

CLINICAL RESEARCH COORDINATOR PHLEBOTOMY TRAINING

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COURSE OUTLINE

- What is Phlebotomy
- Safety
- Supplies and Equipment
- Patient Identification/Patient Preparation
- Site Selection /Site preparation
- Proper tourniquet application/Timing
- Vein of choice
- The venipuncture (tube holder, syringe, butterfly)
- Tubes/Order of Draw
- Observation & bandaging
- Disposal of contaminated equipment
- Labeling/Handling requirements
- Troubleshooting/Complications
- Phlebotomy Basics Video
- Practical: Hands-on demonstration and supervised practice on training models

WHAT IS PHLEBOTOMY?

- ◉ Word derived from Greek words
 - Phleb - relates to veins
 - otomy - relates to cutting
- ◉ The term phlebotomy refers to the drawing of blood for laboratory analysis.

PHLEBOTOMY SAFETY

Patient/blood donors

- ⊙ Exposure to bloodborne viruses through reuse of needles, syringes and lancets, contaminated work surfaces
 - Sterile single-use devices only
 - Safety-engineered devices
 - Clean work surfaces with disinfectant

- ⊙ Infection at blood sampling site
 - Perform hand hygiene
 - Clean patient's skin with 70% isopropyl alcohol and allow to dry
 - Use sterile needle and syringe removed from the packaging just before use

PHLEBOTOMY SAFETY

- ⊙ Pain at blood sampling site
 - Well-trained person should take the blood sample
 - Venipuncture is less painful than heel-pricks in neonates
 - Use needle of smaller gauge than the selected vein
- ⊙ Hematoma or thrombus
 - Enter vessel at an angle of 30 degrees or less
 - Use gauge of needle smaller than the vein
 - Apply pressure to a straight arm for 3-5 minutes after drawing blood
- ⊙ Extensive bleeding
 - Take a history to identify patients on anticoagulants and with a history of bleeding
 - Use a gauge of needle smaller than the vein

PHLEBOTOMY SAFETY

- ⦿ Nerve damage
 - Avoid finger-pricks for children
 - Use antecubital vessels when possible
 - Avoid probing
- ⦿ Vasovagal reaction - Syncope, fainting
 - Hydrate patient, take postural blood pressure if dehydrated
 - Reduce anxiety
 - Have patient lie down if the person expresses concern
 - Provide audio-visual distraction
- ⦿ Allergies
 - Ask about allergies to latex, iodine and alcohol before starting the procedure

PHLEBOTOMY SAFETY

Healthcare worker

- ⦿ Needle or sharps injury during or after the procedure, Breakage of blood containers, Splashes (rare)
 - Use safety devices such as needle covers, tube holders that release needles with one hand and safety lancets
 - Avoid two-handed recapping and disassembly
 - Place sharps container in sight and within arm's reach
 - Dispose of used sharps immediately

- ⦿ Exposure to blood
 - Hepatitis B vaccination
 - Wear gloves and PPE
 - Use evacuated tubes and transfer devices when drawing multiple tubes
 - Follow protocol for exposure to body fluids and report incident, even if post-exposure prophylaxis is not desired
 - Cover broken skin area with a waterproof dressing

BLOODBORNE PATHOGENS

- HIV

- Hepatitis B Virus (HBV)

- Hepatitis C Virus (HCV)

OCCUPATION RISK/PROTECTION

- ⦿ HBV poses a greater risk than HIV
- ⦿ HBV vaccination is available to all employees through Occupational Health
- ⦿ No vaccination available for HCV or HIV
- ⦿ Post exposure treatment is available through Occupational Health

RISKS OF NEEDLE STICKS

- According to the Centers for Disease Control and Prevention (CDC), about 385,000 sharps injuries occur annually to hospital employees.
- **Potential Hazard**
Exposure to blood and other potentially infectious materials (OPIM) because of:
 - Unsafe needle devices.
 - Improper handling and disposal of needles and other sharps.

RISK FACTORS & HAZARDS

- ◉ Factors affecting likelihood of exposure/needlestick
 - The type and design of device
 - Skill level/training of user
 - How quickly the safety mechanism is activated
 - Proper use of safety device
 - Access to biohazard box
 - Loss of focus/distractions

NEEDLE SAFETY AT BWH

- ◉ Brigham and Women's Hospital provides and requires that safe needle/sharp practices and/or devices be used in all procedures requiring the use of needles.
- ◉ http://www.bwhpikenotes.org/Employee_Resources/Health_Safety/NeedleSafety/default.aspx
- ◉ http://www.bwhpikenotes.org/Employee_Resources/Health_Safety/NeedleSafety/FAQ.aspx
- ◉ http://www.bwhpikenotes.org/Employee_Resources/Health_Safety/NeedleSafety/Documents/protection.pdf

