NAME: ___________________________ batch #: _______ DATE: _____________

Skills Station 2:
PLACEMENT OF INTRAVENOUS FLUID LIFE LINE,
PERIPHERAL AND CENTRAL VEINS

OBJECTIVES:

On completion of Station 2, the student will be able to:
1. Describe the surface markings and the technique for insertion of an intravenous cannula into:
   a) A peripheral vein
   b) A femoral vein
   c) An internal jugular or subclavian vein
2. Assemble the components of an intravenous infusion lifeline.
3. Describe the surface markings and the technique for insertion of an interoseous (IO) cannula into the shaft of a leg.

NOTE:
Learning during practice is enhanced by utilizing the illustrations from the paper which demonstrate each approach.
Once the student has learned the site of the venipuncture and the angles of approach for cannulation of central veins and can demonstrate such on a model, he should practice on a cadaver and finally actually perform these techniques on a living patient under supervision until the procedure can be performed safely and efficiently.
Only then can he be considered "certified" to perform central venipuncture. Knowledge of these performance criteria is only the first step toward acquiring such a skill.

Choose one of each of the following: verbalize and demonstrate landmarks rather than actually doing venipuncture: 1) Peripheral vein; 2) Femoral vein; and 3) Internal jugular (one approach) or subclavian.

<table>
<thead>
<tr>
<th>TIME</th>
<th>CRITERIA</th>
<th>PASS</th>
<th>FAIL</th>
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<tbody>
<tr>
<td>60 Sec.</td>
<td>PERIPHERAL VEINS</td>
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<tr>
<td></td>
<td>A. ARMS OR LEGS</td>
<td></td>
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</tr>
<tr>
<td>1</td>
<td>Apply tourniquet proximally.</td>
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<tr>
<td>2</td>
<td>Locate vein and cleanse the overlying skin with alcohol or povidone-iodine.</td>
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<td>3</td>
<td>Anesthetize the skin if a large bore cannula is to be inserted in an awake patient.</td>
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<td>4</td>
<td>Hold vein in place by applying pressure on vein distal to the point of entry.</td>
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<td>5</td>
<td>Puncture the skin with bevel of needle upward about ½ to 1 centimeter from the vein and enter the vein either from the side or from above.</td>
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<tr>
<td>6</td>
<td>Note blood return and advance the catheter either over or through the needle, depending on which type of catheter-needle device is employed. Remove the tourniquet.</td>
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<tr>
<td>7</td>
<td>With draw and remove the needle and attach the intravenous tubing.</td>
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<td>8</td>
<td>Cover the puncture site with povidone-iodine ointment and a sterile dressing and tape in place, excluding the point of connection of the intravenous tubing.</td>
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</table>
### B. EXTERNAL JUGULAR

1. Patient in supine, at least 150 head down position, head turned away toward opposite side.
2. Cleanse skin, use lidocaine if patient awake and large bore needle used.
3. Align needle in the direction of the vein with the point aimed toward the ipsilateral shoulder.
4. Make venipuncture midway between angle of jaw and midclavicular line; "tourniqueting" the vein lightly with one finger above the clavicle.
5. Note blood return.
6. Advance catheter and remove needle; attach to IV tubing.
7. Cover puncture site and affix catheter in place.

### II. CENTRAL VEINS

#### A. FEMORAL

1. Cleanse the overlying skin with povidone-iiodine; this is especially important in this site because the danger of contamination is great. If the puncture is being performed electively, shave the hair around the area.
2. Locate the femoral artery either by its pulsation or by finding the midpoint of a line drawn between the anterior superior iliac spine and the symphysis pubis.
3. Infiltrate the skin with lidocaine if the patient is awake.
4. Make the puncture with the needle attached to a 5 or 10 milliliter syringe two fingerbreadths below the inguinal ligament, medial to the artery, directing the needle cephalad at a 45-degree angle with the skin or frontal plane (some prefer to enter at a 90-degree angle) until the needle will go no further.
5. Maintain suction on the syringe and pull the needle back slowly until blood appears in the syringe, indicating that the lumen of the vein has been entered.
6. Remove the syringe and insert catheter with the needle more parallel to the frontal plane.
7. Withdraw the needle, leaving the catheter in place.
8. Connect to intravenous tubing.
9. Cover the puncture site with povidone-iiodine ointment and a sterile dressing and secure the catheter and tubing in place.

