Bloodborne Pathogen Exposure Control Plan/Standard (Universal)  
Precautions for Handling Human Products in the Laboratory

Principle Investigator: ________________________________
Date of Preparation: ________________________________

A. Purpose

The Bloodborne Pathogens Exposure Plan is to prevent/reduce occupational exposure to bloodborne pathogens via human products: human blood, human tissue, body fluids, primary cell lines, commercially purchased human cell lines and bloodborne pathogens designated at Biological Safety Level 2 or 3 (BSL-2/3).

B. Exposure Determination

Designated employees that may come into contact with human products or other bloodborne pathogens.

1. ____________________________
2. ____________________________
3. ____________________________
4. ____________________________
5. ____________________________

C. Audience

Researchers, to include UTMB faculty, visiting faculty/scientist, volunteers, students, graduate students, and post-doctoral fellows that handle human products and bloodborne pathogens.

D. Policy

Standard/universal precautions is a program based on the assumption that all human products (tissues, blood, body fluids, primary cell lines, commercially purchased human cell lines at BSL-2) are potentially infectious. Application of standard precautions will protect the researcher from bloodborne infectious agents such as Hepatitis B Virus, Hepatitis C Virus, Human Immunodeficiency Virus as well as other Bloodborne pathogens. Standard precautions require that barrier precautions be used when contact with these materials is anticipated. Standard precautions do not rely on the diagnosis of disease to be made before precautions are instituted. It is assumed that all human products are potentially infectious and that measures are to be taken to safely handle these materials. Consistent use of personal protective equipment, safety devices,
and application of BSL-2/3 guidelines will reduce the potential for exposure to bloodborne pathogens.

E. Exposure Control Plan

The bloodborne pathogen exposure control plan is based on Standard Precautions, OSHA regulation (29 CFR Part 190.1030), the Texas Administrative Code Chapter 81, Health and Safety Code, Subchapter H., and the HHS/CDC Biosafety in Microbiological and Biomedical Laboratories, 4th Edition, 1999. The plan will be reviewed periodically and revised as necessary.

F. Biological Safety Committee

Human products and bloodborne pathogens have been designated by the UTMB Biological Safety Committee to be handled at Biological Safety Level 2 or higher as appropriate. This requires the principle investigator and/or lab director to submit a Notification of Use for Biological Agents to the institutional biological safety committee for review and approval. A minimum of BSL-2 microbiological practices, safety equipment, and facilities shall be in place for use of human products and bloodborne pathogens as deemed appropriate by the UTMB Biological Safety Committee.

G. Personal Protective Equipment

All personal protective equipment used in the lab will be provided by the principle investigator. Personal protective equipment will be chosen based on the anticipated exposure to human products or bloodborne pathogens. The protective equipment will be considered appropriate only if it does not permit human products or bloodborne pathogens to pass through or reach the employees’ clothing, skin, eyes, mouth, or other mucous membranes under normal conditions of use.

H. Standard Microbiological Practices

- A biohazard sign must be posted on the laboratory entrance. The sign must include biosafety level, name of the agent in use, special handling procedures, immunizations, principle investigator/lab director name, phone number, and emergency contact information. The sign must be updated to reflect changes in the lab staff.

- Laboratory equipment (freezers, refrigerators, incubators etc.) where human products and bloodborne pathogens are stored, cultured or manipulated shall be labeled with a biohazard symbol.

- Access to the laboratory is limited or restricted when experiments or work with cultures and specimens are in progress.

- Hands shall be washed with soap and water after removing gloves, after handling viable material and before leaving the laboratory.
• Eating, drinking, handling contact lenses, applying cosmetics, and storing food for human use are not permitted. Persons wearing contact lenses in laboratories should also wear eye protection or a face shield.

• Mouth pipetting is prohibited, mechanical pipetting devices are used.

• All procedures are performed carefully to minimize the creation of splashes or aerosols.

• Work surfaces are decontaminated at completion of work or at the end of the day and after any spill of viable material with disinfectants that are effective against the agents of concern.

• Liquid human products and bloodborne pathogens (blood, bloody fluids, cell cultures) are to be decontaminated prior to drain disposal. Solid disposable materials will be placed in a red bag lined biohazard box or autoclaved prior to disposal in the regular trash.

• Disposable instruments/equipment saturated with blood/bloody fluids or contaminated with infectious agents shall be red bagged and boxed as biohazardous for incineration or autoclaved (red/orange autoclave bags) prior to disposal in the regular trash.

• Re-usable contaminated equipment shall be decontaminated by application of an approved disinfectant prior to final cleaning (contact Environment Health & Safety ext. 21781 for information on disinfectants) or autoclaved.

• Equipment that cannot be decontaminated or autoclaved prior to servicing shall have a notice displaying the biohazard symbol attached. The notice shall identify the contaminated site.

