

## Executive Summary

### Optimizing Vascular Access: Factors Affecting Utilization of Intraosseous Techniques

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#### Clinical Problem:

Rapid vascular access is essential during perioperative emergencies, yet difficult venous access can delay medication, fluid, and blood product delivery (Ng et al., 2022). Although IO access is recognized in resuscitation guidance when IV access is unsuccessful or not feasible, operating room readiness remains inconsistent (American Heart Association, n.d.; Astasio-Picado et al., 2022; Chiang & Teichman, 2024; Wigginton et al., 2025).

#### Project Purpose:

This DNP project examined factors influencing CRNAs' knowledge, attitudes, confidence, training, clinical exposure, and decision-making related to perioperative IO access

#### Methods:

A descriptive, cross-sectional Qualtrics survey was distributed through NYSANA using an adapted, previously validated IO attitudes instrument (Žunkovič et al., 2022). The final analytic sample included 35 practicing CRNAs; 97.1% practiced in New York State. Data were analyzed using descriptive statistics and selected inferential tests ( $\alpha = .05$ ).

Key Findings	Significance for CRNAs
Clinical experience	91.4% had never placed IO access in real time; 88.6% had never witnessed another anesthesia provider place IO access in real time.
Training	54.3% reported no formal IO training beyond ACLS/PALS renewal; lack of training was the most frequently selected barrier (77.1%).
System readiness	Only 9.7% reported IO equipment stocked inside the operating room; limited device availability and institutional culture were common barriers.
Self-Perceived competence	Real-time IO exposure was associated with higher perceived confidence in emergency IO placement ( $p = .001$ ).
Educational needs	96.8% were open to additional hands-on IO training or refresher education.

#### Practice Recommendations:

- **Simulation-based IO refreshers:** brief, repeated, hands-on practice focused on indications, site selection, insertion, infusion setup, and troubleshooting (Astasio-Picado et al., 2022; Szydłowski et al., 2021).
- **OR IO readiness bundle:** driver, needles, extension tubing, flush, pressure infusion equipment, securement, and lidocaine guidance when appropriate (Astasio-Picado et al., 2022; Szydłowski et al., 2021).
- **Escalation cognitive aid:** define when to move from repeated access attempts to IO access, such as two unsuccessful attempts, approximately 90 seconds of delay, or unstable physiology with urgent medication or blood product need (American Heart Association, n.d.; Wigginton et al., 2025).
- **Role clarity and debriefing:** clarify who retrieves equipment, places IO access, confirms patency, documents use, and reviews access delays after events or simulation (Chiang & Teichman, 2024).

*\*When vascular access becomes the rate-limiting step in perioperative emergency care, IO access should function as a predictable escalation pathway, not a delayed last resort after prolonged attempts.\**

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