01.02 – Blood Borne Pathogens (BBP) Occupational Post Exposure Management

Purpose

Establish protocol for management of occupational exposures to blood or potentially infectious materials.

Audience

All employees of UTMB hospitals, clinics, outpatient surgical center, contract workers, volunteers, and students.

Policy

Exposures to blood borne pathogens will be managed as described in sections to follow for any occupational exposure of healthcare workers, students, or first responders. UTMB will assume responsibility for testing of a source patient in the care of a UTMB facility.

Definitions

Definitions of exposure to infectious pathogens:

Occupational exposure to blood, body fluids and tissues with infectious pathogens may occur under the following circumstances. (Body fluids include semen; vaginal and oral secretions; and cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids; and wound exudate)

- Percutaneous injury (e.g. needle stick, laceration with a sharp object)
- Contact of mucous membranes or ocular membranes (mucosal
- exposure)
- Contact of non-intact skin (e.g. skin that is chapped, abraded)

NOTE: Exposure to blood, body fluids and tissues that have been inactivated of pathogens with effective means is not a considered an infection risk; eg, body tissues that have been fixed in formalin for 24 hours is not a risk for infection.

Contacts

Employee Health Clinic: 409-747-9172 Fax: 409-747-9182
E-mail: emphlthc@utmb.edu

Student Health: 409-747-9508 Fax: (409) 747-9330

Infection Control & Healthcare Epidemiology:
During office hours: 409-772-3192
After hours pager: 409-643-3133

Online forms and instructions: https://www.utmb.edu/stuck/home

Procedures

A. Initial care of exposed area: exposed employee will cleanse site of percutaneous exposure or rinse exposed mucous membranes for per-mucosal exposure before reporting the exposure.

B. Reporting an exposure
1. Healthcare worker or student on main campus: report exposure to supervisor or supervising instructor/faculty.
2. Employee: report exposure to supervisor, complete 'Blood Borne Pathogen Exposure and Notification Form' (access at https://www.utmb.edu/stuck/faculty-supervisor-checklist), and take completed form at exposure evaluation (see Section D.1)
3. Student: complete student injury form.
4. Correctional employee exposed to a UTMB patient: Report exposure TDCU triage nurse.
5. First responder/Contractor: report exposure to his/her agency's supervisor and infection control officer.

C. Obtaining a blood sample from source patient
1. The priority for testing is to secure a specimen on the source patient, when known, and test the source patient for HIV, hepatitis B and hepatitis C (see Section D.2).
2. Request charge nurse for patient's location (hospital/urgent care center/clinic) to obtain verbal consent and blood sample. If patient is no longer in the care of UTMB, call the lab to determine if there is an adequate serum sample drawn for routine clinical care. Obtain verbal consent for HIV testing when feasible. Use manual lab slips (available from Employee Health and also at https://www.utmb.edu/stuck/faculty-supervisor-checklist) to order labs. Obtain 1 serum separator tube and label with source patient's name and medical record number.

D. Exposure evaluation, counseling, and management of employee or student
1. Location:
   a. Employee exposure: After arranging source patient testing, employee should report to the nearest UTMB ED. Employees also have the option to be evaluated by the Employee Health Clinic during office hours (9 AM-4:00 PM). Employees at remote locations may use a facility designated by Clinic management for remote locations. The completed 'Blood Borne Pathogen Exposure and Notification Form' can be faxed (409-747-9182) or scanned and emailed to the Employee Health Clinic (EmployeeHealth.clinic@utmb.edu) for follow-up on the next business day.

   b. UTMB students:
      1) Exposed on a UTMB campus: report to UTMB Student Health during office hours. After hours, report to the designated UTMB emergency department.
      2) Student at off-site rotation at facility not operated by UTMB:

report exposure per facility policy to assure source patient testing, then report exposure to UTMB student health.

3) School of Medicine students who are designated for rotations at other institutions should follow the prearranged process with the appropriate facilities per the School of Medicine agreements.

c. Non-UTMB students:
   1) Student-school who has contract with UTMB (Galveston College): Follow UTMB student process by reporting to the Student Health Clinic as above.
   2) Student-school who does not have contract with UTMB Student Health: follow process outlined by school. Inform student that they should see their primary care provider for any additional follow-up and treatment indicated.
d. Correctional care officer:
   1) Register as a patient in the ED on the main campus for initial evaluation and prophylaxis as indicated.
e. First responders/Contractors:
   1) Register as a patient in the ED for initial evaluation and/or to start HIV prophylaxis as indicated.