• Laboratory personnel should receive appropriate immunizations or antibody titers for agents handled or that may be potentially present in the laboratory.

• The principle investigator/lab director maintains documentation to ensure that all lab personnel has received the appropriate training on the potential hazards associated with the work involved and the exposure evaluation procedures prior to starting work.

• The principle investigator/lab director will maintain training records for lab personnel documenting training on lab protocols.

Needles and syringes or other sharp instruments should be restricted in the laboratory for use only when there is no alternative. Plastic ware should be substituted for glassware whenever possible.

• Sharps include the following items: needles, syringes, capillary tubes, glass slides and cover slips, glass Pasteur pipettes, scalpel and razor blades whether contaminated or not contaminated.
• Sharps products, which are engineered to reduce or prevent injury, are strongly encouraged. These products include but are not limited to safety needles and sharps with engineered sharps protection and needless systems.

• Used sharps must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal. They must be carefully placed in conveniently located puncture-resistant containers specifically designed for sharps disposal.

• Non-disposable sharps must be placed in a hard-walled closable container for transport to a processing area for decontamination preferably by autoclaving.

• Sharps containers are to be closed when they are ¾ full. They may be placed into the red bag lined biohazard box/container for disposal.

• Employees should never reach into the sharps container when placing materials inside and should never attempt to retrieve materials.

• With two exceptions, needles shall never be removed from a syringe or vacutainer holder, and they shall be disposed of as a unit in a sharps container designed for sharps disposal. One exception to the rule is that needles may be removed from vacutainer holders using the “keyhole” device on red plastic needle disposal containers. The only other exception to this rule is removal of needles from syringes used to obtain arterial blood, or recapping dental needles used for local anesthesia or needles used for titrating IV solutions. In the instance that needles are required to be recapped the one-handed technique shall be used. The cap is placed on a flat surface and then picked up with the needle and syringe. The cap shall be snapped into place by gently pushing the cap against a flat vertical inanimate surface (not the other hand).

• Venipuncture and insertion of steel needles or plastic catheters into any intra-vascular space shall be carried out with great care.
  
  o Gloves shall be worn
  o Vacutainers shall be used for venipuncture as appropriate.
  o In the extraordinary circumstance where blood cannot be obtained using a vacutainer, a needle and syringe shall be used. However, in transferring blood from syringes to vacutainers, NEVER FORCIBLY INJECT blood into the tubes. Forcible injection of blood through the rubber stopper of tubes without a vacuum may cause the top to pop off and spray blood on the operator. Tubes without a vacuum shall be discarded and replaced by tubes with a vacuum.

• New employees or employees being transferred to other sections will receive training about any potential exposure from the principle investigator/lab director.
I. Safety Equipment (Primary Barriers)

Disposable or re-usable gloves shall be used for procedures involving all contact with human products/bloodborne pathogens.

- Wearing two pair of gloves may be appropriate.
- Disposable gloves shall be replaced when they become overtly contaminated or if they are torn, punctured, or when the integrity of the barrier is compromised.
- Disposable gloves shall not be washed or disinfected for reuse or used for touching “clean” surfaces.
- Gloves are never to be worn outside the laboratory.
- Re-usable gloves (heavy duty latex or nitrile gloves) may be decontaminated with an appropriate disinfectant and reused but shall be discarded if they are peeling, cracked or discolored, or if they have punctures, tears, or other evidence of deterioration.
- Discovery of an allergic reaction to glove material shall be reported to the principle investigator/lab director or lab supervisor immediately. Alternative glove material shall be identified and appropriate gloves then provided to the employee.

Lab coats or cover gowns designated for lab use are worn while in the laboratory.

- Laboratory coats and gowns will be removed prior to leaving the laboratory.
- Disposable coats or gowns shall be discarded as regular waste unless significantly contaminated with infectious material in which case they shall be placed in a red bag as biohazardous waste or in a red/orange autoclave bag for autoclaving.
- Re-usable coats or gowns shall be placed in an impervious laundry bag and sent to the UTMB laundry or for BSL-3 facilities autoclaved first and then sent to the laundry.
- Gloves shall be worn when handling contaminated instruments or equipment.

Face protection (goggles, mask, face shield, and other splatter guards) is used for anticipated splashes or sprays of infectious materials to the face when the microorganisms must be manipulated outside the biological safety cabinet.

Spills and accidents that result in overt exposures to infectious materials are immediately reported and spill procedures are implemented. Refer to the UTMB Safety Manual, Chapter 9 Biological Safety for spill procedure information.

Properly maintained biological safety cabinets, Class II type A/B3 or B2 cabinets, or other appropriate personal protective equipment or physical containment devices are used whenever:

- Procedures are conducted that have potential for producing infectious droplet aerosols or splashes. This includes but is not limited to centrifuging, pipetting, grinding, sonic disruption, vortexing, vigorous mixing, opening containers of infectious materials whose
internal pressures may be different from ambient pressures, inoculating animals intranasally, and harvesting infected tissues from animals.

