors associated with HBV and HIV transmission. Employees can then take precautions on how to avoid or minimize personal risk because they can recognize situations posing increased exposure potential.

Administrative Procedures

The employer should establish formal procedures to ensure that tasks are properly identified, standard operating procedures (SOP's) are developed, and employees are adequately trained and protected. These procedures should address such topics as, the identification of Category I and II employees, establishment of mandatory work practices and protective equipment for each Category, surveillance of the workplace, and formal investigation of known or suspected parental exposure to blood, body fluids, or tissues.

Training and Education

The employer should establish initial and periodic training programs for all employees who perform Category I or II tasks. No worker should engage in any Category I or II task before receiving training concerning the SOP's, work practices, and protective equipment for that task. In addition to appropriate preventive and corrective actions, all employees should be made aware of the potential consequences and modes of transmission of HBV and HIV.

Engineering Controls

When possible, engineering controls should be used as the primary method to reduce worker exposure to harmful substances or organisms. The preferred approach is to use, to the fullest extent feasible, intrinsically safe substance, procedures, and devices.

Substitution of a hazardous procedure or device with one that is less risky or harmful is an example of this approach: e.g., a laser scalpel reduces the risk of cuts and scrapes by eliminating the necessity to handle the conventional scalpel blade.

Isolation or containment of the hazard is an alternative engineering control technique. Disposable, puncture-resistant containers for used needles, blades, etc., isolate cut and needlestick injury hazards from the workers. Glove boxes, ventilated cabinets, centrifuge covers, or similar enclosures serve not only to isolate the hazard, but also to contain spills and splashes.

Work Practices

For all identified Category I or II tasks, the employer should have written, detailed standard operating procedures (SOP's). All employees who perform Category I or II tasks should have ready access to SOP's pertaining to those tasks. Four important points should be emphasized:

1. Work practices should be developed on the assumption that all body fluids and tissues are potentially infectious.
2. Work practices should include provisions for the safe collection of fluids and tissues and for their disposal according to applicable local, state, and federal regulations.
3. Work practices and SOP's should provide procedures to be followed if there are spills or personal exposures to bodily fluids or tissues.
4. Work practices should provide specific and detailed procedures to be observed with sharp objects such as needles, scalpel blades, and broken glassware.

Personal Protective Equipment

For workers performing Category I tasks, a required minimum array of protective clothing or equipment should be specified in the pertinent SOP. Specific combinations of clothing as equipment must be tailored to specific tasks. The minimum level of protection for Category I tasks, most often, would include the use of appropriate gloves. If there is a potential for splashes, protective eyewear or face shields should be worn. Paramedics responding to an auto accident might protect themselves against cuts on metal or glass by wearing gloves or gauntlets that are both puncture-resistant and impervious to blood.

For workers performing Category II tasks, there should be ready access to appropriate protective equipment (gloves, eyewear, surgical masks), and specified and pertinent SOP's. Workers performing Category II tasks need not wear protective equipment at all times, but they should be prepared to put on appropriate garb on short notice.

Medical

In addition to any health care or surveillance required by other rules, regulations, or labor-management agreement, the employer should make available at no cost to the employee:

1. Voluntary HBV immunization for all workers whose employment requires them to perform Category I tasks and who test negative for HBV antibodies. Previous published recommendations by the Center for Disease Control also address the topic of pre- and post-exposure prophylaxis.
2. Monitoring, at the request of the worker, for HBV and HIV antibodies following the known or suspected parenteral exposure to blood, body fluids or tissues. This monitoring program must include appropriate precautions to protect the confidentiality of test results for all workers who may elect to participate.
3. Medical counseling for all workers found, as a result of the monitoring describes above, to be seropositive for HBV and HIV. Counseling guidelines have been published by the Public Health Service.

Recordkeeping

If any employee is required to perform Category I or II tasks, the employer should maintain records documenting the following:

1. Administrative procedures used to classify job tasks.
2. Copies of all Category I and II SOP's and review/approval processes through which each SOP passed.
3. Training records (dates, topics, names, etc.).
4. Conditions observed in routine workplace surveillance (noncompliance episodes and corrective actions taken should be documented).
5. Conditions associated with each incident of mucous membrane or parenteral exposure to body fluids or tissues, evaluation of those conditions, and a description of any corrective measures taken to prevent a recurrence or other similar exposure.

While encountered primarily within the health-care and research fields, occupational exposure to such diseases as hepatitis B and AIDS can exist within such vocations as police, firefighters, emergency medical technicians, housekeeping departments, etc.

This technical bulletin provides an outline of the program approach considered for reducing the likelihood of viral disease transmission. Such organizations as the Occupational Safety and Health Administration (OSHA) and the Centers for Disease Control (CDC) have published specific recommendations concerning the individual topics, such as personal

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