Activated Partial Thromboplastin Times From Venipuncture Versus Central Venous Catheter Specimens in Adults Receiving Continuous Heparin Infusions

**Facts**

Hospitalized patients undergo a variety of diagnostic tests to monitor the course of illness. Many of these diagnostic tests involve the collection of single or multiple blood specimens via capillary finger stick, venipuncture, or specimen retrieval from arterial or central venous access devices (CVADs). Central venous access refers to cannulation of the internal jugular, subclavian, or femoral vein.

- CVADs allow painless collection of blood specimens because no further skin puncture is required. However, many of the subtleties of collecting blood from a CVAD have not been clearly defined. Because the patient is often receiving fluids or medications through the same port from which the blood sample is collected, contamination and erroneous test results could occur.

- A number of factors have been suggested as potentially influencing aPTT results, including catheter size, type, dead space, time from catheter insertion to blood sampling, diagnosis, discard and preflush volumes, and dose and route of administration of concomitant anticoagulant. Additional considerations include liver disease, hormone therapy, and medications.

- The following drugs have been identified as affecting aPTT results: diphenylhydantoin, heparin, warfarin, naloxone, radiographic agents, antihistamines, vitamin C, aspirin, and chlorpromazine as well as conjugated estrogen in males and oral contraceptives in females. In addition, hemolyzed, lipemic, and icteric specimens also may affect aPTT results.

- The purpose of this study was to determine if there is a clinically significant difference in aPTT values measured in venipuncture specimens versus CVAD specimens in hospitalized adult patients receiving continuous heparin infusions through a central catheter.

- Overall, the aPTT specimens collected via venipuncture and a CVAD were not significantly different from one another.

- The mean difference in aPTT did not differ by sex, race, or self-reported history of alcohol use. However, the mean aPTT difference between those whose medical record indicated they were receiving hormone therapy (n = 5) and those who were not (n = 47) was significantly different.

**Recommendations**

Information from this study, the 2011 recommendations of the Infusion Nurses Society, and new institutional policies have been used to formulate the following recommendations for aPTT specimen collection in patients receiving heparin infusions:

- Collect the aPTT specimen by peripheral venipuncture if possible.
- Define the optimal port to use for infusions more clearly to ensure more consistent nursing practice.
- If a CVAD specimen for aPTT is necessary, collect the specimen from a port without a heparin infusion if possible, and follow the institution’s laboratory guidelines:
  1. flush the catheter with 10 mL of saline before pausing the infusion or withdrawing the waste amount of blood,
  2. turn off the heparin infusion for 5 minutes and clamp all ports before specimen collection, and
  3. aspirate and discard 10 mL of blood before specimen collection (for catheters that are size 5F-8F).
- Revisions to charting options have been submitted for consideration to the clinical documentation specialist responsible for revising screen content in the electronic medical records. These revisions will allow clearer documentation of which CVAD lumens are being used for specific infusions and clarification as to which CVAD lumen was used for specimen collection.