BWH STANDARD PRECAUTIONS

- Standard Precautions are designed both to prevent transmission of bloodborne pathogens to health care workers (previously covered under universal precautions) and to prevent hospital spread of pathogens between patients via hands of health care workers. Standard Precautions apply to all patients regardless of their diagnosis or presumed infection status. **Good hand hygiene (handwashing/hand antisepsis) is the standard of quality patient care.**

SAFE WORK PRACTICES

- ◉ Observe universal (standard) safety precautions. Observe all applicable isolation procedures. PPE's will be worn at all time.
- ◉ Wash hands in warm, running water with the chlorhexidine gluconate hand washing product (approved by the Infection Control Committee), or if not visibly contaminated with a commercial foaming hand wash product before and after each patient collection.
- ◉ Gloves are to be worn during all phlebotomies, and changed between patient collections.
- ◉ Palpation of phlebotomy site may be performed without gloves providing the skin is not broken.
- ◉ A lab coat or gown must be worn during blood collection procedures.
- ◉ Needles and hubs are single use and are disposed of in an appropriate 'sharps' container as one unit. **Needles are never recapped, removed, broken, or bent after phlebotomy procedure.**
- ◉ Gloves are to be discarded in the appropriate container immediately after the phlebotomy procedure. All other items used for the procedure must be disposed of according to proper biohazardous waste disposal policy.
- ◉ Contaminated surfaces must be cleaned with freshly prepared 10% bleach solution. All surfaces are cleaned daily with bleach.
- ◉ In the case of an accidental needlestick, immediately wash the area with an antibacterial soap, express blood from the wound, and contact your supervisor.

BWH PROCEDURE FOLLOWING BLOOD/BODY FLUID EXPOSURE

If you are exposed to blood or visibly bloody fluids from:

- ◉ Needlestick, or cut from sharp object
- ◉ Splash to eyes, mouth, nose, or open cut
 - 1. Wash or flush affected area
 - 2. Page STIK Beeper - #3 STIK (37845)
 - 3. Notify your supervisor
 - 4. Obtain evaluation and treatment in Occupational Health
- ◉ Business Hours:
 - ◉ M-F, 7am to 4:00pm
BWH Occupational Health Services,
10 Vining Street, Suite 104, in the Neville Building.
The phone number is 617 732-6034.
- ◉ Off Hours: Emergency Department
- ◉ **It is important to report exposure within 1-2 hours. You may need immediate treatment.**

SUPPLIES AND EQUIPMENT

- ◉ Needles
 - Safety Needles, 22g or less
 - Butterfly needles, 21g or less
 - Syringes
- ◉ Blood Collection Tubes
 - The vacuum tubes are designed to draw a predetermined volume of blood. Tubes with different additives are used for collecting blood specimens for specific types of tests. The color of the rubber stopper is used to identify these additives
- ◉ Antiseptic. Individually packaged 70% isopropyl alcohol wipes
- ◉ Tourniquets. Latex-free tourniquets are available
- ◉ 2x2 Gauze or cotton balls
- ◉ Sharps Disposal Container. An OSHA acceptable, puncture proof container marked "Biohazardous"
- ◉ Bandages or tape

PATIENT IDENTIFICATION & PATIENT PREPARATION

- ◉ Verify patient name and date of birth &/or medical record number
- ◉ Gain the patient's confidence and assure him/her, although the patient will feel a little pinch it will be of short duration.
- ◉ Depending on study and tests to be done - ask whether patient is fasting
- ◉ Seated Patient - arm extended to form a straight-line from shoulder to wrist. Supported by the armrest; not bent at the elbow.
- ◉ Lying down - Ask the patient - lie on back in a comfortable position. Place a pillow under the arm - if needed

SITE SELECTION

- Extensive scarring or healed burn areas should be avoided
- Specimens should not be obtained from the arm on the same side as a mastectomy
- Avoid areas of hematoma
- If an IV is in place, samples may be obtained below but NEVER above the IV site
- Do not obtain specimens from an arm having a cannula, fistula, or vascular graft.
- Allow 10-15 minutes after a transfusion is completed before obtaining a blood sample

SITE SELECTION

- Vein Selection
 - Palpate and trace the path of veins several times with the index finger. Unlike veins, arteries pulsate, are more elastic, and have a thick wall.
 - Thrombosed veins lack resilience, feel cord-like, and roll easily.
 - If veins are not readily available - massaging the arm from wrist to elbow. Tapping sharply at the vein site with the index finger a few times will cause the vein to dilate. Application of heat to the site may have the same result.
 - Lowering the extremity over the bedside or arm rest will allow the veins to fill to capacity.

