

A Study Comparing Coagulation Test Results from PICCs and Venipunctures
Linda Ann Humphries, RN, CNS, CCRN
Harris Methodist Southwest Hospital

Problem: Hospitalized patients, particularly those with PICC lines, may require anticoagulation therapy or coagulation studies to determine changes in condition. Venipuncture, a painful procedure, often results in bruising, bleeding and increased risk for infection. It is particularly difficult in some patients with limited venous access. Our policy/procedure requires venipuncture to obtain all coagulation test samples.

Evidence: A review of published literature supported the use of PICC lines for coagulation studies when proper protocol is followed.

Strategy: An evidence-based protocol was developed for drawing coagulation studies from PICC lines. The study compared results from coagulation studies drawn from a PICC using the evidence-based protocol, and samples drawn via venipuncture.

Practice Change: The clinical research study was designed to determine if the policy/procedure requiring venipuncture for coagulation studies could be revised. The goal was to show no significant difference between coagulation study results drawn via venipuncture and via PICC lines using an evidence-based protocol. The results will be used to validate a change in policy/procedure.

Evaluation: The study compared PT, PTT, INR, and Fibrinogen results from blood samples obtained via venipuncture and via a PICC line using an evidence-based protocol.

Results: Purposive sampling was used. All patients admitted to the hospital with PICC lines were asked to participate in the study. Thirty patients consented to have blood collected from a peripheral vein via venipuncture and through the PICC line following protocol. PTT, PT, INR and Fibrinogen tests were run on all samples. Results were compared using Pearson product moment correlations and paired t-tests. There were no statistically significant differences in any of the coagulation tests drawn on patients peripherally using venipuncture or samples drawn through the PICC line.

Recommendations: The current policy can be revised to allow coagulation studies to be drawn from PICC lines using an evidence-based protocol.

Bibliography

- American Association of Critical-Care Nurses. (2007). *FAQ's: How Much Blood Should be Drawn From Central Lines Prior to Obtaining A Blood Sample For a Laboratory Test Involving an Adult Patient?* Retrieved January 27, 2007, from <http://www.aacn.org>
- American Association of Critical-Care Nurses. (2001). *Blood Sampling Techniques for Patients with Arterial or Venous Catheters*. Retrieved January 24, 2007, from <http://www.aacn.org>
- Center For Disease Control (2002). Guidelines for the Prevention of Intravascular Catheter-Related Infections. *Morbidity and Mortality Weekly Report*, 51(RR-10), 3.
- Center for Phlebotomy Education (2006). When to Draw After a Transfusion. *Phlebotomy Today*, 7(4), 3-4.
- Clinical Rounds (2005). Blood Sampling Gets the Go-ahead. *Nursing* 2008, 35(5), 34-35. Retrieved January 29, 2008, from <http://gateway.tx.ovid.com>
- Dech, Z. E., & Szaflarski, N. L. (1996). Nursing Strategies to Minimize Blood Loss Associated with Phlebotomy. *AACN Clinical Issues*, 7(2), 277-287.
- Earsing, K. A., Hobson, D. B., & White, K. M. (2005). Preventing Central Line Infections. *Nursing Management*, 36(10), 18-24. Retrieved January 27, 2007, from <http://nursingmanagement.com>
- Farjo, L. (2003). Blood Collection from Peripherally Inserted Central Venous Catheters: An Institutions Effort to Evaluate and Update Its Current Policy. *Journal of Infusion Nurse Society*, 26(6), 374-379. Retrieved January 29, 2008, from <http://gateway.tx.ovid.com>
- Frey, A. M. (2003). Drawing Blood Samples from Vascular Access Devices: Evidence-Based Practice. *Journal of Infusion Nurse Society*, 26(5), 285-293. Retrieved January 29, 2008, from <http://gateway.tx.ovid.com>

John Hopkins Hospital. (2007). *Adult Vascular Access Device Policy*. Retrieved

January 28, 2008, from Johns Hopkins Hospital Web Site:

<http://hopkinsmedicine.org>

Knue , M., Doellman, D., Rabin, K., & Jacobs, B. R. (2006). *The Efficacy and Safety of Blood Sampling Through Peripherally Inserted Central Catheter Devices in Children*. Retrieved April 24, 2006, from

<http://www.mrw.intwerscience.wiley.com>

McPherson, D. J. (2007). PICCs: Peripherally Inserted Central Catheters: What You Should Know. *Men In Nursing*, 2(6), 38-43. Retrieved January 29, 2008, from

<http://gateway.tx.ovid.com>

Prue-Owens, K. K. (2006). Use of Peripheral Venous Access Devices For Obtaining Blood Samples for Measurement of Activated Partial Thromboplastin Times. *Critical Care Nurse*, 26(1), 30-38.

Rickard, C.M., Couchman, B.A., Schmidt, S.J., Dank, A., Purdie, D.M. (2003). A Discard Volume of Twice the Dead Space Ensures Clinically Accurate Arterial Blood Gases and Electrolytes and Prevents Unnecessary Blood Loss. *Critical Care Medicine*, 31(6), 1654-1658.