

# Implementing a Program for Ultrasound-Guided Peripheral Venous Access Training, Policy and Procedure Development, Protocol Use, Competency, and Skill Tracking

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## KEYWORDS

• Ultrasound guided • Intravenous access • Competency • Protocol

## KEY POINTS

- Ultrasound-guided peripheral venous access provides a safe alternative to traditional methods of peripheral vascular access.
- When visualization of peripheral vasculature is poor, ultrasound-guided peripheral intravenous access provides a safe method for administration of medications, intravenous fluids and blood products.
- Although vasculopathies and chronic medical conditions contribute to difficult peripheral intravenous access, obesity is the most common cause for poor visualization and palpation of veins.
- Ultrasound-guided peripheral intravenous access bridges the practice gap between traditional methods of peripheral intravenous access and central venous access in adult patient with difficult peripheral intravenous access.
- This article presents a competency-based training program, policy, procedure, protocol and tracking system for training in the use of ultrasound-guided peripheral intravenous access (UGPIVA).

## INTRODUCTION

For most hospitalized patients, peripheral intravenous (IV) access is needed to administer fluids, blood products, and potentially lifesaving medications.<sup>1</sup> When peripheral IV access is established in a timely fashion, patient outcomes are optimized.

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The authors have nothing to disclose.

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However, traditional methods for obtaining peripheral IV access are sometimes unsuccessful.

Traditional nursing approaches to peripheral IV access focus on the palpation/visualization technique. With this technique, nurses rely on being able to see or feel a suitable vein for peripheral cannulation. Often, patients do not have visible or palpable veins suitable for cannulation. Multiple factors, such as the age of the patient, dehydration, small or fragile veins, obesity, and a history of IV drug abuse, present particularly challenging situations for securing peripheral IV access.<sup>2,3</sup>

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### **Significance**

Multiple peripheral IV access attempts can increase a patient's anxiety, increase the overall procedural pain, increase the risk for infection, and most importantly delay vital treatment.<sup>2(p199)</sup> The Infusion Nurses Society recommends that patients undergo only 2 traditional percutaneous venipunctures before using other methods for establishing peripheral IV access.<sup>4</sup> If peripheral IV cannulation remains unsuccessful, an alternate route must be found.

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### **Background**

When peripheral IV cannulation is unsuccessful, central venous access may be deemed necessary and is usually performed by physicians because of the risk of serious complications such as pneumothorax, malpositioning of the cannula, local tissue damage, corresponding arterial punctures, or cardiac dysrhythmias.<sup>5,6</sup> Physician ability to provide timely central venous access can be difficult as they are often coordinating care for multiple patients at any given time. In addition, the risks of central venous access often outweigh the benefits when used in the non-critically ill patient population.

Real-time ultrasound guidance for establishment of central venous cannulation has been studied and used for the last 30 years. The safety of real-time ultrasound guidance has led the Agency for Healthcare Research and Quality to recommend it for all central venous access.<sup>7</sup> However, unless a patient requires particular medications that must be administered through a central catheter, or if central fluid monitoring must be documented, peripheral IV access is the preferred route because of ease of access and reduced risk of complications.<sup>8</sup>

Therefore, a practice gap exists between traditional methods of peripheral venous access and ultrasound-guided central venous access. Ultrasound-guided peripheral intravenous access (UGPIVA) provides a safe and reliable means of bridging this practice gap.

UGPIVA uses a live feed ultrasound screen that documents peripheral venous cannulation from skin puncture through venipuncture via direct visualization on an ultrasound monitor for the health care provider performing the skill in real time. This article presents a competency-based training program, policy, procedure, protocol, and tracking system for training registered nurses (RNs) in the skill and use of UGPIVA in adult patients.

## **REVIEW OF LITERATURE**

In patients who present with difficult peripheral IV access, UGPIVA is more successful than traditional peripheral IV access techniques, requires less time, decreases the amount of percutaneous punctures, and improves patient satisfaction.<sup>7(p458)</sup> UGPIVA uses the same ultrasonographic technique that central venous access has used for 30 years. There is a low risk of patient complications associated with UGPIVA, and complications are usually limited to local events, such as phlebitis, pain, and irritation.<sup>9</sup>

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