2. Laboratory tests for source patients
   The source patient will be tested for the following: HIV antigen/antibody combo test, HBsAg, anti-Hepatitis B core antibody, and HCV antibody with reflex HCV PCR if antibody positive.
   a. Source patient testing at EDs: perform rapid HIV screening test through local laboratory located at ED facility.
      i. Rapid HIV test result is typically available within 30 minutes. The local laboratory will call in the HIV result, either positive or negative, to ED, but ED staff may also contact the laboratory for test result after 30 minutes.
      ii. HIV prophylaxis treatment decision will be based on this test result (see Section F).
   b. Send remainder of the sample to **Sample Management on the Galveston main campus, CSW 7.412 (core laboratory)** via courier for confirmatory HIV test (if onsite rapid HIV test is positive) and for hepatitis B and C.

3. Laboratory tests for exposed individual
   a. HIV antigen/antibody combo test, HCV antibody and total anti-HBc (see Section E).
   b. In addition, HBV surface antibody should be ordered for exposed individuals who have a prior history of HBV immunization.
   c. Additional laboratory tests required if exposed person is starting prophylaxis for confirmed or possible HIV exposure – CBC (use additional lavender top tube for CBC), complete metabolic panel (CMP). Females in reproductive age must have a urine or serum pregnancy test.

d. Reporting of initial source patient's laboratory test results: As stated item 2a above, all rapid HIV test results will be reported to the ordering clinicians within in 30 minutes. In addition, HIV and all other test results will be scanned by the Pathology Laboratory into the source patient's electronic medical record if the source is a UTMB patient. In addition, the results will be sent via fax to:

   i. Student Health for UTMB student or student from school with UTMB Student Health contract,
   ii. Employee Health for UTMB employees,
   iii. Department of Infection Control & Healthcare Epidemiology (IC/HE) which will review the source patient's laboratory results for positive results for any of the following: hepatitis B surface antigen, hepatitis C antibody, or HIV antibody/antigen. In order to assure that abnormal results are addressed by the patient's physician, any positive result will be communicated to a member of the patient's healthcare team The care provider will be informed that the results will be retrievable in the patient's medical record. For first responders/contractors, the source patient's positive or negative results will be forwarded to the respective agency's safety office or occupational healthcare provider.

4. Review of initial laboratory results and follow up evaluation
   a. UTMB employee: Employee Health clinicians will review the source patient and employee tests. They will provide counseling, prophylaxis (if not already initiated in ED), or vaccination as indicated, and instructions for any additional follow-up testing or assessment by a specialist (e.g. hepatologist, infectious disease physician, or obstetrician).
   b. UTMB student or student from school with UTMB Student Health contract:
      1) Source patient results are reviewed by Student Health clinicians to determine need for additional prophylaxis, testing, vaccination, or treatment.
      2) Any follow up care will be provided either by Student Health clinicians with appropriate referrals to specialists as needed.
   c. Non-UTMB student
      1) Any follow-up care will be through a healthcare provider designated by the school or the student's personal healthcare provider. Report to individual designated by school and follow school policy regarding evaluation and post-exposure testing/treatment.
      2) Source patient's results without patient identifiers are communicated to designated school official by Infection Control & Healthcare Epidemiology.
   d. Correctional care officer:

1) Any follow-up care will be arranged through the TDCJ liaison.

e. First responder/Contractor:
   1) Any follow-up care will be provided by the agency's designated occupational healthcare provider.

E. General guidelines for follow-up testing of exposed employee/student: Follow-up is determined by the results of the initial lab work drawn on the source of the occupational exposure. It proceeds as follows:

Known HIV (+) source: Obtain HIV antigen/antibody test at exposure and at 6 weeks, and 4 months
Known HBV (+) source: Obtain Total anti-HBc at exposure and obtain HBsAg and Total anti-HBc at 6 months
Known HCV (+) source: Obtain HCV antibody at exposure and obtain HCV Qual RNA (PCR) at 3-6 weeks, and HCV antibody test at 4-6 months
Unknown source: Obtain HIV & HCV antibody at exposure and at 3 months and 6 months; and also obtain Total anti-HBc at exposure and HBsAg and Total anti-HBc at 6 months

Special Precautions after a known HIV(+) or high risk exposure

- Do not share a toothbrush. Gums can bleed easily, getting blood on the toothbrush.
- Do not share razors as blood may go undetected on the blade.
- Avoid pregnancy until HIV infection is ruled out (i.e. generally 6 months following exposure, but up to one year).
- Use safe sex practices-male/female latex condoms for barrier protection or abstain from sex during the follow-up period until HIV infection has been ruled out.
- Do not donate blood, plasma, organs, tissue or semen during the follow-up period.
- Seek medical evaluation for any acute illness that occurs during the follow-up period.

F. HIV exposure prophylaxis specifics
   1. Post-exposure prophylaxis and testing for HIV exposure
      a. Risk of HIV Infection
         The average risk of HIV infection due to all types of reported percutaneous exposures to HIV-infected blood is 0.3%. A percutaneous exposure is defined as a needle stick or laceration/puncture with a sharp object.

