Improving quality patient care through an evidence-based approach to hemolysis reduction

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Problem Identification

• In one chemotherapy unit labs were routinely drawn off PIVs
• Hemolysis rates were rising and peaked at 4.9%
• Patients needed multiple repeat lab draws and treatment delays
• Other units had gone to a 2-stick method (1 for labs and 1 for the IV) but this unit’s population was identified as unique
  • Breast cancer patients had limited extremities available
  • 30% of all Adriamycin prescribed hospital-wide was administered in this unit therefore avoiding multiple same-day venipuncture was needed to minimize risk of extravasation
• The goal was to reduce hemolysis without a process change

Background

• Hemolysis leads to inaccurate test results or no results at all, leading to repeat blood draws, delays in treatment and increased time and costs for patients and staff
• Drawing labs off a peripheral intravenous (PIV) line is a known contributor to hemolysis; however, this is the preferred method of specimen collection in patients with limited venous access, such as breast oncology patients.
  • This preserves vein integrity to safely administer chemotherapy and improve patient satisfaction
• The American Society for Clinical Pathology has established 2% or below as an acceptable benchmark for hemolyzed specimens

Interventions

A multi-faceted approach was implemented to reduce hemolysis rates by reinforcing best practices found in the literature

Factors increasing hemolysis as identified in the literature

- PIV draws
- Tourniquet time > 1 min
- Pneumatic tube delivery
- Puncture before ETOH dries
- Use of site other than antecubital

Results/Data

• Re-education and timers brought awareness to staff practices, resulting in reduction of hemolysis rates over 2% that was maintained for >6 months
• Pneumatic tube pilot did not show benefit in hemolysis rates; some data suggests this is only a factor over distances longer than 2,000m
• Continuous monitoring and staff reinforcement was needed during initial months
• More than 70% of patients with hemolysis were metastatic versus adjuvant
• On average, 25% of metastatic patients with hemolyzed specimens were patients on research protocols requiring multiple blood draws

Overcoming Challenges

• Use of multiple interventions can avoided a major patient process change, but can be more challenging for staff to adhere to
• Use of a Plan-Do-Study-Act model can be used to test interventions and revise throughout the process
• Rates dropped most and repeatedly when staff was reminded about best practices, demonstrating need for continued monitoring and reinforcement

Nursing Implications

• Reducing hemolysis rates is possible without changing patient process to include multiple needle sticks. This emphasizes the importance of using nursing literature to identify practice drift.
• More discussion is needed with LIPs to increase CVAD placement in metastatic patients who will be receiving indefinite treatment
• These changes can apply to patients beyond breast oncology (e.g. dialysis patients with a fistula, etc) who have challenging venous access

Hemolyzed Specimen Rates

Oct 2016

• Back-to-Basics education for chemo staff on evidence for hemolysis reduction

Nov 2016

• Timers added to chair lamps in all chemo rooms for tourniquet time reinforcement

Jan 2016

• Pilot of specimen transport change from pneumatic tube to hand pick up

Feb 2017

• Return to pneumatic tube use and reinforcement of back to basics concepts

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