

Evaluation of a Midline Catheter Program and Effect on Central Line Associated Blood Stream Infections

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Introduction

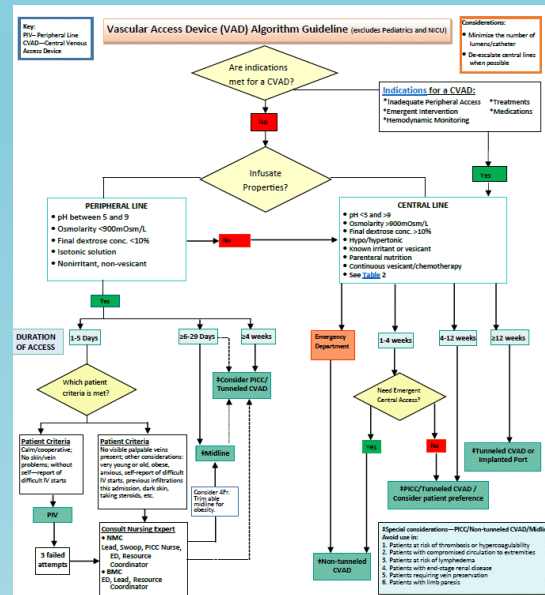
- Central Line Associated Bloodstream Infections (CLABSIs) portend increased patient morbidity, length of stay and costs, thus focused efforts on reduction of CLABSI rates remain necessary. Guidelines recommend against peripheral venous catheters when access is required for longer than 6 days, often leading to central venous catheter (CVCs) placement.¹ Midline catheters are an option in provide vascular access.² To improve vascular access device choice and reduce the potential risk of CLABSIs, we implemented a quality improvement initiative comprised of a new vascular access algorithm with introduction of midline utilization and sought to evaluate the impact of midline use on CLABSI rates.

Study Design

- A prospective quality improvement assessment from October 2017 through June 2018 analyzed the infection rates of midline catheters and CVCs. When a primary service placed a consult for a peripherally inserted central catheter (PICC), that patient would be evaluated via the vascular access algorithm (figure) for whether they should receive a midline catheter, a peripherally inserted central venous catheter or a centrally inserted central venous catheter. The midline catheters and central venous catheters were monitored for duration of indwell and bloodstream infections consistent with reportable CLABSI definitions

Table of Catheter Infections			
Line	Line Infections	Catheter Days	Rate
CVC	29	23847	1.27
PICC	12	16879	0.71
Midline	4	6575	0.61
Total	45	47301	
Rate per 1000 catheter days			

Vascular Access Algorithm



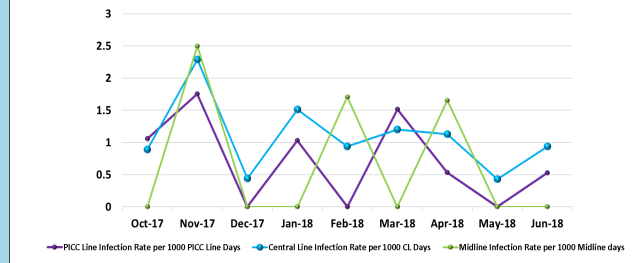
Results

- Over nine months 1,196 midline catheters, 1,514 peripherally inserted central and 4,124 central venous catheters were placed.
- The midline catheters were in place for a total of 6,575 total midline catheter days. The PICC lines were in place for a total of 16,870 catheter days, and centrally inserted central venous catheters were in place for 23,847 catheter days.
- There were 4 (0.3%) positive cultures that met the definition of CLABSI from patients with a midline catheter. There were 12 (0.8%) positive cultures from patients with a PICC, and there were 29 (0.7%) central venous catheter that met the reportable CLABSI definition.

Conclusion and Future Directions

- The implementation of a vascular access algorithm including midlines may effectively reduce central line insertions and thereby decrease CLABSIs through appropriate utilization of a lower risk device (midline). Further research into comparing additional risks, benefits, complications and costs of midline catheters and all styles of central venous catheters is warranted.

NM Centralline and Midline Infections Oct 2017 - June 2018



References

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- Xu, Tianyuan, et al. "Safety and utilization of peripherally inserted central catheters versus midline catheters at a large academic medical center." *American journal of infection control* 44.12 (2016): 1458-1461.