         The risk appears to be greater than 0.3% for exposure to HIV (+) patients involving deep injury, visible blood on the device causing the injury or a device previously placed in the source patient's vein or artery.

         The risk of HIV infection is considered to be much lower if the

source HIV patient is on antiretroviral treatment and has undetectable HIV viral load.

b. Prescriptions:
   1) Initial dose: Pharmacy has stocked several locations, including emergency departments, urgent care centers and some clinics with the initial 24-hour dose if source patient is known HIV positive, or if the source patient is unavailable for testing. In these circumstances, the first dose of prophylaxis must begin within 4 hours of exposure or as soon as possible. In other situations, where the source sample is being tested for HIV, the initial prophylaxis dose can be delayed for up to 72 hours until HIV test result is available.

   2) When continued prophylaxis is required, the prescription will be faxed to the Pharmacy. The Pharmacy will arrange to deliver medication to employees who do not work on the main campus via courier.

c. Prophylaxis Regimens for Exposure to HIV: Prophylaxis will be offered to employees and students who have a percutaneous injury or contamination of mucous membranes or nonintact skin exposure to HIV during the performance of their duties. Prophylaxis in these circumstances is voluntary. The CDC says, “Because most occupational exposures to HIV do not result in infection transmission, potential toxicity must be carefully considered when prescribing post-exposure prophylaxis (PEP)”

Medication Schedule

RECOMMENDATIONS (FOR BOTH PRENGANT AND NON-PREGNANT PERSONS:

Dolutegravir 50 mg tablet (Tivicay) - One tablet by mouth with or without food once daily for 4 weeks.

AND

Emtricitabine/Tenofovir 200mg/300mg tablet (Truvada or Descovy) - One tablet by mouth with or without food once daily for 4 weeks.

Side effects associated with Dolutegravir (Tivicay) and include nausea, diarrhea, headache, dizziness, abnormal dreams and difficulty sleeping. Rarely, these medications may cause jaundice with dark urine and yellowing of the skin or eyes.

Side effects associated with emtricitabine/tenofovir (Truvada and Descovy) include nausea, vomiting, diarrhea, abdominal pain, dizziness, gas, loss of appetite, headache, rash, skin discoloration, joint pain and muscle pain. Rarely, this medication may cause jaundice with dark urine and yellowing of the skin or eyes.

Expert consultation for exposure to a known HIV+ source:
Infectious Diseases/HIV expert consultation for HIV postexposure prophylaxis (PEP) is recommended in order to review the source person's prior HIV treatment, viral suppression, and resistance pattern. The exposed person may be seen in the HIV clinic if necessary. Other reasons for consultation with the expert are listed below **(note: *provision of PEP should not be delayed while awaiting expert consultation).***

- Delayed (ie, later than 72 hours) exposure report. Interval after which benefits from PEP are undefined.
- Breastfeeding in the exposed person
- If source person's virus is known or suspected to be resistant to one or more of the drugs considered for PEP, selection of drugs to which the source person's virus is unlikely to be resistant is recommended.
- Toxicity of the initial PEP regimen
  - Symptoms (eg, gastrointestinal symptoms and others) are often manageable without changing the PEP regimen by prescribing antimotility or antiemetic agents.
- Serious medical illness in the exposed person who is already taking multiple medications may increase the risk of drug toxicity and drug-drug interactions.

G. Post-exposure Prophylaxis for Hepatitis B and Hepatitis C

1. Risk of Hepatitis B or Hepatitis C Infection
   The average risk of Hepatitis B virus (HBV) infection in susceptible persons after percutaneous exposure to HBV-infected blood is 6 – 30%. The risk of Hepatitis C virus (HCV) infection after percutaneous exposure to HCV-infected blood is 7.4% (95% CI 3.9%-12.5%).
2. Testing and vaccination regimens for Hepatitis B:
   a. For vaccinated HCW (who have written documentation of a complete, ≥ 3-dose of Hepatitis B vaccine series) with subsequent ≥ 10 mIU/mL, testing the source patient for HBsAg is unnecessary.
   b. **Exposed HCW/Student has never received Hepatitis B vaccine**
      i. Offer HBV vaccine if source is known to be positive for hepatitis B or is high risk for hepatitis B or source is unknown, (e.g., needle puncture through a trash bag) and employee/student has not been vaccinated against hepatitis B.
      ii. Offer Hepatitis B Immune Globulin 0.06 ml/kg IM if source is known to be positive for hepatitis B, or is high risk for hepatitis B or source is unknown, (e.g. needle puncture through a trash bag) and employee/student has not been vaccinated against hepatitis B.**Exposed HCW/Student has received 3 doses of Hepatitis B vaccine twice and anti-HBs < 10 mIU/mL**
      iii. For vaccinated HCW/Student (who have written documentation of Hepatitis B vaccination) with anti-HBs < 10 mIU/mL after two complete ≥ 3-dose Hepatitis B vaccine series, the source patient should be tested for HbsAg as soon as possible after the exposure. If the source patient is HbsAg-positive or has unknown HbsAg status, HCW/Student should receive 2 doses of HBIG. The first dose should be administered as soon as possible after exposure and the second dose should be administered 1 month later. If the source patient is HbsAg-negative neither HBIG nor Hepatitis B vaccine is necessary.
      iv. **Exposed HCW/Student has received 3 doses of Hepatitis B vaccine but has not been tested for anti-HBs**: For vaccinated HCW/Student (who have written documentation of a complete, ≥ 3-dose Hepatitis B vaccine series) without previous anti-HBs testing, the HCW/Student should be tested for anti-HBs and the source patient (if known) should be tested for HbsAg as soon as possible after the exposure. Testing the source patient and the HCW/Student should occur simultaneously; testing the source patient should not be delayed while waiting for the HCW/Student anti-HBs test results, and likewise, testing the HCW/Student should not be

