

Exposure Control Plan

OSHA 1910.1030 Bloodborne Pathogen Standard
and the Needlestick Safety & Prevention Act



Last updated: July 2020

*Annual reviews completed March 2014, March 2015, March 2016, March 2017, March 2018,
March 2019, March 2020.*

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I. POLICY

NOTE: This plan covers the Grantham Campus (including the Bowmansdale building), and the facility located at 401 Winding Hill. Where the protocol for Winding Hill differs, a separate protocol designated for the Winding Hill location will appear at the end of the section.

It is the policy of Messiah to comply with the requirements of 29 CFR 1910.1030 concerning employees' occupational exposure to bloodborne pathogens and other potentially infectious materials (OPIM) and to comply with the requirements of the Needlestick Safety & Prevention Act.

This *Exposure Control Plan* is Messiah's written program outlining our compliance with these regulations and contains the results of our exposure determination; rules for eliminating and/or minimizing occupational exposure; the procedure for the administration of the Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-Up; information regarding our employee training program; and recordkeeping responsibilities. This Plan has been written with the intent to eliminate or minimize employee exposure to bloodborne pathogens and OPIM.

This Plan will be reviewed at least annually by the VP for Human Resources & Compliance (or designee) for all locations; the Facilities Services Administrative Assistant and the Health Services Coordinator for the Grantham campus; and the Cadaver Lab Coordinator for the Winding Hill facility. The latest annual revision date will be recorded on the cover. All revisions to this *Exposure Control Plan* will be documented in the Revision Log (Section XI).

II. DEFINITIONS

Bloodborne Pathogen: A pathogenic microorganism such as bacterial or viruses that are present in human blood and can cause disease to humans. These pathogens include, but are not limited to, hepatitis B (HBV), hepatitis C (HCV), Human Immunodeficiency Virus (HIV), and Syphilis.

Contaminated: The presence or reasonably anticipated presence of blood or other potentially infectious material on an item or surface.

Exposure Incident: Occurs when you come into contact with infectious blood or OPIM through puncture from contaminated sharps/needle injuries; exposure to openings in your skin (cuts, scratches, bites, blisters, acne or other open wounds); contact with mucous membranes of the eyes, nose, or mouth.

HBV: Hepatitis B

HIV: Human immunodeficiency virus.

Occupational Exposure: Skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious material that may result from the performance of an employee's duties.

Other Potentially Infectious Materials (OPIM): Human Body Fluids including (but not limited to) blood products (plasma, serum), saliva, semen, secretions including vaginal secretions, cerebrospinal fluids, synovial fluid, pleural fluid, amniotic fluid, pericardial fluid, peritoneal fluid, skin tissue and/or cell cultures, 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.**

In addition, per the CDC, "Employers and employees in the nontransplant anatomical donation industry and **end users** should recognize that cadavers and nontransplant anatomical materials are considered potentially infectious with *M. tuberculosis* and other pathogens, even if they are known to test negative for HIV, HBV, and HCV. Employers must comply with the OSHA Bloodborne Pathogen Standard..." (see <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6317a4.htm>) To know the proper handling and disposal of wastes generated in the cadaver lab, refer to the [Waste Manual](#), Section V, Infectious Waste/Biohazard Waste.

Universal Precautions: An approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are to be treated as if known to be infected by a bloodborne pathogen; this is because it can be difficult to tell if certain body fluids contain blood (ex., vomit, urine, feces, sputum, nasal secretions).

III. EXPOSURE DETERMINATION

Per the OSHA Standard, employers must complete an exposure determination to identify all job classifications in which **ALL** employees have occupational exposure to blood or other bodily fluids; a list of job classifications in which **SOME** employees have occupational exposure; and a list of all tasks and procedures in which occupational exposure occurs. This determination must be made without regard to the use of personal protective equipment.

1. **CATEGORY 1 EMPLOYEES** - The following are job positions in which **ALL** employees in these positions may be expected to incur occupational exposure:
 - Faculty and Technicians in the Department of Nursing
 - Registered Nurses
 - Licensed Practical Nurses
 - Others in the Engle Center who provide medical care (ex., CPN)

2. **CATEGORY 2 EMPLOYEES** - The following are job positions in which **SOME** employees may be expected to incur occupational exposure:
 - Athletic Coaches and Athletic Trainers – when giving assistance to injured players
 - Campus Events Staff – during cleaning, including the cleaning up of blood and body fluid spills
 - Dining Services Supervision Team – if cleaning up blood or vomitus in a dining area during hours when Campus Events personnel are not available to perform this clean-up
 - Engle Center Employees not mentioned in Category 1 – while assisting in medical care
 - Facilities Maintenance & Grounds Employees – through exposure to sewer water
 - Laundry Staff – while processing soiled linens and sports laundry
 - Residence Directors (RDs) – who may need to assist in containing and controlling spills in their areas and provide first aid to students who are injured or become ill while in the residence hall
 - Safety Department Personnel – when providing first aid assistance
 - Waste Coordinator – when handling medical waste
 - Coordinator of Cadaver Lab, Winding Hill
 - Employees working in Pediatric Lab at Winding Hill providing care to children
 - Employees in the School of Science, Engineering and Health – who work on projects/research that involve blood/body fluids or other infectious materials or who work with cadavers
 - Employees in any Graduate Program who work on projects/research that involve blood/body fluids or other infectious materials or who work with cadavers
 - All employees who have been trained in First Aid/CPR for the purpose of providing medical first aid in an emergency. This may include some staff in Messiah Press; lab, shop or studio

technicians in various schools; Department of Safety personnel; Fitness Center employees; etc.

CATEGORY 2 **STUDENT EMPLOYEES** - The following are job positions in which **SOME** student employees may be expected to incur occupational exposure:

- Any student employment positions where providing first aid/CPR is a requirement (ex., Lifeguard, Fitness Center Attendant, Gymnasium Oversight)
- Campus Events Laundry (due to potential for exposure from contaminated linens)

3. **Employees** NOT expected to incur occupational exposure include personnel working in administration, accounting, office/clerical positions, and faculty (except those in positions noted above).

Student employees NOT expected to incur occupational exposure include all positions not listed above.

IV. STANDARD PRECAUTIONS

Standard Precautions are designed to reduce the risk of transmission of micro-organisms from both recognized and unrecognized sources. Standard Precautions incorporate the major features of Universal Precautions (designed to reduce the risk of transmission of bloodborne pathogens) and Body Substance Isolation (designed to reduce the risk of transmission of pathogens from moist body substances). Standard Precautions apply to 1) blood; 2) all body fluids, secretions and excretions except sweat, regardless of whether or not they contain visible blood; 3) non-intact skin; and 4) mucous membranes.

A. ENGINEERING CONTROLS/WORK PRACTICES

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

Engineering controls will be evaluated to insure their effectiveness and, when necessary, they shall be replaced.

HYGIENE

The single most important procedure for preventing acquired infection is good hand hygiene.

Hand hygiene is indicated before and after any personal contact, before performing invasive procedures, before giving care to immuno-compromised individuals, before and after touching wounds, before gloves are put on and after gloves are removed, after contact with mucous membranes and after handling potentially contaminated items such as urine or sputum collection devices or soiled laundry.

