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Reduction of Repeat Lab Specimens: Does Venipuncture via PIV or Venous Straight Stick Result in More Hemolyzed Labs in the Pediatric Population?

Macie Bailey, BSN, RN & Ayanna Brown-Gomez, BSN, RN & Ariana Dreps, BSN, RN & Kristina McClellan, BSN, RN

Background

The policy relating to pulling back blood specimen via PIV vs. Venipuncture was interpreted various ways between departments. The goal is to clarify the policy

Clinical Question

In the Pediatric Population will drawing labs from a peripheral saline locked IV be as accurate and a reduction in the number of repeat lab draws compared to venipuncture.

Methods

- A literature review was conducted in 2021. A Medical Librarian also assisted with the search. Four studies were reviewed that directly related to this topic.
- A survey was also conducted within Children's Health Plano PICU and ED in efforts to better understand what factors contribute to hemolysis of labs.

Acknowledgments

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Presentation and Critical Appraisal of Evidence

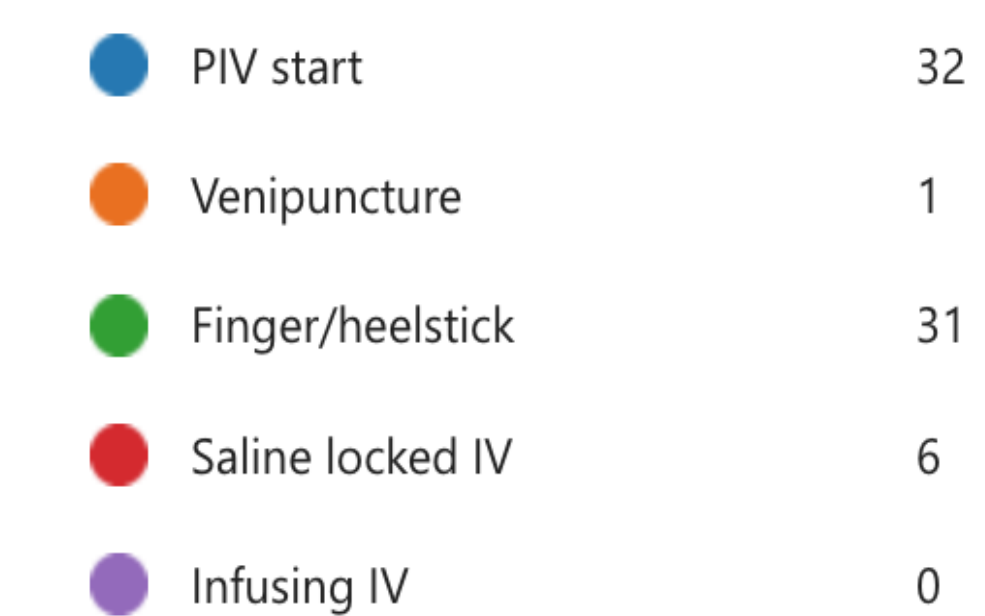
Jacob et al	2021	A study conducted to compare accuracy and safety of obtaining blood specimens from existing peripheral lines and venipunctures. Specifically, the invasive/painful subject relates more to venipuncture samples while obtaining specimens from PIVs is both accurate and non-invasive. In this study hemolysis was not related to the route the blood specimen was received but was affected by the length of time the tourniquet was applied or what level the tube was filled to with blood.
Mulloy et al	2018	Study supporting blood draws through existing PIVs decreases level of pain, decreases fear of needle, and overall hospital anxiety. PIVO (device with a catheter that is fed through the PIV catheter and obtains blood straight from the vein) was used in this case to prevent any chances of withdrawing or infiltration of an existing PIV. Existing PIVs and PIVO blood draws resulted with the same amount of success rate relating to hemolysis but patients rated PIVO blood draws a 0 on a 0-10 pain scale.
Davies et al	2020	This study identifies venipuncture lab draws as an invasive technique that can also cause delay in care, specifically in emergency situations. The study supports using existing PIVs to obtain blood specimens. The results show that hemolysis is rare when using a 22G catheter or larger and a syringe to pull back the sample rather than a vacutainer.
Psaila et al	2023	Study supporting that PIV blood draws are effective when the PIV is within 12 hours of being placed. The existing PIV was flushed with 5mL of normal saline and then a vacutainer was connected to the J loop and 2 tubes were taken, 1 for waste and the other for the blood sample.