VEIN OF CHOICE

- The larger median cubital, basilic and cephalic veins are most frequently used, but other may be necessary and will become more prominent if the patient closes his fist tightly.
- **At no time may phlebotomists perform venipuncture on an artery.**
- **At no time will blood be drawn from the feet.**

VEIN OF CHOICE

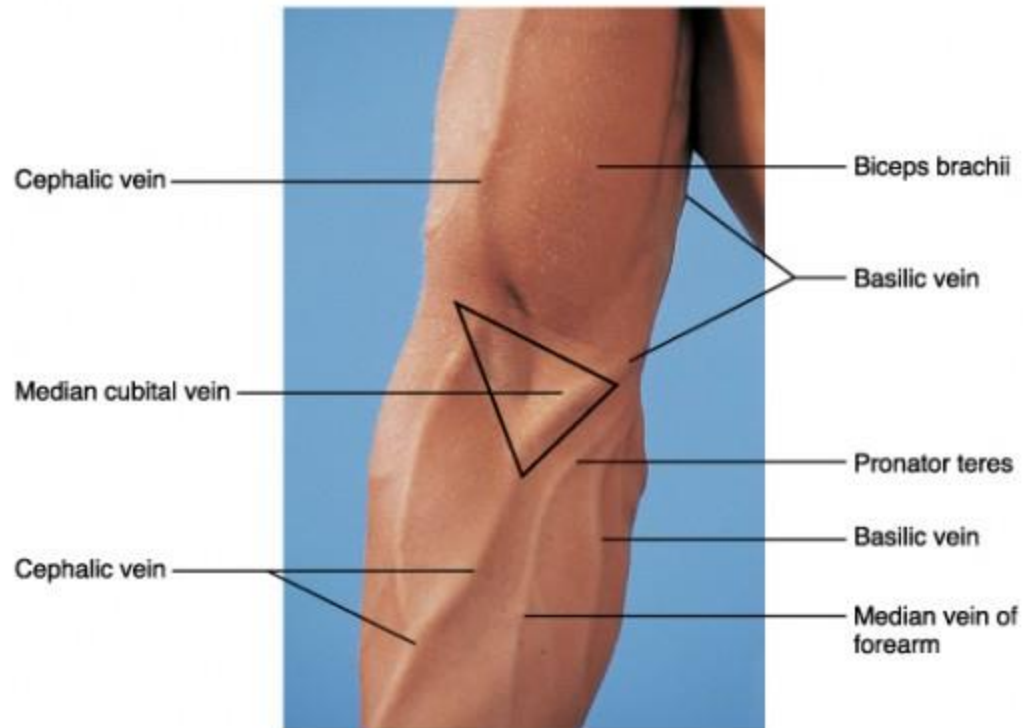
- ◉ **Which Is The Best Vein For Venipuncture?**
 - **The median cubital vein** lies inside the cubital fossa anterior to the elbow and is the most common and easiest site of incision:
 - **It is not surrounded by large innervation** meaning that the pain is minimal
 - **It lies very close to skin surface** allowing optimal visibility and less complications.

VEIN OF CHOICE

- ◉ First Choice - Median Cubital Vein
 - Usually large and palpable (though not always visible)
 - Supported by subcutaneous tissue
 - Least apt to Roll
- Second Choice - Cephalic Vein
 - Runs down the thumb side of the arm
 - Less support and rolls easily
- Basilic Vein often most prominent
 - Least Desirable
 - Rolls Easily
 - Used as last resort

VEIN OF CHOICE

○ Preferred Veins -



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TOURNIQUET APPLICATION & TIMING



TOURNIQUET APPLICATION & TIMING

- ◉ 3 to 4 inches (7.5 to 10.0 cm) above the venipuncture site
- ◉ Maximum Time - One minute
- ◉ For preliminary vein selection - release and reapply after 2 minutes
- ◉ Applied with enough tension to compress the vein

TOURNIQUET TYING

- ◉ Tying a Tourniquet

- Practice Tying a tourniquet on your neighbor's arm

- ◉ Finding Veins

- Can you find, see, feel your veins?
- Your neighbor's veins?

SITE PREPARATION

- ◉ **Cleansing Method for Routine Venipuncture**
 - Alcohol prep pad- using a circular motion from the center outward
 - Allow the area to dry
 - If site is touched, the site must be cleansed again before the needle is inserted.