COSMETICS, FOOD STORAGE AND CONSUMPTION, SMOKING AND PERSONAL HYGIENE

Eating, drinking, applying cosmetics and handling contact lenses are prohibited in work areas where there is a potential for occupational exposure. (Smoking is prohibited in all areas of Messiah properties.) Employees are reminded to wash their hands carefully before handling contact lenses or touching the face, lips or eyes in order to minimize risk for infection.

Food may not be stored in areas where contamination is likely. Medications and biological specimens must be stored separately from refrigerated food items. Refrigerators are available in employee lounges for food related items. Other refrigerators which are reserved for medications and laboratory samples must be clearly marked for this purpose or labeled "Not for Food Storage."

LABELS AND SIGNS

Warning labels will be affixed to containers of medical waste. Red bags with the biohazard symbol may be substituted for labels. Labels will display the universal biohazard sign or the word 'Biohazard.' Labels will be securely affixed to containers.

Refrigerators and freezers used for storage of biohazards will display the biohazard label. See item 2 above for more information regarding labeling of these units.

SHARPS INJURY PREVENTION PROGRAM

The Sharps Injury Prevention Program is meant to provide protection to everyone, from the sharps user to anyone who may come in contact with sharps after use.

Engineering and work practice controls should be used to eliminate or minimize employee exposure to needles and other sharps. These controls will include such items as sharps disposal containers and self-sheathing needles. **As additional devices become available, employees of the Engle Center will evaluate them for possible use.** Used needles and other sharps will not be sheared, bent, broken, recapped or re-sheathed by hand. Used sharps will be placed in the containers that are rigid and puncture-, burst- and tear-proof under normal conditions of handling and use. Containers should be labeled with the biohazard symbol and should close to prevent hands from entering the container. ***Please note: Cardboard boxes are not acceptable sharps containers and should not be used as such.***

Containers of used medical sharps may be stored at the point of generation for up to 30 days. They must then be collected and stored in the freezer at Lenhert waste storage until shipped for disposal (not to exceed 90 days). Containers of sharps not used for medical purposes, once $\frac{3}{4}$ full, should be taken to the Lenhert freezer and added to the Biohazard Waste Stream for disposal.

At the main campus, if needed, sharps containers can be picked up at the Engle Center. **The Engle Center will accept all sharps containers and offers a personal sized container in exchange. At Winding Hill, contact the Coordinator of the Cadaver Lab for sharps containers and disposal.**

Broken glass must not be picked up directly with the hands. It must be cleaned up using mechanical means such as a brush and dustpan.

For more information on the proper storage, labeling and disposal of bloodborne pathogen waste, refer to the Waste Manual, Section V.

SPECIMENS

Specimens of blood or other potentially infectious materials must be placed in a container that prevents leakage during the collection, handling, processing, storage and transport of the specimen. The container must be labeled or color-coded with the requirements of the OSHA Standard.

Specimens that could puncture the primary container should be placed in a plastic container prior to placing in a laboratory bag.

Mouth pipetting/suctioning of blood or OPIM is prohibited.

All procedures which involve blood or OPIM shall be performed in a manner that prevents or minimizes splashing, spraying, spattering, and generation of droplets of these substances.

LAUNDRY

Soiled linen from on-campus housing will be handled as little as possible. All linen is considered contaminated and standard precautions should be used at all times. **Staff members will wear protective aprons and gloves while working in the soiled linen areas of the Laundry department.**

B. PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE will be provided by Messiah at no cost to the employee. Gloves will be worn when the employee has the potential for hands to have direct contact with blood or other potentially infectious material, mucous membranes, non-intact skin and when handling items or surfaces soiled with blood or other potentially infectious material. Gloves are to be worn when handling linens soiled with urine, feces or sputum. Gloves are to be worn when performing venipunctures, injections or changing dressings.

Disposable gloves will be replaced as soon as possible when visibly soiled, torn or punctured. They will be disposed of in biohazard containers and handled as contaminated waste. They will not be washed or disinfected for reuse.

Utility gloves (used by Laundry and Campus Events at Grantham campus) may be disinfected for reuse so long as the integrity of the glove is maintained. Employees are responsible for cleaning gloves with disinfectant provided and storing gloves in their respective work area.

Caution should be used when removing any type of gloves to insure that the unprotected hand does not come in contact with contaminants on the glove surfaces.

Masks/eye protection/face shields will be worn whenever splashes, sprays, splatter or aerosols of blood or other potentially infectious material may be generated and there is potential for eye, nose or mouth contamination.

All procedures involving blood or infectious materials will be performed according to individual department procedures in order to minimize splashes and aerosolization. Additional supplies are available from the department supervisor/manager. Goggles are supplied where required and determined necessary by the supervisor/manager and in Campus Events and Laundry areas. Goggles are for use in any other situation where splashes of body fluids could occur. Disposable masks are to be discarded in biohazard containers and handled as contaminated waste.

Employees are expected to clean protective devices as they become soiled with infective material or before the staff member leaves the work area at the end of the shift.

The use of personal protective equipment is monitored by supervisors. Staff members who do not comply will receive disciplinary action in accordance with Human Resources' Policies.

First aid kits are located throughout Messiah facilities and should include disposable gloves and safety glasses/goggles. Kits will be replenished after each use or as needed. To replenish kits at the Grantham campus, contact the Department of Safety; it is the Department of Safety's responsibility for providing and restocking first aid kits/cabinets across campus. To replenish the kit at the Winding Hill facility, contact the Department of Safety, Grantham Campus.

In addition, AEDs are also found in most Messiah buildings. The Department of Safety conducts the required inspections of these units at the Grantham campus; at Winding Hill the inspections are conducted by Department of Safety, Grantham Campus. (See *Appendix A* for list of locations of both the first aid kits and the AEDs.)

V. SPILL CLEAN-UP FOR BLOOD AND BODY FLUIDS

This procedure should be followed in order to minimize contact with blood and body fluids and properly clean and disinfect the affected area, preventing the transmission of infections including HIV, Hepatitis B, Hepatitis C, MRSA and VRE.

Only employees who have been properly trained in this spill clean-up procedure, have completed Messiah's Bloodborne Pathogen training, and have been offered the Hepatitis B vaccination are authorized to clean up spills of blood and other body fluids. Employees are expected to use the proper personal protective equipment (ex. gloves) provided when cleaning areas that may be contaminated with blood or infectious material.

Mops in Campus Events and Dining Services will be laundered weekly and cleaning cloths laundered after each use. Contaminated items will be placed in red plastic biohazard bags for disposal. All pails, cans and similar containers intended for reuse which are likely to become contaminated by blood or body fluids will be inspected and decontaminated on a regular basis and as soon as visible contamination occurs. At Winding Hill, no contaminated cleaning items will be laundered for re-use: all contaminated items belonging to Messiah will be disposed of as a bio-hazard waste.

SPILL CLEAN-UP PROCEDURE FOR GRANTHAM CAMPUS

Training of employees in this spill clean-up procedure is the responsibility of the Facilities Assistant and must be conducted each year with all Campus Events employees and the Dining Services Leadership Team. Training should be documented to include the date, name of trainer, names of trainees, and topic/information covered in training. Documentation should be retained by the Facilities Assistant for Campus Events employees. The Facilities Assistant will forward completed documentation for the Dining Services Leadership Team to the Dining Services Director for retention.

