

Blood Sample Hemolysis Prevention: Certified Emergency Nurses Know the Answer

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Background

Blood sample hemolysis rates from the ED exceed nationally established benchmarks.

Hemolyzed blood samples result in:

- Patient discomfort
- Delayed clinical decision making
- Added costs
- Longer waits

Researchers demonstrated that hemolysis rates are reduced with use of:

- Low volume/low vacuum tubes
- Steel straight needle for phlebotomy
- Antecubital vein for phlebotomy

Emergency Nurses play a key role in reducing hemolysis rates as they are most frequently responsible for phlebotomy in the ED.

Problem

Current state of emergency nurses' knowledge, attitudes, and practices (KAP) for prevention of blood sample hemolysis is not known.

Aims

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

Methods

Descriptive correlational research design.

Setting & Sample

Convenience sample of ENA members currently practicing in EDs in the US who completed an online survey (n = 427).

KAP Instrument

Survey instrument developed by the research team with content validity confirmed by outside experts:

- Knowledge – 3 multiple choice questions
- Attitudes – 5 Likert response items
- Practices – 7 multiple choice items
- Demographic characteristics – 8 items

Procedure

IRB approved as exempt research.

Request for participation sent to random sample of 5,000 ENA members via email by the Institute for Emergency Nursing Research (response rate = 8.5%).

Survey housed on Cleveland Clinic's REDCap® server, a secure web platform for building and managing online databases and surveys.

Results

Participant Characteristics	
Variable	Mean(SD)
Years as an emergency nurse	13.86(10.78)
ED yearly volume	53,353(27,914.22)
n(%)	
Current role	
Clinical staff nurse	314(73.5)
Highest level of nursing education	
Diploma/associate degree	68(15.9)
Bachelor degree	255(59.7)
Graduate degree	104(24.4)
Certification in Emergency Nursing	
ENA's Clinical Practice Guideline on Prevention of Lab Sample Hemolysis	226(52.9)
Aware of it, accessed it	31(7.3)
Aware of it, not accessed it	82(19.2)
Not aware of it	314(73.5)
Employed in a teaching ED	
ED patient population served	235(55)
Adults only	41(9.6)
Pediatrics only	12(2.8)
Adults and pediatrics	374(87.6)
Hemolysis rate reduction programs have occurred in my ED	118(27.6)

Knowledge Results

Only 85 participants (19.9%) answered all 3 knowledge questions correctly (passing score)

- **Significant association between possessing CEN and passing knowledge test:**
 $X^2(427)=7.149, p=.008$
- **Significant association between years in emergency nursing and pass (Mdn=15 yrs.) vs. fail (Mdn=10 yrs.) knowledge test:**
Mann-Whitney U ($n_{pass} = 85, n_{fail} = 342$) = 12088.0, $z = -2.406, p = .016$

Attitudes & Practices

- **Over 80% agree/strongly agree that phlebotomy/IV insertion impacts patient satisfaction and expectations** & hemolyzed samples impact nurses' workload
- **87% reported current practice is phlebotomy via IV catheter insertion** & 52% report using low volume tubes

Conclusion

Every effort should be made to have zero hemolyzed samples to prevent delays in care, patient discomfort, and added costs.

Those charged with reducing blood sample hemolysis in their ED should be familiar with the ENA CPG and engage emergency nurses with CEN and greater experience to lead the initiative.

Research needs to be conducted on ED patient phlebotomy experience and its impact on patient satisfaction in order know if nurses' beliefs are congruent with patient expectations.

ENA member knowledge and use of CPGs needs to be explored in order to understand their value to the profession.

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