Results

3. When you get a call from the lab that your specimen was hemolyzed, how was the specimen typically collected?

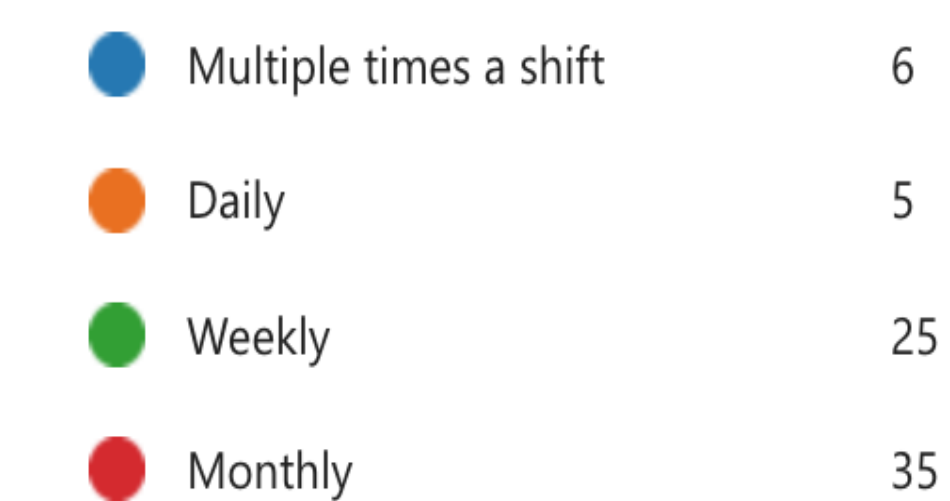
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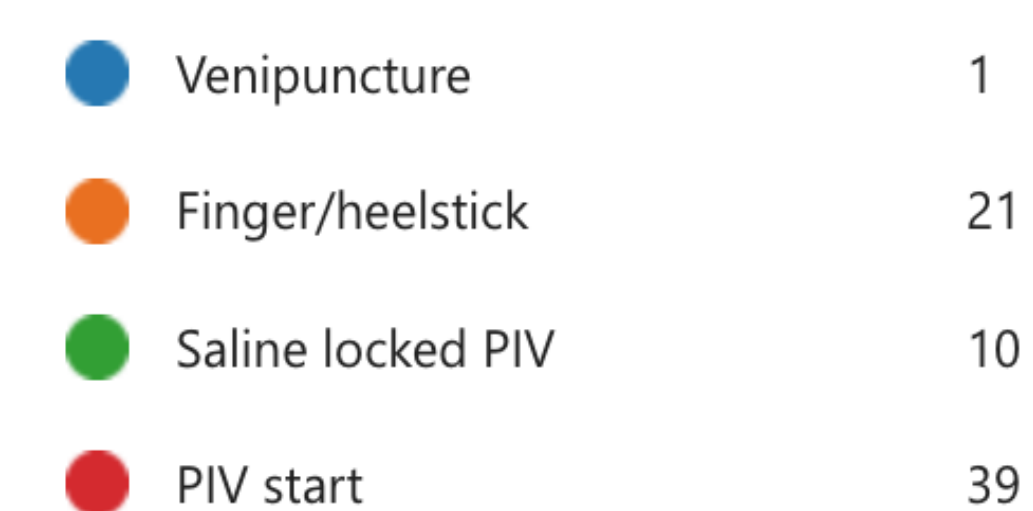
2. How often do you get a call from lab saying your specimen has been hemolyzed?

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1. What blood specimen collection do you use most often on your unit?

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Clinical Practice Implications

- The tourniquet time affects specimen results and hemolysis
- The syringe is proven significantly less likely to hemolyze vs. Vacutainer
- Methods of preparation affect the outcome of hemolyzed blood specimen (heat pack, tourniquet, etc.)