The Campus Events Supervisors are to assure that no employee who has not been properly trained in this policy is ever put into a position that requires exposure to blood/body fluids.

1. Spill area should be closed to traffic. Notify the Department of Safety to complete an incident report.
2. Don the proper protective equipment including gloves, and if necessary, safety glasses or goggles.
3. Saturate the area with body fluid absorbent. Contain spill area with paper towels. Push the towels at the edge of the spill into the spill's center. Add more paper towels as needed. Discard the paper towels and bulk material into a red infectious waste bag. If glass is present, use a dustpan for cleanup of the pieces.

4. Spill containment kits are available for use when containing a gross spill of excessive blood or body fluids. Kits are located in Eisenhower, room 149; Kline/Jordan, room 165; Lenhart Facility Services; and the Department of Safety Vehicles.
5. Sanitization of the spill area must be accomplished with the approved disinfectant. Flood the spill area; allow 10 minutes for disinfection.
6. Absorb remaining fluids and disinfectant solution with paper towels, and sanitize area with fresh towels. Spray the area until it is completely covered with the solution. No scrubbing is necessary. Wipe off with a clean cloth, mop or sponge.
7. Discard paper towels and gloves into a red infectious waste bag and dispose of per Section V - Infectious Waste/Biohazard Waste in the *Waste Manual*.
8. If spill occurred on a carpeted surface, use carpet extractor to thoroughly clean area.
9. Wash exposed areas (hands, arms and face) thoroughly.

NOTE: For the proper name of the body fluid absorbent, approved disinfectant, and/or the carpet extractor currently available, contact the Facilities Assistant.

SPILL CLEAN-UP PROCEDURE FOR WINDING HILL FACILITY

A spill kit for vomitus exists in the first floor custodial closet. Use this kit to solidify and control odor. Contact Rebekah Ostby for the spill kit. Then call the Department of Safety at ext. 6005 (717-691-6005) and request a Campus Events employee be sent to Winding Hill to complete the proper clean up.

VI. RESIDENCE HALLS

A. SPILL CLEAN-UP PROCEDURE IN RESIDENCE HALLS

1. Campus Events will handle Residence Life calls for clean-ups and floods as follows. A janitorial emergency includes:
 - a. Blood, vomit, or feces in a public space (outside the body)
 - b. Any other miscellaneous mess that cannot be contained without assistance. (This includes floods from over-flowed toilets, leaking pipes, plumbing fixtures and HVAC units.)

2. **Campus Events Residence Hall Staff (or the Facilities Assistant) will be responsible to train RD's** in August before students arrive in how to apply vomit absorption products such as Z-Goop or Nylogel to an affected area as an initial treatment. This training should be documented and documentation should include the name of trainer, employees receiving training, date of training, and topic/information included in training. Documentation should be forwarded to the Director of Residence Life for record retention.

NOTE: RDs are offered the Hepatitis B vaccination and are included in Messiah's Bloodborne Pathogen Training.

3. In cases of blood, vomit or feces in a public area, RDs should apply the appropriate body fluid absorbent if Campus Events Staff are not able to immediately reply to a cleanup need. RDs should also set out wet floor signs so other students do not walk over the affected area. **Campus Events student workers are NOT trained to deal with these emergencies.**

4. Residence Life staff should use the following guideline for seeking assistance through the day and night:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
12:00-4:30 am	Call: Dispatch (x6005) to contact Campus Events 3 rd Shift by radio							
4:30-6:00 am	Call: Dispatch (x6005) to contact Campus Events 3 rd Shift by radio					Call: Dispatch to contact CE 3 rd Shift by radio		
6:00-7:30 am	Call: Dispatch (x6005) to contact Campus Events 1 st Shift by radio							
7:30-1:00 pm	No Coverage	Call: Campus Events staff in your building OR Call Dispatch (x6005) to contact CE Staff by radio						
1:00-4:00 pm	Call: Dispatch to contact CE High Ctr Worker	Call: Dispatch (x6005) to contact CE worker in the Res Halls by radio					Call: Dispatch to call CE 1 st or 2 nd shift staff by radio	
4:00-5:00 pm		Call: Dispatch (x6005) to contact Campus Events 2 nd Shift by radio						
5:00-7:00 pm		Call: Dispatch (x6005) to contact Campus Events 2 nd Shift by radio						
7:00-11:00 pm								
11:00-11:59 pm	Call: Dispatch (x6005) to contact Campus Events 3 rd Shift by radio							

B. SHARPS IN RESIDENCE HALLS

Students who have a medical usage of hypodermic needles or other sharps should be collecting the sharps in approved containers (available from the Engle Center) and giving the full containers to the Engle Center for disposal with the clinic's biohazard waste. Students should not be exposing their roommates, other students, campus events staff, residence directors or others to their contaminated sharps.

If used sharps are found that have not been placed in an appropriate collection container, an RD should contact the student immediately to have them placed in the biohazard container and review with the student the importance of placing them immediately into the proper container when generated. If it is not known who the used sharps belong to, then the RD should obtain a biohazard container and, using the proper protection (gloves), place them in the container and give the container to the Engle Center. A reminder should then be given to all students living in that residence hall regarding proper disposal of sharps.

If needles or other biohazard wastes are found that have been used with illegal substances, the department of safety should be contacted immediately. They will collect the sharps/waste for evidence and/or proper disposal.

VII. BIOHAZARD WASTE POLICY

Medical infectious waste is to be handled as outlined in the Messiah *Waste Manual*, Section V - Infectious Waste/Biohazard Waste. Contaminated sharps will be immediately placed in the designated puncture proof containers. These containers are readily accessible from the Engle Center or the Facility Assistant at the Grantham campus. To obtain these containers at the Winding Hill facility, contact the Coordinator of Cadaver Lab. Containers must not be overfilled.

At the main campus, medical waste is to be transported to the Waste Accumulation area in the Lenhart Building by the Facility Assistant who will arrange for final transport and disposal with an approved waste disposal facility. Storage limitations should be in compliance with requirements as outlined in the *Waste Manual*.

At the Winding Hill facility, medical waste is to be transported to the waste storage room by the Coordinator of the Cadaver Lab who will arrange for final transport and disposal with an approved waste disposal facility. Storage limitations should be in compliance with requirements as outlined in the *Waste Manual*.

VIII. HEPATITIS B VACCINATION

All employees and student employees in Job Categories 1 & 2 (as defined under Section III – Exposure Determination) have been identified as at risk for exposure to blood or other potentially infectious materials and will be offered the Hepatitis B Vaccine at no cost to the employee. The vaccination is a series of three (3) shots that require three separate appointments for the injections. The employee shall be expected to commit to finish the series if s/he requests the vaccination unless the employee terminates from the Category 1/2 position.

FOR EMPLOYEES:

The Human Resource Office has responsibility for assuring that the vaccine is offered, obtaining the signed consent/waiver form, and filing/retaining this OSHA required document for employees in personnel files. If this is done as part of the electronic on-boarding system, the employee's signature will be an electronic signature.

