5-31-2017

Assessing the Burden of Unnecessary Central Venous Catheters in Patients on Medical-Surgical Floors

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Recommended Citation  
Blum, MD, Justine; McGrath, MD, Christopher; Modi, MD, Anita; Saxena, MD, Shivam; Shah, MD, Ashish; Sidhu, MD, Nimrita; and Oxman, MD, David, 'Assessing the Burden of Unnecessary Central Venous Catheters in Patients on Medical-Surgical Floors' (2017). *House Staff Quality Improvement and Patient Safety Posters*. Poster 34.  
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Central lines -- including peripherally-inserted central venous catheters (PICCs) -- allow the administration of intravenous therapies but also pose risks including catheter-associated thrombosis and central-line associated bloodstream infection (CLABSI). Placing PICCs and other non-tunneled central lines only when necessary, and removing them when they are no longer clinically indicated, is critical to ensuring patient safety. Based on our clinical experience, we suspected that a significant proportion of PICCs and other central line days in medical-surgical floor (med-surg) patients at Thomas Jefferson University Hospital (TJUH) are not indicated. A project to reduce unnecessary line days could improve the quality and safety of care at TJUH.

Our project goals are to:
- a) assess the burden of unnecessary PICCs and other non-tunneled central lines on med-surg units at TJUH and
- b) understand the underlying reasons behind the problem. In the first phase of our project we conducted an audit of med-surg unit PICCs and other non-tunneled central lines with the goal of obtaining a rough estimate of the number of line days that are unnecessary.

SMART AIM
By December 31, 2017, the TJUH medical-surgical floors will reduce the number of unnecessary PICC line days by 30%.

METHODS
We developed a definition for necessity of central lines based on previously published studies and adapted them for TJUH. A Central Audit Form was developed in which we developed specific criteria to justify non-ICU central venous access. Members of the project then undertook several random audits of med-surg floors in which patients with PICCs (or other central lines) were identified and assessed for central line necessity. Data from these audits was pooled and analyzed.

AUDIT FORM
Central Line Audit Form
Criteria for Justification of Non-ICU Central Venous Access
- Scheduled medication requiring central venous access
- Total peripheral nutrition or plasmapheresis
- Anticipated need for home intravenous (IV) therapy (e.g. antibiotics)
- Unable to obtain adequate peripheral access and one of the following:
  - Scheduled IV medication
  - 2 IV medications and/or blood products being simultaneously administered
- Active (within last 24 hours) cardiovascular instability (SBP <100, heart rate <50 or >120)
- < 24 hours from ICU transfer with central line in place
- No justification for central line

RESULTS
A total of 266 patients on medical-surgical floors were audited. 28/266 (10.5%) patients had PICCs or other central lines. 5 of these 28 lines (18%) were determined to be unnecessary at the time of audit as they did not meet proposed criteria of justification.

The remainder of central venous catheters (82%) were justified. The most common reasons for PICC/CVC use were: 12/28 (42.8%) for home antibiotics, 5/28 (17.8%) for chemotherapy, 4/28 (14.2%) difficult IV access, 3/28 (10.7%) for TPN, 1/28 (3.5%) for instability and need for IV meds.

FISHBONE DIAGRAM

REFERENCES