WINGED INFUSION (BUTTERFLY)

- ◉ BD Vacutainer Push Button Blood Collection Set - Butterfly Needles
- ◉ Features
 - Engineered with a retractable needle
 - Push button activation system allows needle to remain in vein while depressing button
 - Needle will retract automatically from vein

WINGED INFUSION (BUTTERFLY)

- ◉ Always used with a barrel
- ◉ Twist needle until tight
- ◉ Winged infusion set - Activate safety device by pushing button
- ◉ Warn subjects they will hear a click

THE VENIPUNCTURE

- Attach the appropriate needle to the hub by removing the plastic cap over the small end of the needle and inserting into the hub, twisting it tight.
- Remove plastic cap over needle and hold bevel up.
- Pull the skin tight with your thumb or index finger just below the puncture site.
- Holding the needle in line with the vein, use a quick, small thrust to penetrate the skin and enter the vein in one smooth motion at approx 30 degree angle
- Holding the hub securely, insert the first vacutainer tube following proper order of draw into the large end of the hub penetrating the stopper. Blood should flow into the evacuated tube.
- After blood starts to flow, release the tourniquet and ask the patient to open his or her hand. When blood flow stops, remove the tube by holding the hub securely and pulling the tube of the needle.

TUBES/ORDER OF DRAW

✓ Check protocol / manual of procedure

- Blood culture vials or bottles, sterile tubes
 - Coagulation tube (light blue top) - Routine PT/PTT may be performed if blue top is first tube collected. If using butterfly- collect red top first
 - Serum tube with or without clot activator or silica gel (Red or Gold)
 - Heparin tube (Green top)
 - EDTA (Lavender top)
 - Glycolytic inhibitor (Gray top)
- http://www.questdiagnostics.com/dms/Documents/tes-t-center/order_of_draw.pdf

OBSERVATION & BANDAGING

- ◉ Place a gauze pad over the puncture site and remove the needle. Dispose of the syringe and needle as a unit into an appropriate sharps container
- ◉ Immediately apply slight pressure. Ask the patient to apply pressure for at least 2 minutes.
- ◉ When bleeding stops, apply a fresh bandage, gauze or tape.

LABELING/HANDLING REQUIREMENTS

- ◉ Label all tubes immediately after collection with patient's name, medical record, location, date, time, and your initials. Samples for crossmatch or type & screen also need the Blood Bank band number.
- ◉ Never prelabel tubes. Do the labeling immediately after taking the specimen.
- ◉ Unlabeled or Improperly Labeled Tubes or Specimens Cannot be Accepted By the Laboratory
- ◉ All specimens must be sealed inside a plastic biohazard bag before being transported to the Laboratory.

TROUBLESHOOTING & COMPLICATIONS

- ◉ If a blood sample is not attainable
 - Reposition the needle.
 - Ensure that the collection tube is completely pushed onto the back of the needle in the hub.
 - Use another tube as vacuum may have been lost.
 - Loosen the tourniquet.
 - Probing is not recommended. In most cases, another puncture in a site below the first site is advised.
 - A patient should never be stuck more than twice unsuccessfully by a phlebotomist.
 - If necessary, bring to phlebotomy

PHLEBOTOMY PROCEDURE

- Identify subject (Name, DOB, MR#)
- Ask subject about
 - Allergies - latex, iodine,
 - Problems with fainting, dizziness
 - Preferred arm
 - Fasting, Hydration
- Make subject comfortable/feel relaxed
- Wash hands
- Apply gloves

PHLEBOTOMY PROCEDURE

- Apply tourniquet 3-4 inches above site
- Vein selection
- Cleanse with alcohol
- Use Standard Precautions
- Draw blood using standard procedure:
15-30 degree angle, bevel up
- Release tourniquet (1 min - 2 min max)
- Invert tubes 8 times
- Remove needle

PHLEBOTOMY PROCEDURE

- Ask subject to apply pressure
- Discard needles in sharps container
- Label tubes
- Apply tape/bandage over gauze
- Remove gloves
- Wash hands
- Process, Store, Ship blood per protocol

PHLEBOTOMY VIDEO

<https://www.youtube.com/watch?v=RKuUP06NNcU>

2D version of the Oakland University School of Health Sciences blood draw training video. This video contains entirely original work. Similarity with any other products is coincidental.

PRACTICAL

- Hands-on demonstration and supervised practice on training models

THANK YOU !



PHLEBOTOMY CRITERIA

- ◉ Stabilize extremity
- ◉ Vein selection
- ◉ Tourniquet application
- ◉ Insert needle at 15-30 degree angle, bevel up
- ◉ Follow order of draw
- ◉ Mixes tubes by inverting 8 times
- ◉ Release tourniquet after 1-2 minutes
- ◉ Place gauze over site
- ◉ Remove needle
- ◉ Discard needle/barrel in sharps container
- ◉ Ask subject to apply pressure/elevate arm
- ◉ Label tubes
- ◉ Apply tape/bandage over gauze