The Engle Center will administer the vaccination and/or titer and maintain the actual records for the documentation of the vaccination and/or titer for all eligible employees, regardless of the location they are assigned.

Human Resources will offer the vaccine within 10 working days of the employee's initial assignment to work involving the potential for occupational exposure. The Hepatitis B Vaccination Form (or electronic form with the same content) will be used for employees for this purpose (*Appendix B*). The form must be completed by all employees in positions listed under Category 1 and 2. Only one check box should be selected on the form by the employee:

1. EMPLOYEE ACCEPTS HEPATITIS B VACCINATION

If the employee chooses to accept the vaccination, s/he must check the first box, sign and date the form. Human Resources will then forward a copy of the form to the Engle Center; however, **it is the employee's responsibility to contact the Engle Center to arrange an appointment** for the first shot in the vaccination series. The completed form will be filed in the employee's file in HR (or the electronic onboarding file) and retained for 30 years after termination of the employee. Employees who receive the vaccination and who have ongoing contact with patients or blood and are at ongoing risk for percutaneous injuries (Category 1 and 2) must be tested for antibody to hepatitis B surface antigen one to two months after completing the three-dose series. Employees who do not respond to the initial vaccination must be revaccinated with a second three-dose vaccine series and retested. If they still do not respond, no additional vaccinations will be given.

2. EMPLOYEE DECLINES VACCINATION

If, for any reason, the employee does not wish to receive the vaccination, s/he should check the second box on the form, sign and date it. The completed form will be filed in the employee's file in HR (or the electronic onboarding file) and retained for 30 years after termination of the employee. Employees who initially decline the vaccine but who later wish to have it may then request the vaccine at no cost provided they are still in the appropriate job position.

3. EMPLOYEE REQUESTS TITER

If the employee has previously had the vaccination or cannot recall if s/he had the vaccination, a titer may be requested to determine if sufficient antibodies are in the employee's blood to determine immunity. If the employee requests a titer (which requires drawing a blood sample), HR should send a copy of the form to the Engle Center; however, **it is the employee's responsibility to contact the Engle Center to set up an appointment** for this test. The completed form will be filed in the employee's file in HR (or the electronic onboarding file) and retained for 30 years after termination of the employee. Once the results of the titer are received, the Engle Center must communicate the results to the employee; the employee may then request the vaccine at no cost.

FOR STUDENT EMPLOYEES:

The Student Employment Office has responsibility for assuring that the vaccine is offered, obtaining the signed consent/waiver form, and filing/retaining this OSHA required document for employees.

The Engle Center will administer the vaccination and maintain the actual records for the documentation of the vaccination for all eligible student employees, regardless of the location they are assigned.

The student employee will be offered the vaccine within 10 working days of initial assignment to work involving the potential for occupational exposure. The Hepatitis B Exposure – Student Employees Form will be used for this purpose (*Appendix C*). **The form must be completed by all student employees regardless of the potential for exposure.** If the student employee position is listed as a Category 2, the student employee must check one box in the first section of the form; if the student employee position is not listed as a Category 2, the student must check the only check box in the last section of the form. **There are no student employee positions in Category 1.**

1. STUDENT EMPLOYEE IS ELIGIBLE FOR VACCINATION BUT DECLINES

Most students will have received the Hepatitis B vaccination prior to coming to Messiah. If this is the case, the student should check the first box.

If the student employee has never had the vaccination but, for any reason, does not wish to receive the vaccination, s/he should check the second box on the form, sign and date it. Student employees who initially decline the vaccine but who later wish to have it may then request the vaccine at no cost.

This signed form will be retained by the student employment office for 30 years after the termination of the student employee.

2. STUDENT EMPLOYEE ACCEPTS HEPATITIS B VACCINATION

If the student employee chooses to accept the vaccination, s/he must check the third box, sign and date the form. The Student Employment Office should give a copy to the student employee for the Engle Center; however, **it is the student's responsibility to contact the Engle Center to arrange an appointment** for the first shot in the vaccination series. The original signed form will be retained for 30 years after termination of the student employee.

It is important to note that the vaccination is a series of three injections. Messiah will pay for each of the three only as long as the student employee continues in a Category 2 position. If the student employee terminates employment or transfers to a position that is not included in Category 2, Messiah will not continue to pay for the injections. The student can opt to discontinue the series or to pay for the remaining injections himself/herself.

Student employees who receive the vaccination and who have ongoing contact with patients or blood and are at ongoing risk for percutaneous injuries (Category 2) must be tested for antibody to hepatitis B surface antigen one to two months after completing the three-dose series. Student employees who do not respond to the initial vaccination must be revaccinated with a second three-dose vaccine series and retested. If they still do not respond, no additional vaccinations will be given.

3. STUDENT EMPLOYEE IS NOT ELIGIBLE FOR THE VACCINATION

If the student employee is not working in a Category 2 position, they must still sign and return the form, checking the final box on the form. This is to alert the student that should they change work positions in the future and move into a Category 2 position, they would become eligible for the vaccination at that time.

IX. TRAINING REQUIREMENTS

Training for all employees in Categories 1 and 2 (Section III) will be conducted prior to initial assignment to tasks where occupational exposure may occur. This training is available via an online Qualtrics training program. The training link will be sent to all new employees by the Office of Human Resources & Compliance and **it is the responsibility of the employee's supervision to determine if s/he works in a capacity requiring this training; the supervisor must also ensure the new employee is provided with release time to complete the training.** Training records are maintained in the Qualtrics and EGaD systems and available to the Office of Human Resources & Compliance. Whenever possible, this online training should be completed within the first three days of work for impacted new employees.

Training, tailored to the employee's responsibilities, will be conducted by the department supervisor. **Training for residence directors will include review of section VI of this manual; the director of residence life should initiate this each August with all RDs.**

The VP for Human Resources & Compliance will be responsible to insure that annual training is provided to all employees in Categories 1 and 2 (Section III). This training will be provided by an online Qualtrics program. These training records will be maintained in the Qualtrics and EGaD systems and available to the Office of Human Resources & Compliance.

Training will include the following:

- Explanation of the OSHA Standard for Blood Borne Pathogens (29 CFR 1910.1030)
- Epidemiology and Symptomatology of Blood Borne Diseases (HBV, HCV, HIV)
- Modes of transmission of Blood Borne Pathogens
- This Exposure Control Plan, i.e. points of the plan, lines of responsibility, how the plan will be implemented, etc.
- Procedures which might cause exposure to blood or other potentially infectious materials at this facility
- Control methods which will be used at the facility to control exposure to blood or other potentially infectious materials
- Personal Protective Equipment available at this facility and who should be contacted concerning it
- Signs and labels used at the facility
- Hepatitis B Vaccine program at the facility
- Post Exposure Evaluation and follow-up

General awareness training will be given to all employees at the beginning of their employment as part of new employee orientation. This training should include what to do if an employee (not in Category 1

or 2) comes upon a spill of blood or other body fluids. A record of the training will be maintained by the Office of Human Resources & Compliance.

An annual reminder regarding general awareness will be communicated to all employees via mass email; this may be included in the EHS Information pamphlet distributed at the start of the academic year (via mass email) and given to all new employees. A record of this general awareness training will be maintained by the Office of Human Resources & Compliance.