#### B. SUBCLAVIAN, INFRACLAVICULAR APPROACH

1. Patient in supine, at least 15° head down position, head turned away.
2. Cleanse skin, use lidocaine if patient awake.
3. Introduce needle attached to a syringe 1 centimeter below the junction of the middle and medial thirds of the clavicle.
4. Hold the syringe and needle parallel to the frontal plane (the plane of the back of the patient).
5. Direct the needle medially, slightly cephalad, and posteriorly behind the clavicle toward the posterior superior angle of the sternal end of the clavicle.
6. Establish a good point of reference by firmly pressing the fingertip into the suprasternal notch to locate the deep side of the superior angle of the clavicle and directing the course of the needle slightly behind the fingertip.
7. Advance needle while withdrawing plunger of syringe.
8. When blood appears and vein entered, rotate bevel of needle caudally; remove syringe and insert catheter to predetermined depth.
9. Remove needle and connect catheter to IV tubing.
10. Cover puncture site, and affix catheter in place.
### C. INTERNAL JUGULAR, POSTERIOR APPROACH

1. Patient in supine, at least 15° head down position, head turned away.
2. Cleanse skin, use lidocaine if patient awake.
3. Introduce the needle under the sternomastoid muscle near the junction of the middle and lower thirds of the lateral (posterior) border (5 centimeters above the clavicle or just above where the external jugular vein crosses the sternomastoid muscle).
4. Aim the needle caudally and ventrally (anteriorly) toward the suprasternal notch at an angle of 45 degrees to the sagittal and horizontal planes and with 15-degree forward angulation in the frontal plane.
5. The vein should be entered within 5 to 7 centimeters.
6. Advance needle while withdrawing plunger of syringe.
7. When blood appears and vein entered, remove syringe and insert catheter to predetermined depth.
8. Remove needle and connect catheter to IV tubing.
9. Cover puncture site, and affix catheter in place.

### D. INTERNAL JUGULAR, MIDDLE OR CENTRAL ROUTE

1. Patient in supine, at least 15° head down position, head turned away.
2. Cleanse skin, use lidocaine if patient awake.
3. Introduce needle attached to syringe in the center of triangle formed by two lower heads of sternomastoid muscle and clavicle.
4. Direct needle caudally, parallel to sagittal plane, at 30- posterior angle with frontal plane.
5. If vein is not entered, withdraw needle and redirect it 5 to 10 degrees laterally.
6. Advance needle while withdrawing plunger of syringe.
7. When blood appears and vein entered, remove syringe and insert catheter to predetermined depth.
8. Remove needle and connect catheter to IV tubing.
9. Cover puncture site, and affix catheter in place.

### E. INTERNAL JUGULAR, ANTERIOR APPROACH

1. Patient in supine, at least 15° head down position, head turned away.
2. Cleanse skin, use lidocaine if patient awake.
3. Place the left index and middle fingers (if from the right side) 3 centimeters lateral to the mid-sternal line; the carotid artery is retracted medially away from the anterior border of the sternomastoid.
4. Introduce the needle at the midpoint of this anterior border (5 centimeters above the clavicle and 5 centimeters below the angle of the mandible).
5. Forming a posterior angle of 30 to 45 degrees with the frontal plane, direct the needle caudally toward the ipsilateral nipple and toward the junction of the middle and medial thirds of the clavicle.
6. Advance needle while withdrawing plunger of syringe.
7. When blood appears and vein entered, remove syringe and insert catheter to predetermined depth.
8. Remove needle and connect catheter to IV tubing.
9. Cover puncture site, and affix catheter in place.