

Guidance on Needle Selection for Blood Collection

Slides 3-7 are Excerpts from Medical Lab Management on Needle Selection

Proper Needle Selection for Blood Collection

Caitlin Goodwin, MSN, CNM, APRN

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Descriptions

The Straight Needle

The design of the straight needle and collection system is ideal when multiple samples are required, as many tubes can be attached to and removed from a single needle. Straight needles are commonly available in 21 and 22 gauge. The generally accepted benefits of straight needles include needle stick reductions, quality venous samples, and cost savings.

The Butterfly Needle

The design of the winged-infusion blood collection needle is ideal for those with small or fragile veins (eg, hands and feet), including neonatal/pediatric, geriatric, oncology, and burn patients. For these cases, the very finely bored 25-gauge needle is the preferred method. Of note, it is best to avoid straight needles with patients who experience uncontrolled movements, such as tremors or seizing, due to the increased risk of nerve damage.

World Health Organization Recommendations

- When assessing whether to use the straight needle or the butterfly needle, review the recommendations of acknowledged professional organizations, such as *The World Health Organization (WHO) guidelines on phlebotomy best practices that support the primary use of the straight needle (other than in the conditions mentioned in previous slide)*.³ The WHO describes the straight needle and syringe as possessing a variety of sizes and gauges, being readily available, and beneficial for a variety of blood draws (including pediatric population), and if heparinized, arterial blood collection. The WHO also states that butterfly needles are recommended for difficult to access, small veins in pediatric patients, the elderly, and other at-risk populations.³

Proper Use of the Winged Collection System

- In addition to the scenarios described previously, butterfly needles are best used for blood cultures, patients with bleeding disorders, and venous blood gases.² Furthermore, butterfly needles benefit patients who cannot physically change the position of their arms or if ten or more tubes are to be collected at one time.²
- These specialized uses notwithstanding, improper use of butterfly needles can lead to a higher risk of needlestick injury due to the butterfly design, which may encourage the user to release control of the needle to free one hand to support the rear of the kit while affixing and withdrawing the collection vial on the device.⁴

Conclusion

- Choosing the correct vein, collection tube, device type, and needle size for each individual patient is vital to proper phlebotomy, the quality of which impacts all other subsequent processes.
- Given the evidence, *straight needles offer greater safety against needle sticks due to poor technique, generally have less hemolysis and clotting, and can provide significant cost savings*. That said, butterfly needle sets should be on hand and used for their specific, beneficial purposes. Attention to quality in phlebotomy is a boon to all laboratory services.

Straight Needle Benefits

- Straight needles are generally considered the first choice for blood sample collection, as they are less prone to clotting (versus the flexible tubing used in winged-infusion blood collection systems) and less prone to hemolysis than collection through IV catheters. A 2003 study to evaluate risk factors for clotting in blood samples found that straight needles are preferable to IV catheters due to decreased risk of hemolysis.⁶

Additionally on Winged Sets and Hemolysis

Use of winged sets “may” increase incidence of needlesticks and hemolysis?

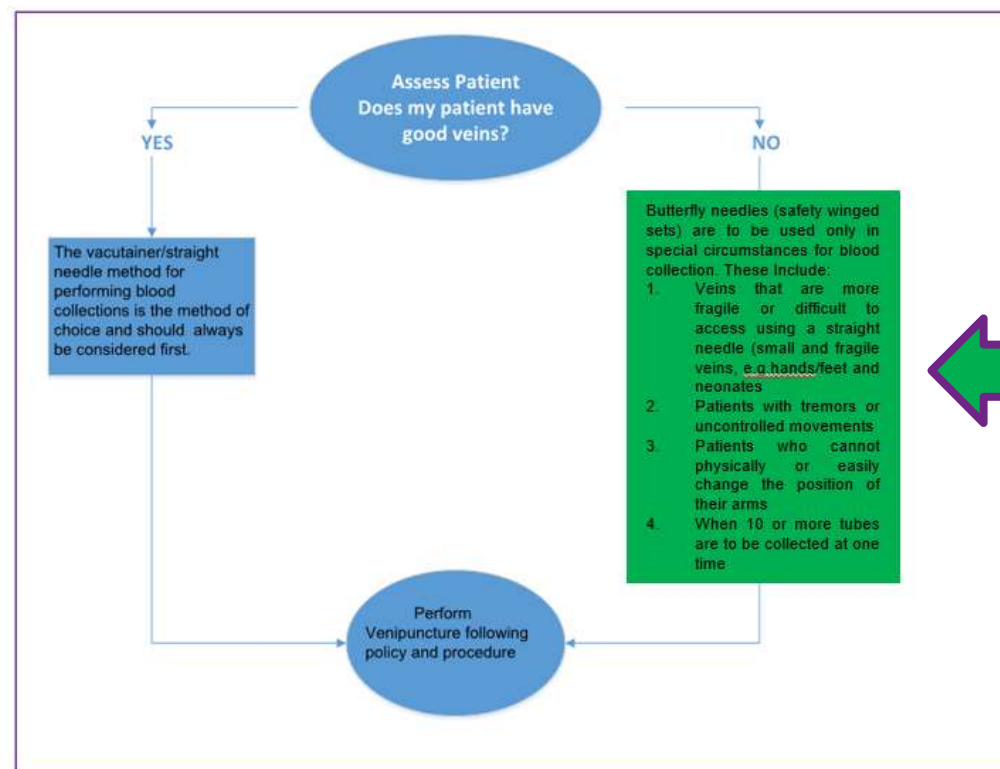
Butterfly/Winged Infusion Sets

- If the phlebotomist uses safety butterfly/winged infusion sets, he/she needs to consider the impact on patient’s safety because:
 - Type of needle in the patient’s vein longer than conventional needle due to blood having to flow through tubing to blood collection tube(s)
 - Has accounted for the HIGHEST percentage of needlestick injuries
 - Shown to lead to hemolysis particularly when using a smaller gauge needle with standard size vacuum tubes
 - Thus, the safety butterfly needle needs to be used with the matching manufacturer’s equipment to insure a safe blood collection.

Exerpt from “Consequences of Blood Collection Errors ;
Kathy Becan-McBride **EdD, MASCP, MLS (ASCP)**

Kathy Becan-McBride is a professor and author of many books on phlebotomy including those that help clinicians prepare for national board certification exams

Sample Algorithm for Needle Selection



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