X. EXPOSURE POST EVALUATION AND FOLLOW-UP

Any staff member who has a needle stick exposure or blood or body fluid contact is to report to the Engle Center immediately. At the Engle Center the wound will be cleaned, but the employee will then have to report to Concentra Medical Center, WORKNET Occupational Medicine or a hospital for further treatment. A confidential medical evaluation will occur to:

- Document the exposure
- Test the source of the exposure*
- Test the exposed individual*
- Provide counseling
- Evaluate any reported illness
- Describe medical and post-exposure evaluation procedures

** Consent must be obtained before testing any individuals, including the source individual and the exposed individual.*

If the Engle Center is closed, the employee is to report to Concentra Medical Center, WORKNET Occupational Medicine or a hospital for treatment and/or decontamination. The hospital, Concentra Medical Center or WORKNET Occupational Medicine should be provided with details of the exposure incident. The exposure is to be reported to Human Resources & Compliance at first convenience by the employee, the Engle Center, and/or the employee's supervisor.

All needle stick injuries will be documented on the Sharps Injury Log maintained by the Engle Center (see *Appendix D*).

All employees who incur a needle stick injury or other exposure should be given a copy of the "Needle Sticks Questions/Answers" information sheet (*Appendix E*) and the "Educational Handout for Employees Who May Have Experienced an Exposure" information sheet (*Appendix F*). This should be done when they first report to the Engle Center for treatment (or when the Engle Center first learns of the exposure).

XI. RECORDKEEPING

All records required by this OSHA standard will be maintained for **30 years after the employee terminates employment** as required by 29 CFR 1910.1020. The only exception are training records which must be retained for a minimum of 3 years. These records are confidential and will not be disclosed except as required by law. Records will be maintained as follows:

- Medical records will be compiled and maintained by the Engle Center. The record will include the employee's name, employee identification number, a copy of the Hepatitis B Vaccination record and the staff member's acceptance to receive Hepatitis B Vaccine, the results of the titer test, the circumstances of any exposure incidents including the type and brand of device involved in the injury (if known), the department or work area where the exposure occurred, and an explanation of how the incident occurred, a copy of results of the physical exam and follow-up procedures and a copy of the physician's written opinion. **These records are confidential** and will not be disclosed except as required by law. **The records will be maintained for 30 years after the employee terminates employment** as required by 29 CFR 1910.1020. The employees who incur an exposure incident will be given care by Concentra Medical Center, WORKNET Occupational Medicine or a hospital; however, the appropriate medical information should be provided by the health care provider for record retention in the employee's file at the Engle Center.
- The signed "Hepatitis B Vaccination Form" (whether accepted, declined or a titer is requested) for all staff, administrative and faculty employees will be maintained in the Human Resource Office in the employee's personnel file. All "Hepatitis B Vaccination Forms" for student employees will be maintained by the Student Employment Office.
- Individual department training records will be maintained in the specific department and will be the responsibility of the supervisor of that department. These must be retained for a minimum of 3 years [1910.1030(h)(2)(D)(ii)].
- Other training records as mentioned in the previous section will be maintained by the Office of Human Resources & Compliance.

XII. REVISION LOG

This manual will be reviewed in its entirety on an annual basis and the review date recorded on the cover. However, any revisions made independent of this annual review and all major revisions made as part of this annual review will be documented below.

<i>Section I: POLICY</i>	
Revision	Date
Plan contents compiled into one manual.	August 2013
Updated to include Winding Hill facility.	January 2017

<i>Section II: DEFINITIONS</i>	
Revision	Date
Plan contents compiled into one manual.	August 2013
Added statement by CDC referencing cadavers as OPIM.	October 2016

<i>Section III: EXPOSURE DETERMINATION</i>	
Revision	Date
Plan contents compiled into one manual.	August 2013
Included SEH personnel who work with blood, body fluids or OIM in Category 2.	March 2016
Updated to include Winding Hill facility.	January 2017
Added specific student employee exposure to Category 2.	September 2017

<i>Section IV: STANDARD PRECAUTIONS</i>	
Revision	Date
Plan contents compiled into one manual.	August 2013
Updated Appendix A, list of First Aid Kits	October 2013
Update Appendix A, list of First Aid Kits and list of AEDs	July 2017

<i>Section V: SPILL CLEAN-UP FOR BLOOD & BODY FLUIDS</i>	
Revision	Date
Plan contents compiled into one manual.	August 2013
Updated table on availability of Campus Events for spill clean-up (page 10)	February 2015
Updated to currently used chemicals; also, changed responsibility for record retention of Dining Services employee training from Campus Events Manager to Dining Services Director.	March 2016
Replaced reference to TB-Cide Quat (manufactured by Spartan Chemical) with the term "body fluid absorbent." Removed all references to specific chemical names and added statement to contact Campus Events Manager or Facility Compliance/Campus Events Inventory Controller for current product.	March 2017
Added section for protocol at Winding Hill.	May 2017

Section VI: RESIDENCE HALLS

<u>Revision</u>	<u>Date</u>
Added this section to manual.	May 2015
Changed responsibility for retention of training records for RDs from Campus Events Manager to Residence Director.	March 2016

Section VII: BIOHAZARD WASTE POLICY

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Changed "Recycle and Waste Coordinator" to "Facility Compliance/Campus Events Inventory Controller"	March 2013
Changed section number from VI to VII.	May 2015
Added information on Winding Hill.	January 2017

Section VIII: HEPATITIS B VACCINATION

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Changed section number from VII to VIII.	May 2015
Included specifics for student employment eligibility for vaccination and reference for Hepatitis B Vaccination form.	September 2017

Section IX: TRAINING

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Changed section number from VIII to IX.	May 2015
Updated to include reference to Qualtrics online training program.	March 2016

Section X: EXPOSURE POST EVALUATION AND FOLLOW-UP

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Changed section number from IX to X.	May 2015

Section XI: RECORD KEEPING

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Changed section number from X to XI.	May 2015

APPENDICES

<u>Revision</u>	<u>Date</u>
Plan contents compiled into one manual.	August 2013
Updated Appendix A listing	March 2014
Update Appendix A listing per info from Department of Safety	March 2015

Updated Appendix A to include new first aid kits added to Hoffman and Mellinger	March 2015
Updated Appendix A to reflect new larger first aid kits installed across campus and removal of many smaller first aid kits; also added locations of AEDs	April 2016
Updated list of AED locations in Appendix A	October 2016
Updated Appendix A and B to include Winding Hill.	May 2017
Updated Appendix A for location of first aid kits (Winding Hill) and for location of AEDs (Winding Hill)	July 2017
Added Hepatitis B Form for Student Employees, Appendix C, and updated all successive appendices accordingly.	September 2017
Update Appendix A to identify those AEDs equipped with infant/child pads.	November 2017
Added location of Stop-the-Bleed kits to Appendix A	May 2019
Added Stop-the-Bleed kit for Grounds to Appendix A	September 2019
Updated list of first aid kits locations; changed office suite number for Appendix C	March 2020

Updated contents to reflect change from College to University and changed titles/responsibilities due to changes resulting from Voluntary Separation Program. July 2020

APPENDICES

All the appendices to this manual are contained in this section. Electronic copies of these documents may be obtained by contacting the Office of Human Resources & Compliance.

