

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>

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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-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.

## PROJECT GOALS

Our project goals are to:

- assess the burden of unnecessary PICCs and other non-tunneled central lines on med-surg units at TJUH and
- 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 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
  - PRN 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.

## CONCLUSIONS

There are a significant number of unnecessary PICC or central line days in med- surg patients at TJUH. Reducing these unnecessary lines days could reduce central line-associated complications. Next steps will include investigation of underlying reasons and the development of strategies to address the problem.

## NEXT STEPS

### Proposed Interventions

- Address justification of non-central venous catheters to the "script" for patient centered rounds.
- Similar to the antibiotic stewardship team, create a stewardship team to address use of central venous catheters on medical-surgical floors.
- Assign the nurse manager for each nursing unit to round on PICC necessity and discuss justification with primary team directly
- Assign a pop-up or hard stop in EMR that notifies team of duration of central venous access and asks them to justify its indication.

## REFERENCES

- Coady K, Ali M, Sidloff D, Kenningham R, Ahmed S. 2015. A Comparison of Infections and Complications in Central Venous Catheters in Adults with Solid Tumours. *The Journal of Vascular Access*. 16(1). 1-76.
- Royer T, Lang E, Neuzil K, Beneda H. 2005. Peripherally inserted central catheter (PICC) bloodstream infection surveillance rates in medical intensive care, medical-surgical wards, extended care, and outpatients. *American Journal of Infection Control*. 33(5). 15-16.
- Ajenjo MC, Morley JC, Russo AJ, McMullen KM, Robinson C, Williams RC, Warren DK. 2011. Peripherally inserted central venous catheter-associated bloodstream infections in hospitalized adult patients. *Infection Control and Hospital Epidemiology*. 32(2):125-130.
- Tejedor SC, Tong D, Stein J, Payne C, Dressler D, Xue W, Steinberg JP. 2012. Temporary central venous catheter utilization patterns in a large tertiary care center: tracking the "idle central venous catheter." *Infection Control and Hospital Epidemiology*. 33(1): 50-57.

## FISHBONE DIAGRAM

