Partial Thromboplastin Time

Accurate measurement through evidence-based practice

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At the University of Pittsburgh Medical Center's Hillman Cancer Center, multiple occurrences of critically elevated partial thromboplastin time (PTT) levels drawn by central venous access devices (implantable ports) were determined to be inaccurate. Root cause analysis revealed the institutional policy and staff education for collection did not support peripheral venipuncture for coagulation panels. Peer-reviewed literature and case studies were evaluated by the evidence-based practice council, and the data revealed that PTT levels yielded incorrect results when drawn through an implantable port. This suggested that peripheral venipuncture might be preferable.

AT A GLANCE

- PTT blood draws from implantable ports may result in falsely elevated levels.
- Oncology nurses might consider peripheral venipuncture for coagulation panel collection, even for patients with implantable ports.
- To ensure best safety practices related to PTT draws, quality and safety leadership can review institutional policies and nursing education.

KEYWORDS
partial thromboplastin time; implantable port; coagulation panel; venipuncture; blood draw

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The University of Pittsburgh Medical Center (UPMC) is home to more than 60 cancer centers, treating about 110,000 patients with cancer each year (UPMC Hillman Cancer Center, 2017). Within the adult oncology patient population at Hillman Cancer Center, nurses have reported multiple occurrences of critically elevated partial thromboplastin time (PTT) levels drawn from implantable ports that were later determined to be false. The inaccurate PTT results occurred despite an institutional policy of completing a 10 cc normal saline flush and discarding 20 ccs of blood prior to obtaining the PTT level from the implantable port. In addition, repeat samples acquired from the implantable ports remained incorrect and elevated. Redraws completed via peripheral venipuncture, however, were within normal limits. Therefore, the evidence-based practice (EBP) council at Hillman Cancer Center identified the need for establishing improved policies and procedures to obtain accurate PTT levels in patients with implantable ports.

Role of PTT in Oncology

When a patient experiences a bleeding event, a sequence of 13 clotting factors called the coagulation cascade lead to the formation of a blood clot through extrinsic, intrinsic, and common pathways (Palta, Saroa, & Palta, 2014). Medical providers commonly order coagulation panels in patients scheduled to undergo surgery, in patients with medical conditions that affect the pathways, and/or in patients who have comorbidities that may lead to secondary adverse events if coagulation factors are not monitored. Researchers have noted a strong correlation between cancer and thrombosis, reinforcing the need for patients with cancer to undergo coagulation panel testing (Elyamany, Alzahrani, & Bukhary, 2014). According to Wun and White (2009), patients with cancer have about a fourfold greater risk for thrombosis related to cancers associated with a hypercoagulable state; in addition, some chemotherapy regimens can further amplify the risk for thrombosis. One component of the coagulation panel is PTT, which evaluates the factors found in intrinsic and common pathways (Palta et al., 2014). PTT is used to monitor therapy with unfractionated heparin and other anticoagulant agents, including direct thrombin inhibitors (Palta et al., 2014).

Implantable Ports

Blood draw and drug therapy administration through implantable ports can decrease peripheral vein damage and pain, and reduce the opportunity for drugs to come into contact with a patient's skin. Factors that may influence port-drawn PTT results