Locations for First Aid Kits

Building	Location	Lg 1st Aid Kit	Sm 1 st Aid Kit
Agape Center	Room 110B		X
Agape Center	1st floor restroom		X
Bowmansdale Building	Main Lobby outside room 013 by bulletin board	X	
Bowmansdale Building	Mail rm 23		X
Bowmansdale Building	Press rm 13		X
Boyer Hall	1st floor by AED in lobby	X	
Boyer Hall	3rd floor center hallway near elevator 3 & stairwell A	X	
Climenhaga Fine Arts	Theatre shop, upper rm 25		X
Climenhaga Fine Arts	Rm 36		X
Climenhaga Fine Arts	Rm 113		X
Climenhaga Homestead	Wall near sink in conference room (McBeth)	X	
Climenhaga Homestead	Kitchen, rm106		X
Eisenhower Campus Ctr	Falcon Express, rm 157	X	
Eisenhower Campus Ctr	Falcon Exchange, rm215		X
Eisenhower Campus Ctr	Lottie Nelson (at time clock)	X	
Eisenhower Campus Ctr	Post Office, rm 171		X
Falcon Hut	1st floor concession area		X
Frey Academic	Room 45		X
Frey Academic	Basement near ENGR project room	X	
Frey Academic	3rd floor lounge area by water fountain	X	
Frey Academic	Sculpture Studio, rm 4		X
Frey Academic	Woodworking Studio, rm 10		X
Frey Academic	Room 21		X
Frey Academic	Textile Studio, rm 50		X
Frey Academic	Printmaking Studio, rm 182		X
Frey Academic	Break Room 236		X
Fry Apartments	Basement by laundry	X	
High Center	By AED in vending machine room	X	
High Center	Ticket Office, rm 129		X
Hoffman	In kitchen on right side wall	X	
Hostetter Chapel	Main lobby on left wall by black box and cork board	X	
Jordan	Custodial closet, rm 264		X
Jordan/Kline	1st floor in lobby by Oakes Museum (by AED)	X	
Jordan/Kline	3rd floor common area (beside entrance to Kline wing)	X	
Kelly	Basement in laundry	X	
Kline	Rm 202		X
Kline	Rm 221		X
Kline	Rm 302		X
Kline	Rm 313		X

Building	Location	Lg 1st Aid Kit	Sm 1st Aid Kit
Larsen Student Union	Intercultural Office, rm 212		X
Larsen Student Union	Student Manager Desk, rm 230		X
Larsen Student Union	Inside main doors by AED	X	
Larsen Student Union	Union Café	X	
Lenhert Building	By room 110 near AED	X	
Lenhert Building	Grounds Office inside the main door	X	
Lenhert Building	HVAC Shop, rm 110		X
Lenhert Building	Carpentry Shop, rm 126		X
Lenhert Building	Central Receiving, rm 128		X
Lenhert Building	Lock Smith Shop, rm 129		X
Lenhert Building	Fleet Services, rm131		X
Mellinger	Basement by laundry on outside wall	X	
Mill House	2nd floor kitchen		X
Murray Library	By librarian's desk	X	
Murray Library	Break room 024		X
Naugle	Lobby near AED	X	
North Complex (1)	Basement beside fire extinguisher	X	
North Complex (2)	1st floor across from elevator	X	
North Complex (3)	2nd floor near fire extinguisher	X	
North Complex (4)	3rd floor near fire extinguisher	X	
Old Main	Handicap entrance by AED	X	
Old Main	Break room 236		X
Old Main	Copier/Break Room, 308		X
Orchard Hill	Public side, kitchen		X
Reeser Garage	Room 002A		X
Smith	Basement by laundry	X	
Sollenberger	Hitchcock entrance (center doors) by gym manager's desk	X	
Sollenberger	Pool, rm 123		X
Sollenberger	Campus Events office, rm 149	X	
Sollenberger	Falcon Fitness Center Desk	X	
Sollenberger	Sawyer Gym	X	
South Complex (1)	Common areas near elevator on 1st floor	X	
South Complex (2)	Common areas near elevator on 2nd floor	X	
South Complex (3)	Common areas near elevator on 3rd floor	X	
Witmer	Lobby	X	
Winding Hill	First floor employee resource room (lounge)	X	
Winding Hill	Rear second floor hallway	X	

LOCATIONS FOR AED'S

Building	Location
Bowmansdale	Main office area
Boyer Hall	Main entrance on left in corner
Eisenhower Campus Center	<ul style="list-style-type: none"> • Lower Level outside weight room • Lower Level in the Athletic Training Room • First floor at Dispatch Services * • Second Floor Outside entrance C Lottie
Engle Center	Back exam rooms
Frey Academic	Main entrance beside fire panel
Fry/Kelly Residence	C section by fire panel
High Center	Lower level in vending machine room
Hoffman	Inside main doors on left
Hostetter Chapel	Between restrooms in main lobby *
Kline/Jordan	By trash cans in center near elephant *
Larsen Student Union	1 st floor near pulse door
Lenhert	Hallway off front offices by room 110
Murray Library	Beside elevator on main floor
Naugle	1 st floor lounge near TV
North Complex/Smith	Main lobby/Fishbowl beside TV
Old Main	Rear entrance under steps in center stairwell
Safety Office Vehicles	<ul style="list-style-type: none"> • Escape • Focus • Pick-up
Sollenberger Sports Center	<ul style="list-style-type: none"> • Fitness Center wall just inside door • Indoor Track on Pool Side • Side entrance to Hitchcock* • Sports Center, Pool Office
South Complex	Mt. View lobby inside door
Witmer/Mellinger	First floor lobby
Winding Hill	Second floor, rear hallway

* AEDs equipped with infant/child pads.

LOCATIONS FOR WALL-MOUNTED STOP-THE-BLEED KITS

Building	Location
Bowmansdale	Main office area
Boyer Hall	Main entrance on left in corner
Climenhaga Fine Arts	In hall off lobby by art studios
Eisenhower Campus Center	<ul style="list-style-type: none"> • First floor at Dispatch Services • Second floor outside entrance C Lottie
Falcon Hut	1 st Floor concession area
Frey Academic	Main entrance beside fire panel
High Center	Lower level in vending machine room
Hoffman	Inside main doors on left
Hostetter Chapel	Between restrooms in main lobby
Kline/Jordan	By trash cans in center near elephant
Larsen Student Union	1 st floor near door to Pulse
Lenhert	Hallway off front offices by room 110
Murray Library	Beside elevator on main floor
North Complex/Smith	Main lobby/Fishbowl beside TV
Old Main	Rear entrance under steps in center stairwell
Sollenberger Sports Center	First floor hall by Athletic Offices (near SC143)
South Complex	Mt. View lobby inside door
Witmer/Mellinger	First floor lobby
Winding Hill	Second floor, rear hallway

LOCATIONS FOR PORTABLE STOP-THE-BLEED KITS

Area/# of kits	Location
Department of Safety (4)	One in each vehicle
Department of Safety (1)	Greenbriar
Department of Safety (1)	The Connection Substation
Engle Center (2)	
Frey Engr Machine Shop (2)	Office of Technician/Lab Assistant
Orchard Hill (1)	Public side, kitchen
Department of Nursing (2)	
Grounds Office, Lenhert Bldg. (1)	

Hepatitis B Vaccination Form

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 the Hepatitis B vaccine, at no charge to myself.

