**PURPOSE:** The purpose of this Standard Operating Procedure (SOP) is to establish a standard procedure for safe and proper collection of blood samples via venipuncture at Kent State University.

**SCOPE:** This SOP applies to designated research personnel who have received appropriate phlebotomy training and certification from the IRB-approved researcher able to certify that investigators demonstrate appropriate blood drawing techniques.

**RESPONSIBILITIES:** The Principal Investigator (PI) is responsible for ensuring that all staff involved with the collection of study blood samples are experienced and proficient in venipuncture, and certified prior to performing blood draws.

PI’s are responsible for ensuring that a laboratory specific bloodborne pathogens exposure plan is in place prior to performing blood draws.

Research personnel are responsible for following this SOP when obtaining blood samples from human subjects for research.

**DEFINITIONS:**

**Antecubital fossa:** The hollow or depressed area at the bend of the elbow. The median cubital

vein runs superficially midline of the antecubital fossa. The median cubital vein is the best choice for venipuncture as it is least likely to roll, large and easy to access, unlikely to clot during blood collection, and presents the least risk of nerve damage.

**Brachialcephalic vein:** The superficial vein running lateral to the median cubital vein. This is the second best choice for venipuncture and presents like the median cubital vein with a low risk of nerve damage.

**Hemolysis:** The destruction of red blood cells with liberation of hemoglobin, the iron-containing protein.

**Laboratory Requistion:** Form that serves as order and source documentation of laboratory tests.

**Palpate:** To feel or examine by hand.

**Personal Protective Equipment (PPE):** Specialized clothing or equipment worn by a healthcare worker for protection against infectious materials ). Examples include gloves, gowns, masks and goggles.

**Sharps Container:** A sturdy, liquid-proof container utilized to collect used needles or other sharp objects necessary for puncturing the skin or tissue.

**Tourniquet:** A tight encircling band-like device used to forcibly compress a blood vessel.

**Universal Precautions:** Infection control measures used to reduce the risk of transmission of bloodborne pathogens through exposure to blood or other body fluids. These preventative measures treat all blood and body fluids as infected or disease carrying.

Measures include:

* Use of single-use disposable injection or percutaneous equipment, or sterilized, if single-use equipment is not available
* Discarding sharps, such as needles, scalpels, etc. without recapping, in rigid, liquid-proof containers that is sealed and destroyed prior to being completely full
* Washing hands with soap and water before and after procedures
* Use of barriers such as gloves, gowns, goggles, or face mask to prevent contact with blood or body fluids
* Disinfecting instruments and contaminated equipments and work space

**Vacutainer:** Plastic or glass tubes used to collect blood samples. Vacutainers may contain various additives that act to separate components of blood or keep blood.

**Venipuncture:** The transcutaneous, sterile procedure used to puncture a vein in order to

withdraw a specimen of blood, or to initiate infusion therapy.

**Equipment/Room**

Blood draws should be conducted in a room that is separated by a door from bench space, biological safety cabinets or other laboratory equipment that is used to handle or store biological or infectious agents. Space utilized for blood draws should be separate from active manipulation of infectious biological agents and active work with hazardous chemical agents prior to the blood draw (for area disinfection purposes), at the time of the blood draw, and until disinfection procedures have been completed after the blood draw.

Blood draw areas must follow these practices:

* Furniture – Blood draw chair or table should be made of a material that can easily be disinfected (Ex. vinyl or plastic furniture).
* Sharps containers – An approved Sharps disposal container should be available in the blood draw area at the point of use. All glass items and needles must be disposed in an approved Sharps container.
* Biohazardous Waste Disposal – Biohazardous waste bags and boxes must be used to dispose of all plastic ware and personnel protective equipment that has a substantial amount of blood on it. (note: gauze pads, gloves and wrappers with minimal blood can be disposed of in normal trash).
* Disinfectant – Bleach solution or an EPA registered disinfectant should be available in the blood draw area in the event of a spill.
* Spill or Emergency Procedure – A procedure to handle spill cleanup or emergency response information should be posted at the point of use.
* Biohazardous Signage and Labeling – All clinical laboratory spaces must be labeled with a biohazardous door sign designating the space as BSL-2. All equipment used to store and handle human blood and blood products must be labeled with a biohazardous sticker.
* Phlebotomy needles- All needles and butterfly needles are required to have safety locks or safety shields to minimize the risk for accidental needle sticks.
* Personnel Protective Equipment - Personnel conducting blood draws are A new needle or butterfly set will be used for each attempt.
* If the subject does not permit a third attempt or the third attempt was unsuccessful the blood draw procedure must be discontinued.
* Personnel are required to wear the appropriate personnel protective equipment (PPE). This includes liquid barrier gloves (latex or nitrile), face protection (safety glasses) and lab coat or lab gown that can be laundered or disposed in event of a blood splash or spill.

**PROCEDURE:**

1. Wash hands and put on gloves and other PPE as appropriate.
2. Assemble blood collection equipment; place equipment away from study subject.
3. Explain procedure to subject.
4. Ask subject to remove restrictive clothing.
5. Position the subject arms comfortably and safe. Consider lowering extremity to allow veins to fill.
6. Apply tourniquet approximately 3-4 inches above planned puncture site. Do not place too tightly or leave on more than 2 minutes.
7. Palpate for a suitable vein with index finger. The medial cubital vein or brachiocephalic vein are used most frequently.
8. Prepare venipuncture site with alcohol prep. Cleanse in a circular fashion, beginning at the site and working outward. Allow to dry. Do not palpate area after cleansing.

1. Perform venipuncture using appropriate size needle.
2. If necessary, place each successive tube in vaccutainer to initiate flow.
3. When blood collection is complete, release tourniquet and remove last tube from vacutainer holder.
4. Place a cotton ball or gauze over site, and withraw needle in smooth, cautious manner to avoid bruising the vein.
5. Apply and hold pressure to the cotton ball or guaze over the puncture site until bleeding stops. May ask subject to hold pressure if able.
6. Secure cotton ball or guaze with paper tape or bandaid.
7. Discard needle into red, shaprs container without recapping needle. Dispose any used, remaining equipment in appropriate receptacle.
8. Invert each tube gently if instructed per the protocol. Do not shake as vigorous mixing may cause hemolysis.
9. Label each tube with subject ID, date and time of draw. If requested by sponsor, may need to include location of site draw (i.e: left antecubital, etc).

**Disposal of sharps and biohazard material**

1) Needles need to be disposed in a sharps container

2) Gauze pads, gloves and wrappers can be disposed of in regular trash cans.

a. If an item is profusely saturated in blood it must be disposed of in the biohazard containers.

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| **REFERENCES:** | CDC Universal Precautions for Preventing Transmission of Bloodborne Infections OSHA Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens  IRB Policy for Collection of Blood Samples in Human Subject Research |
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| **RELATED POLICIES:** |  |
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| **APPENDICES:** | None |
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| **REVISION HISTORY:** Keep a running history of all revision dates | |
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