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. [http://jdc.jefferson.edu/patientsafetyposters/34](http://jdc.jefferson.edu/patientsafetyposters/34)

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

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**BACKGROUND**

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-tunnelled 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.

**PROJECT GOALS**

Our project goals are to:

a) assess the burden of unnecessary PICCs and other non-tunnelled 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-tunnelled 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 lines 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 following:
  - Scheduled IV medication
  - 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**

- **Provider**
  - Perception: Provider misconception
  - Factors: Over-concerns for potential future need
  - Lack of evidence

- **Provider**
  - Over-concerns for potential future need

- **System**
  - Lack of IV insertion support team
  - Lack of accountability
  - Lack of guideline

- **Patient**
  - High number of patients with difficult venous access
  - Patient preference

- **Technology**
  - Lack of computer access

Unnecessary PICC days

**REFERENCES**