- I would like to accept the series of Hepatitis B vaccinations and understand that it is my responsibility to make the appointments with the Engle Health Center at ext. 6035. The Hepatitis B vaccination consists of series of three shots which will require three separate appointments for the injections.
- I decline the Hepatitis B vaccination series at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease. If in the future I continue to have the occupational exposure to blood or other potentially infectious materials and want to be vaccinated with the Hepatitis B vaccine, I can receive the vaccination series at no charge to me.
- I am uncertain if I have received the Hepatitis B vaccination previously. I would like a titration performed to determine if I have Hepatitis B antibodies in my blood. I understand that it is my responsibility to make the appointment with the Engle Health Center at ext. 6035.

Name (Print)

ID #

Name (Signature)

Date

*Please return completed form to Suite 3015 within 3 days of beginning job assignment.
This signed form must be maintained in the employee's personnel file in Human Resources &
Compliance for 30 years after termination of employment.*

Hepatitis B Exposure for Student Employees

Certain student employment positions at Messiah present the potential for exposure to blood or other potentially infectious materials and thus offer the risk of acquiring Hepatitis B virus (HBV) infection. These positions include:

- Any student employment positions where providing first aid/CPR is a requirement (ex., Lifeguard, Fitness Center Attendant, Gymnasium Oversight)
- Campus Events Laundry (due to potential for exposure from contaminated linens)

IF YOU WORK IN ONE OF THE POSITIONS MENTIONED ABOVE, you must complete this section by checking one of the following and sign this form:

- Decline – I have previously received the Hepatitis B vaccination series.
- Decline – I do not wish to receive the Hepatitis B vaccination series at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B. If I decide in the future I wish to receive this vaccination, I can begin the 3-series injections provided I continue to have the occupational exposure to blood or other potentially infectious materials in my student employment position at Messiah.
- I want to receive the Hepatitis B vaccination series. **I understand that it is my responsibility to make the appointments with the Engle Center at ext. 6035.** Because this is a series of three injections over a 6-month period, I understand that Messiah will pay for the vaccination during the time I am employed in one of the positions listed above. If I terminate from this position before the series is finished, Messiah will not pay for the remaining injections. However, if I wish, I can complete the series at my own expense.

IF YOU DO NOT WORK IN ONE OF THE POSITIONS MENTIONED ABOVE, you must check the following and sign this form:

- At this time, I am not eligible to receive the Hepatitis B vaccination at Messiah's expense. However, I understand that if, at a later date, I move to another work position that is included in those listed above I would become eligible and could request the vaccination.

Name (Print)

ID #

Name (Signature)

Date

Student Employee Position: _____

*Please return completed form to Student Employment Office, suite 3015.
Keep a copy to give to the Engle Center if you wish to receive the vaccination.*

Needle Sticks Questions/Answers

For individuals who have been injured with a needle that may have been used.

What should I do?

Wash the injured area with soap and water and go to the Engle Health Center, hospital, Concentra or WORKNET Occupational Medicine for treatment immediately. If you are an employee, you may go to the Engle Center to have the wound cleaned but, because this is a Workers' Compensation incident, you will need to go to Concentra, WORKNET Occupational Medicine or the hospital for blood tests; they will also provide counseling regarding Human Immunodeficiency Virus (HIV), Hepatitis B, Hepatitis C and other diseases transmitted by exposure to blood, and answer your questions. He/she will tell you what symptoms to watch for during the next 6 months. Most people who are going to become infected do so within 6 months.

Can the syringe be tested for HIV, Hepatitis B and Hepatitis C?

No. Laboratories are not able to test syringes and/or needles for HIV, Hepatitis B or the Hepatitis C Virus because there is not enough blood to test. Also, antibody tests for these viruses cannot be done after blood is dry.

What should I do with the syringe?

Contact the Engle Center for proper disposal of the needle.

What is needed for disease transmission to occur?

In order for there to be disease transmission, these things must occur:

- 1) the person who used the needle must have the disease;
- 2) the person stuck by the needle must be susceptible to the disease;
- 3) the person stuck by the needle has to get enough virus into the body to cause infection.

While HIV, Hepatitis B, and Hepatitis C can be transmitted by needle stick, this does not occur often.

Is there anything else I should do?

Public health recommendations during the six months following exposure to blood include:

- NO sharing of personal items, such as needles, toothbrushes and razors;
- NO unprotected sexual intercourse;
- NO breast-feeding; and,
- NO blood, semen, or organ donations.

Is the Hepatitis B vaccine recommended after a needle stick injury?

Your doctor will discuss the Hepatitis B vaccine with you. The Centers for Disease Control and Prevention (CDC) recommends that unvaccinated persons receive the first dose of the vaccine as soon as possible, the second dose in one month, and the third dose in six months.

Am I at risk for HIV?

Although the risk of getting HIV from a used syringe/needle is not zero, HIV is a fragile virus and does not survive well outside the human body. Studies have shown that the amount of virus found in dried blood is reduced by 90-99% within several hours, thus making it very difficult to infect a person. Discuss this issue with your doctor.

Am I at risk for Hepatitis B?

The Hepatitis B virus is much stronger than HIV. As dried blood, Hepatitis B stays alive for one week, and maybe longer. Thus, you are at greater risk of contracting Hepatitis B from a used syringe/needle than HIV. Discuss this issue with your doctor.

Am I at risk for Hepatitis C?

Approximately 2 out of 100 people develop Hepatitis C after a needle stick exposure to Hepatitis C infected blood. Discuss this issue with your doctor.

Educational Handout for Employees Who May Have Experienced An Exposure

INTRODUCTION — Exposure to blood or other bodily fluids can result in the transmission of many serious infections, including the human immunodeficiency virus (HIV, the virus that causes AIDS). While most people are not exposed to these fluids, a number of situations can arise where exposures may occur, such as finding a syringe with needle in a park, sharing needles in the injection of illicit drugs, helping an injured person, or becoming the victim of an assault or rape.

Many healthcare facilities are grappling with the appropriate advice to give in these sorts of situations. It is important to note that the guidelines that exist are not based on studies of exposures outside of the healthcare system. Most of the recommendations are derived from needle stick and other exposures of healthcare workers.

Although more than 200 different diseases can be transmitted from exposure to blood, the three most important are hepatitis B virus (HBV), hepatitis C virus (HCV), and HIV. Fortunately, the risk of acquiring any of these infections is low.

DEFINITION — In order to be exposed to a bloodborne pathogen, an individual must have contact with blood, a visibly bloody fluid (e.g. phlegm or urine containing blood), or other bodily fluid (e.g. semen or vaginal secretions) that may contain a virus. The blood or fluid must come into contact with some part of the exposed person's body, through which absorption could take place.

A virus can be absorbed through the blood or mucous membranes, which include the eye, mouth, or genitals. Contact with skin that is intact (without new cuts, scrapes, or rashes) does not constitute an exposure unless the area of the body covered is extensive.

