

## **Blood Sample Hemolysis Prevention: Certified Emergency Nurses Know the Answer**

Blood sample hemolysis rates in Emergency Departments exceed nationally established benchmarks resulting in patient discomfort, added costs, longer waits, and delayed clinical decision making. Best practices for blood sample hemolysis prevention have been established, and emergency nurses are frequently responsible for phlebotomy.

Objectives: 1. Describe emergency nurses' knowledge, attitudes, and practices related to blood sample hemolysis; 2. Examine association between nurse demographic characteristics and knowledge about hemolysis prevention best practices.

A descriptive correlational design was used.

Setting for the study was emergency departments in the United States.

Registered nurse ENA members currently employed in a US emergency department who completed an online survey.

Knowledge, attitudes, and practices survey created, and outside experts confirmed content validity. Survey consisting of three evidence-based multiple choice knowledge questions, five attitude items, seven practice items, and eight demographic items emailed to random sample of 5,000 ENA members. Categorical data summarized using counts and percentages and continuous data described using means and standard deviations. Independent samples t or chi-square tests used to determine associations between passing the knowledge test (answering all three knowledge questions correctly) and demographic data based on levels of data.

There were 427 valid responses (8.5% response rate). Majority of participants were clinical staff nurses (73.5%) with a bachelor degree in nursing (59.7%), held certification in emergency nursing (CEN) (52.9%), and were employed in a teaching ED (55%) that served both adults and children (87.6%). Mean years in emergency nursing was  $13.86 \pm 10.75$ . Only 7.3% had accessed the ENA Clinical Practice Guideline for blood sample hemolysis prevention with 19.2% aware of it but not accessing and 73.5% not aware of it. Median score for attitude items, answered on a 1 totally disagree to 5 totally agree Likert scale, was 4 except the item related to hemolyzed samples delaying patient care (median=5). Common practices reported by respondents were phlebotomy with IV insertion (87.1%) performed by nurses (70.5%) using low volume tubes (52%). Many reported either no policy related to phlebotomy practice (44.3%) or policy allowing phlebotomy with either a steel needle or during IV insertion (34.4%). Only 85 (19.9%) answered all three knowledge test questions correctly.

Chi-square tests revealed a significant association between possessing CEN and passing the knowledge test, Chi-square (1, n=427)=7.149,  $p=.008$ . The 85 participants who passed the knowledge test also had significantly greater years in emergency nursing ( $16.87 \pm 12.35$ ) compared to the 342 participants who did not ( $13.11 \pm 10.19$ ),  $t(425) = 2.597$ ,  $p=.011$ . No other demographic characteristics were significantly associated with passing the knowledge test.

This study begins to address emergency nurses' knowledge, attitudes, and practices related to blood sample hemolysis prevention so that evidence-based changes can be implemented in the ED setting. It demonstrates the relationship specialty certification and years of emergency nursing experience have with evidence-supported practices. Those trying to reduce ED blood sample hemolysis should leverage

the knowledge of experienced and certified emergency nurses when implementing practice changes. Further research is needed related to emergency nurses' attitudes about blood sample hemolysis and patient experience.