- High concentration of large volumes of infectious agents are used. Such materials may be centrifuged in the open laboratory only if sealed rotors heads or centrifuge safety cups are used and if these rotors or safety cups are opened only in a biological safety cabinet.

- Face protection as described above or a face shield is to be used whenever manipulating material outside the biological safety cabinet.

J. Human Products and Bloodborne Pathogen Exposure

Exposed researchers shall report to the Employee Health Center or the Student Health Services during normal working hours and the Trauma Center/Emergency Room after hours or on weekends as soon as possible. Exposure of the researcher is defined as follows:

- Puncture of the skin or laceration by a sharp object contaminated with blood, blood tinged fluids, potentially infectious body fluids, or bloodborne pathogens.

- Contamination of mucous membranes (eyes, nose, mouth) with blood, blood tinged fluids, potentially infectious body fluids, or bloodborne pathogens.

- Contamination of non-intact skin (cuts, scratches, abrasions, dermatitis, etc.) by blood, blood tinged fluids, potentially infectious body fluids, or bloodborne pathogens that is prolonged or involves an extensive area.

- Should a needle stick or injury with another sharp instrument occur, the wound should be cleaned immediately with povidone-iodine, chlorohexidine, or 70% isopropyl alcohol and washed off.

- All injuries and exposures shall be reported to Employee Health Center or to the Student Health Service and appropriate paper work (Bloodborne Pathogen Post Exposure Packet) completed.

K. Biohazardous Waste Disposal

Biohazardous waste includes:

- Microbiological waste
- Pathological waste
- Human blood and blood products
- Bulk blood (100 mls or more)
- Sharps in sharps containers
*Containers used for disposal of biohazardous waste shall be closable, leak resistant and lined with a red biohazard bag. These containers shall be labeled with a biohazard symbol or a red container may be substituted for a labeled container.

*Sharps containers shall be specifically designed for sharps disposal.

*Disposable biohazard boxes will be lined with a red plastic bag and additional absorbent material added if necessary to contain liquids.

*Reusable biohazardous waste containers shall be washed out with soap and water and disinfected with an appropriate disinfectant.

*Gloves shall be worn for washing out containers.

L. State of Texas, CDC and OSHA Documents

Copies of regulations and guidelines are available in Environmental Health and Safety Office, Biological & Chemical Safety.

M. Transportation of Human Products and Bloodborne Pathogens/Infectious Substances

- Transport on campus:
  Human products and bloodborne pathogens will be contained for transport on campus by placing the material in a leakproof non-breakable primary container labeled with a biohazard symbol and then placed into a biohazard labeled secondary transport container.

- Transport off campus:
  Any person placing human products or bloodborne pathogens/infectious substances into transport shall be trained and certified to do so. Training shall meet the requirements set forth by either the U.S. Department of Transportation (DOT) or the International Air Transport Association (IATA). Contact Environmental Health and Safety, Biological & Chemical Safety for information.

N. Compliance Monitoring

- It is the responsibility of all researchers to comply with the Exposure Control Plan.

- Non-compliance by a UTMB Employee shall be subject to appropriate disciplinary measure as outlines by the Human Resources Department.

- Environmental Health and Safety, Biological & Chemical Safety shall randomly monitor compliance.
• Non-compliance incident reports shall be sent to the appropriate principle investigator/lab director.

• Non-compliance reports shall be reviewed by the UTMB Biological Safety Committee.

O. Training

Training is provided at the time of initial assignment to tasks where occupational exposure may occur, and shall be repeated as changes are made. Training shall be tailored to the education and language level of the employee, and offered during the normal work shift. The training will be interactive and cover the following:

• A discussion of the epidemiology and symptoms of bloodborne diseases.

• An explanation of the modes of transmission of bloodborne pathogens.

• An explanation of the UTMB Bloodborne Pathogen Exposure Control Plan, and a method for obtaining a copy.

• The recognition of tasks that may involve exposure.

• An explanation of the use and limitations of methods to reduce exposure, for example standard microbiological work practices and personal protective equipment.

• Information on the Hepatitis B vaccination, including efficacy, safety, method of administration, benefits, and that it will be offered free of charge.

• Information on the appropriate actions to take and persons to contact in an emergency involving blood, blood byproducts, and bloodborne pathogens.

• An explanation of the procedures to follow if an exposure incident occurs, including the method for reporting and medical follow-up.

• Information on the evaluation and follow-up required after an employee exposure incident.

• An explanation of the signs, labels, and color-coding systems.

The person conducting the training shall be knowledgeable in the subject matter.

References

Texas Administrative Code, Chapter 81, Subchapter H Health and Safety Code. Title 25 Health Services, Chapter 96 Bloodborne Pathogen Control.