Thus, exposure to a bloodborne pathogen is possible after:

- A percutaneous (through the skin) injury such as a needle stick or cut with a sharp object
- Contact of mucous membrane (including exposure through sexual intercourse especially if an ulcer is present or trauma to vaginal tissues occurs) or non-intact skin

INFECTION AFTER EXPOSURE — Of these viruses, HBV is the most infectious. A healthcare worker who sustains a needle stick with blood from a known HBV-infected patient has between a 6 and 30 percent chance of developing HBV. The percent for HCV and HIV in the same situation is 1.8 and 0.3, respectively. Other factors influence the risk of becoming infected, including the amount of blood or bodily fluid involved, the depth of penetration, and the amount of virus in the source's blood or body fluid.

The risk of acquisition from a mucous membrane exposure is more difficult to define. When healthcare workers were followed after mucous membrane exposure to HIV, no cases of HIV were identified among those who had been exposed. However, no other explanation for HIV has been found in a few cases where occupational mucous membrane exposure occurred. This has led most experts to state that the risk of acquiring HIV following a mucous membrane exposure is far less than 0.3 percent but not zero.

There is also a difference in terms of risk if the individual has a one-time exposure or has multiple exposures. Thus, the risk for the victim of a single sexual assault is different than for the sexual partner of an infected patient, who is likely to have had more than one exposure.

POST-EXPOSURE RECOMMENDATIONS — The first and most important measure to take following exposure to blood or bodily fluids is to wash the area well with soap and water. Crime victims are exceptions to this rule since washing may destroy important evidence for criminal prosecution. If a cut has occurred, forced bleeding by pressing on the cut for 30 seconds to a minute is advisable, even before washing.

Potentially protective measures to take after exposure for each of the major viruses is different (see below).

Hepatitis B — Although of the three diseases discussed here, HBV is the most infectious, it is also the only one of the three for which there is an effective vaccine. The vaccine, which is made from a piece of the virus, may be administered to individuals who are exposed to blood, even if the blood is not known to carry HBV. The vaccine should be given at the time of exposure, and repeated one month and six months later, to achieve full protection.

If the source of the exposure is known to be positive for HBV, hepatitis B immune globulin (HBIG), which contains antibodies (proteins the body makes to protect against an infection) to the virus, should be given as soon as possible after exposure, preferably within 24 hours. The first dose of hepatitis B vaccine should be given at the same time.

Hepatitis C — HCV can cause a form of hepatitis that leads to chronic liver disease. However, there are no known effective means of preventing this infection following exposure. It is advisable to have blood tests done to assess your liver following a possible exposure and then to have these tests repeated approximately six months later or sooner if symptoms of hepatitis develop. These symptoms include: loss of appetite, nausea, abdominal pain, darkening of urine, light stools, or jaundice (yellowing of the skin or whites of the eye).

Human immunodeficiency virus (HIV) — Information on the value of giving drugs to try to prevent HIV infection after exposure comes from animal studies and treatment of healthcare workers. One retrospective study suggested that treating healthcare workers that have been exposed to HIV with zidovudine (ZDV) reduced the already low risk of acquiring the virus infection by about 81 percent.

Most healthcare workers are now treated with combination therapy, usually two drugs, ZDV and lamivudine (3TC). A third drug, usually a protease inhibitor, is included when the exposure poses an increased risk for transmission or where resistance of the virus to the other drugs is known or suspected based on drugs to combat HIV that the source patient might have been taking.

Many clinicians routinely use the expanded three-drug regimen because of the increased efficacy achieved by adding a protease inhibitor to regimens containing only reverse transcriptase inhibitors in the treatment of persons with AIDS.

In order to determine the most appropriate preventive treatment for a non-healthcare worker, the nature of the exposure and the likelihood of ongoing exposure should be taken into account. The evaluation should also include information about any medications the individual may be taking, and any current or underlying medical conditions that would influence the decision about which drugs should be used. Such conditions, for example, include pregnancy, breast feeding, or kidney or liver disease. All women of childbearing age whose pregnancy status is unknown should be tested for pregnancy.

If the source of exposure is known, an attempt can be made to test them for HIV, although many states have requirements that informed consent be obtained. The exposed individual should be tested for HIV at the time of exposure (baseline) and at six weeks, three months, and six months post-exposure.

Post-exposure prevention treatment should be started as soon as possible after exposure, within a few hours rather than days. It should not be given if more than 72 hours have elapsed. The Centers for Disease Control and Prevention (CDC) recommends the following for exposures outside of the healthcare system: efavirenz plus (lamivudine or emtricitabine) plus (zidovudine or tenofovir) OR Kaletra (lopinavir/ritonavir) plus (lamivudine or emtricitabine) plus zidovudine.

The drugs may produce side effects, and animal studies suggest that the longer treatment is delayed, the less effective it is. The optimal length of preventive treatment is unknown, but four weeks is the generally accepted course.

Any individual who has been exposed to HIV and who receives post-exposure antiretroviral treatment needs to be informed about potential side effects of these drugs, potential drug interactions, and the proper timing of doses. It is crucial to take all of the medication. A group in Canada found that only 8 of 71 people who accepted prophylaxis against HIV following a sexual assault completed the four-week course of treatment. One of the major reasons for stopping the medication is side effects. If you are taking these medications and develop any symptoms, you should contact your doctor and ask if the symptoms might be related to the drugs.

FOLLOW-UP TREATMENT — Follow-up testing for HBV and HCV should be performed about 12 weeks after possible exposure. For people receiving HBV vaccine, return appointments to complete the vaccine series are crucial. For those with possible HCV exposure, contact with your physician to answer any questions that you might have is important in addition to follow-up blood tests.

Individuals who may have been exposed to HIV should receive follow-up counseling, post-exposure testing, and medical evaluation whether or not they receive post-exposure treatment. HIV antibody testing should be performed for at least six months post-exposure, at six weeks, 12 weeks, and six months. In addition, HIV testing should be performed on any person who has an illness that is compatible with an acute retroviral syndrome, regardless of the interval since exposure..

People exposed to a bloodborne pathogen via sexual intercourse will probably also be screened for other sexually transmitted diseases (STDs). In particular, blood tests for syphilis and cultures for gonorrhea and chlamydia most likely will be performed at baseline after exposure and two weeks later. Blood tests for syphilis will also generally be repeated at the same times as the HIV antibody testing if the first two tests are negative.

PROTECTING OTHERS AFTER EXPOSURE — Anyone exposed to a bloodborne pathogen should be educated about how to prevent secondary transmission to others (for example, family, sexual partner or breastfeeding child) during the follow-up period, especially during the first six months after exposure. This time period is when most people who are infected with HIV become antibody positive.

Precautions should include either abstaining from sexual intercourse or the use of condoms. Condoms reduce, but do not completely eliminate, the chances of transmitting HBV, HCV, or HIV infection to others. Women who have been exposed to blood or body fluids from a person known to be infected should avoid becoming pregnant during this time. In addition, individuals who have been exposed to HIV-infected fluids

should not donate blood, plasma, organs, tissue, or semen during the follow-up period. Women who are breast feeding may consider stopping temporarily.

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