delayed while waiting for the source patient HbsAg results.

v. **Exposed HCW/Student has < 10 mIU/mL anti-HBs and source patient positive or has unknown HbsAg status**. If the HCW/Student has anti-HBs < 10 mIU/mL and the source patient is HbsAg- positive or has unknown HbsAg status, the HCW/Student should receive 1 dose of HBIG and be revaccinated as soon as possible after the exposure. The HCW/Student should then receive the second 2 doses to complete the second Hepatitis B vaccine series (6 doses total when accounting for the original 3-dose series) according to the vaccination schedule. To document the HCW's/Student's vaccine response status for future exposures, anti-HBs testing should be performed 1-2 months after the last dose of vaccine.

vi. **Exposed HCW/Student has anti-HBs < 10 mIU/mL and the source patient is HbsAg negative**. If the HCW/Student has anti-HBs < 10 mIU/mL and the source patient is HbsAg-negative, the HCW/Student should receive an additional Hepatitis B vaccine dose, followed by repeat anti-HBs testing 1-2 months later. HCWs/Students whose anti-HBs remains < 10 mIU/mL should undergo revaccination with 2 more doses (6 doses total when accounting for the original 3-dose series). To document the HCW's/Student's vaccine response status for future exposures, anti-HBs testing should be performed 1-2 months after the last dose of vaccine.

vii. **Exposed HCW/Student has anti-HBs ≥ 10 mIU/mL at time of exposure.** If the HCW/Student has anti-HBs ≥ 10 mIU/mL at the time of exposure, no postexposure HBV management is necessary, regardless of the source patient's HbsAg status.

viii. **Exposed HCW/Student unvaccinated or incompletely vaccinated (including those who refused vaccination)**. For unvaccinated or incompletely vaccinated HCW/Student (including those who refused vaccination), the source patient should be tested for HbsAg as soon as possible after the exposure. Testing unvaccinated or incompletely vaccinated HCW/Student for anti-HBs is not necessary and is potentially misleading, because anti-HBs ≥ 10 mIU/mL as a correlate of vaccine-induced protection has only been determined for persons who have completed an approved vaccination series. If the source patient is HbsAg-positive or has unknown HbsAg status, the HCW/Student should receive one dose of HBIG and one dose of Hepatitis B vaccine administered as soon as possible after the exposure. The HCW/Student should complete the Hepatitis B vaccine series according to the vaccination schedule. To document the HCW's/Student's vaccine response status for future

exposures, anti-HBs testing should be performed approximately 1-2 months after the last dose of vaccine. Because anti-HBs testing of HCW/Student who received HBIG should be performed after anti-HBs from HBIG is no longer detectable (6 months after administration), it will likely be necessary to defer anti-HBs testing for a period longer than 1-2 months after the last vaccine dose.

3. Testing and follow-up recommendations for Hepatitis C:
   Employees/Students testing positive for Hepatitis C Qualitative RNA (PCR) at 3-6 weeks or HCV antibody at 4-6 months, will be referred immediately to a hepatologist for treatment.

References:

1. Kuhar DT, Henderson DK, Struble KA, Heneine W, et al. Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis. Infect Control Hosp Epidemiol 2013;34:875-892.

2. Centers for Disease Control and Prevention. CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management, 2013;62(No. RR-10):1-16.

3. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at: https://aidsinfo.nih.gov/guidelines

4. Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States. Available at: https://aidsinfo.nih.gov/guidelines/html/3/perinatal-guidelines

5. Moorman AC, de Perio MA, Goldschmidt R, et al. Testing and Clinical Management of Health Care Personnel Potentially Exposed to Hepatitis C Virus — CDC Guidance, United States, 2020. MMWR Recomm Rep 2020;69(No. RR-6):1–8. DOI: http://dx.doi.org/10.15585/mmwr.rr6906a1