## Project deliverables

The primary deliverable of this Doctor of Nursing Practice project is a comprehensive analysis of survey data assessing CRNA utilization of Point-of-Care Ultrasound (POCUS) and the barriers limiting its routine integration in clinical practice This analysis which was derived from a quantitative, cross-sectional survey of CRNAs practicing in New York State, provides valuable information regarding demographics, confidence levels, clinical application patterns, and perceived barriers to POCUS adoption. These findings provide clear representation of professional trends in CRNA POCUS utilization, including levels of proficiency, frequency of used and the specific applications most commonly incorporated in nurse anesthesia care. This information further contributes to the existing body of knowledge and helps address a notable gap in the literature regarding POCUS utilization specific to nurse anesthetists.

More importantly, the results from this project have several practical implications. They could serve to inform CRNA specific educational initiatives, such as workshops, on-line learnings, and the enhancement of program curriculum. These results could also inform the creation or refinement of institutional policy and protocols addressing POCUS workflows and competency requirement for CRNAs in the perioperative setting. These result address professional advocacy by contributing to the ongoing discussion about the standardization of POCUS within anesthesia practice and the development of CRNA POCUS practice guidelines.

This study further serves as a foundation for future research. By identifying gaps, trends and areas of variability, this study provides a reference point for future projects seeking to examine training models, competency development, or implementation strategies for POCUS within the CRNA profession.

# BARRIERS TO THE USE OF POINT-OF-CARE ULTRASOUND (POCUS) BY CERTIFIED REGISTERED NURSE ANESTHETISTS (CRNAS)

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## Introduction

Point-of-Care Ultrasound (POCUS) applications continue to expand rapidly establishing it as an essential tool for patient management across healthcare settings. POCUS enables clinicians to preform timely, accurate assessments that guide medical decision-making and facilitate the safe execution of various interventional techniques (Arnold et al., 2020). Additionally, research by Tierney at el. (2023) links POCUS use to a reduction in patient radiographic exposure, shorter hospital stays and a decrease in overall healthcare cost. Despite these well-documented benefits, POCUS utilization among Advanced Practice Registered Nurses (APRNs) remains inconsistent. Current literature identifies three primary barriers contributing to this variability: 1) lack of access to formal training, 2) lack of available equipment and 3) lack of time to complete POCUS exams (Resnyk & Weichold, 2024). These challenges are particularly concerning given the growing reliance on APRN's within the healthcare system.

## Purpose & Aims

The purpose of this study was to examine how POCUS is perceived and utilized by Certified Registered Nurse Anesthetists (CRNAs), a subset of APRNs that specialize in anesthesia, and to identify the barriers that prevent its routine integration into clinical practice. By evaluating both perception and utilization patterns, this DNP project aims to advance nursing scholarship and practice through the identification of current gaps in POCUS adoption. The findings have the potential to create further efforts aimed at expanding the scope of practice for advanced nursing professionals, improving patient care, and healthcare efficiency by promoting the routine, evidence-based use of POCUS in CRNA practice.

## Methods

### Design
➤ Non-experimental, quantitative cross-sectional study

### Theoretical Framework
➤ Albert Bandura's Social Cognitive Theory (SCT)

## Sample
➤ A total of 47 participants were recruited through the New York State Association of Nurse Anesthetists (NYSANA) using membership email distribution.

### Inclusion Criteria:
➤ Adult >18y.o. with Current CRNA license
➤ Actively practicing in any setting within NYS
➤ Able to read and understand English

## Data Collection
➤ A custom survey, developed in accordance with Bandura's Guide for Constructing Self-Efficacy Scales (2026), accessed participants' confidence surrounding POCUS skills. In addition, demographic and professional background multiple-choice items were included, along with Likert style questions evaluating perceptions of POCUS use in clinical practice.
➤ Electronic Survey results were collected via Research Electronic Data Capture (REDCap)

## Data Analysis Results
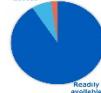➤ Descriptive and inferential statistics
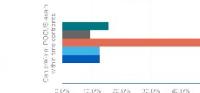
## Results

### Characteristics of Respondents

| Characteristic | n | % |
|---|---|---|
| **Years of experience** | | |
| < 1year | 9 | 19.1 |
| 1 - 2 years | 14 | 29.8 |
| 6 – 10 years | 6 | 12.8 |
| 11 – 15 years | 5 | 10.6 |
| > 15 years | 13 | 27.7 |
| **Practice Setting** | | |
| Independent | 4 | 8.9 |
| Medically Directed | 29 | 64.8 |
| Medically Directed | 3 | 6.7 |
| Academic Center | 18 | 40.0 |
| Community Hospital | 16 | 23.8 |
| Ambulatory Surgery | 10 | 21.3 |
| **Program Type** | | |
| Doctoral – DNP | 24 | 53.4 |
| Other – DNAP | 2 | 4.5 |
| Masters | 21 | 46.7 |
| **Pocus Use** | | |
| Daily | 5 | 4.5 |
| Weekly | 10 | 21.0 |
| Monthly | 8 | 17 |
| Few times per year | 15 | 31.9 |
| Never | 7 | 14.9 |
| **Training** | | |
| Formal in-degree | 17 | 35.4 |
| Formal post-grad | 8 | 17 |
| Informal/on-the-job | 20 | 42.8 |
| None | 7 | 14.9 |

## Perceived Barriers



### Perception of POCUS

All participants agreed or strongly agreed that:
➤ POCUS is a valuable tool in the CRNA profession
➤ POCUS improves the safety and quality of anesthesia care.
➤ An overwhelming majority of participants (n = 30; 93.8%) indicated that POCUS is underutilized in CRNA clinical practice.

### Inferential Statistics

Chi-Square testing = No statistically significant association between training type and frequency of POCUS use in practice. (p = .401)

One-way ANOVA = Confidence with POCUS use did not statistically differ with specific training.
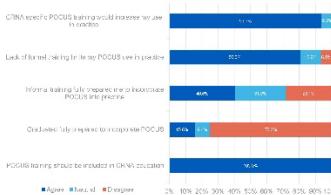
## Discussion

➤ CRNAs value POCUS, believe it improves the safety and quality of nurse anesthesia care, and feel it is underutilized in the profession.
➤ Barriers differ from the literature: while time and training continue to limit use, equipment access was not a barrier among this sample.
➤ CRNAs support the need for additional structured POCUS education; training type did not significantly influence confidence or clinical utilization, indicating training alone does not equate to higher levels of confidence.
➤ POCUS is most commonly used for Vascular access and Regional anesthesia but confidence in performing these techniques varied, suggesting frequency of use alone does not build confidence.
➤ These patterns align with Bandura's SCT which suggests self-efficacy develops in a dynamic multifactor manor. Interpretation of these results suggests that decreased motivation or limited institutional support may be contributing to lower confidence among CRNAs in the use of POCUS.

## Strengths & Limitations

### Strengths
➤ Multiple statistical analyses
➤ Diverse CRNA participation
➤ Specific focus which allows for targeted recommendations

### Limitations
➤ Small sample size, limited to CRNAs practicing in NYS
➤ Self-reported study design could introduce bias
➤ Uneven distribution across training group affected ANOVA assumptions

## Conclusion & Future Implications

Findings highlight the need for structured, competency-based POCUS training/education for CRNAs, supported by ongoing professional development. Strengthening POCUS training pathways may improve anesthesia quality and perioperative patient care. These results could support developing targeted educational materials, curriculum enhancements, and institutional protocols. Future research should use a larger sample, include objective performance measures, and incorporate more precise survey questions.

**\*References available upon request.**