Maximizing the Midline

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BACKGROUND

Due to increased focus on CLABSI and a growing population of patients with limited vascular access options, midline catheter use is on the rise.

With a gap in vascular access options for intermediate dwell times and peripheral IV needs at our 600-bed community hospital, our Vascular Access Team began using the midline catheter. However, the midline catheter is known to have a limited blood sampling capability with no means of declotting. With success in maintaining catheter patency and blood return in our PICCs with the use of the TKO anti-reflux connector, we examined its effect on the blood sampling capability and IV therapy completion in midlines.

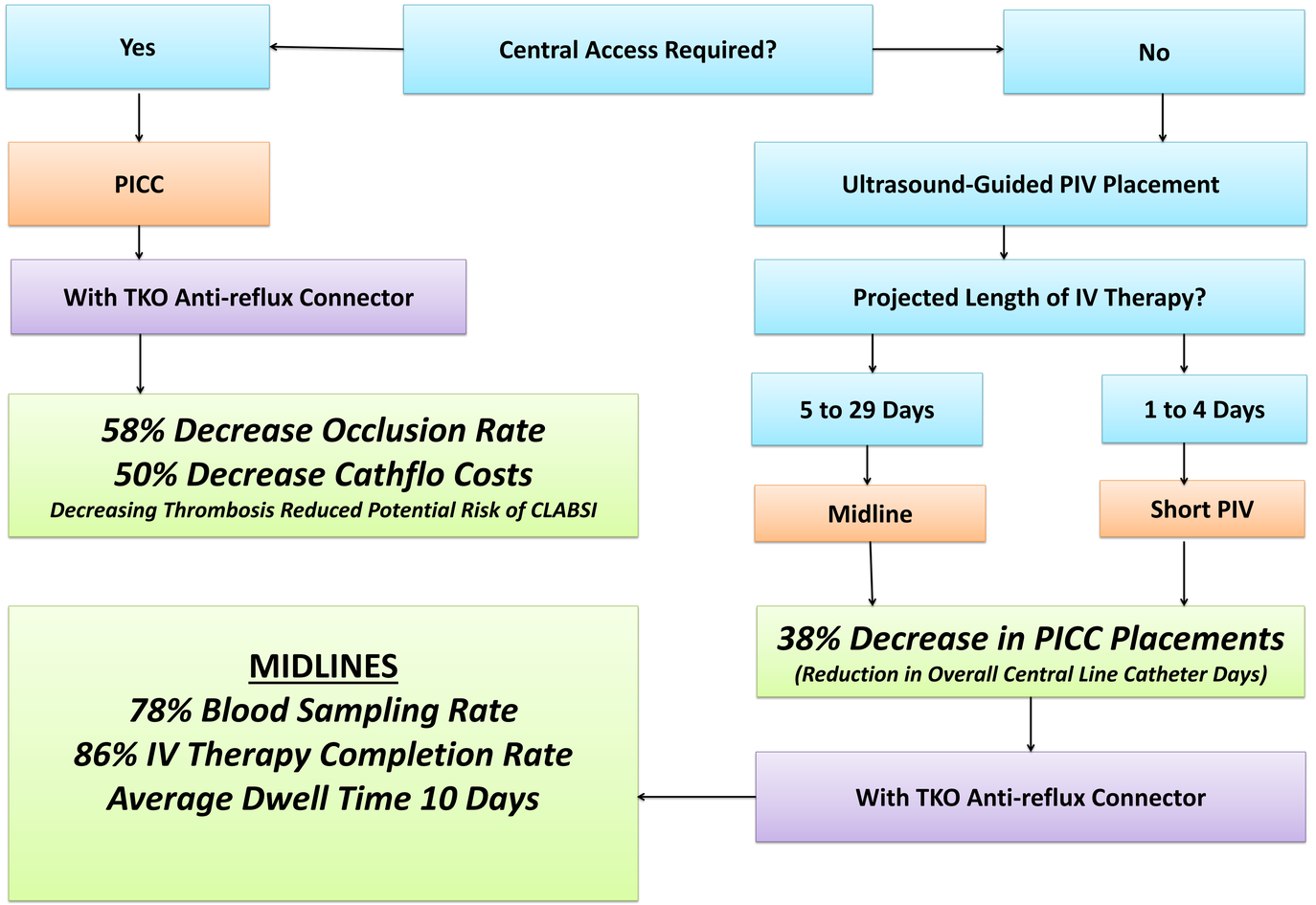
This poster shows catheter dwell time and days of blood sampling capability on midlines of varying size while using the Nexus TKO anti-reflux pressure-activated anti-reflux needleless connector.

METHODS

This study examined data collected during implementation of midline catheters to our facility. Midlines were indicated for 5-29 days of peripheral IV therapy in difficult access patients. Ordering guidelines were made available to clinicians.

Midlines of three gauge sizes (20g, 18g, and 17g) were placed with ultrasound guidance into the deep veins of the upper arm during a 4-month period of data collection on adult inpatients. TKO connectors were used with all of the midlines. Data was collected by us from insertion records and analysis of electronic documentation of staff RNs. Data included: gauge, dwell time, blood sampling rate and IV therapy completion. Vessel size to catheter ratio was not factored. In total, 330 midlines were placed. 148 (45%) midlines were discontinued within 4 days or were present at discharge. These catheters were not candidates for the study. 182 (55%) midlines with a dwell time of 5 to 29 days were included in this data.

RESULT 1: *CLABSI Reduction with Introduction of Vascular Access Options Based on Projected Length of Therapy*



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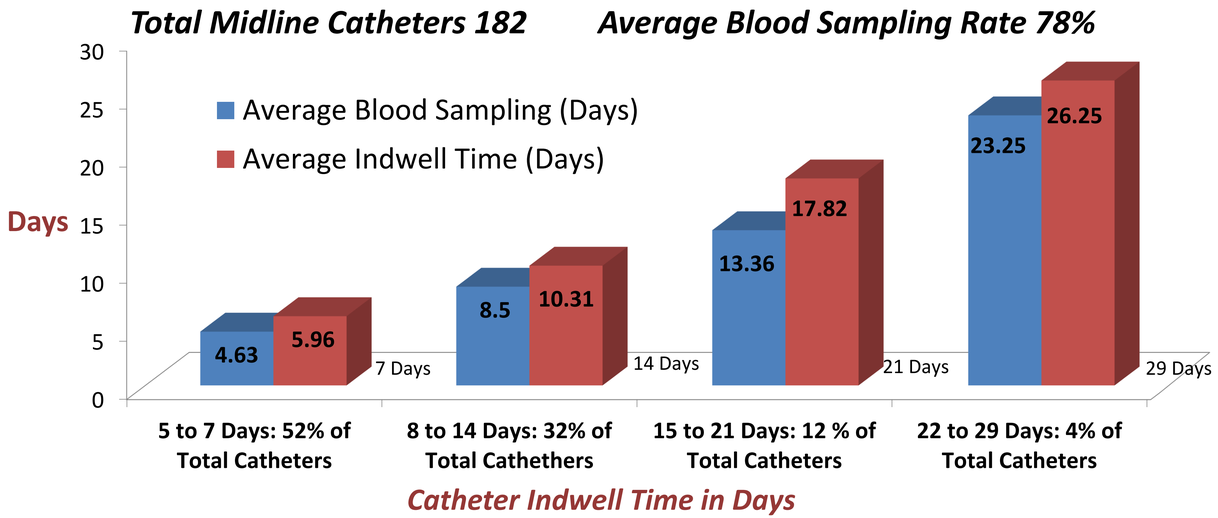
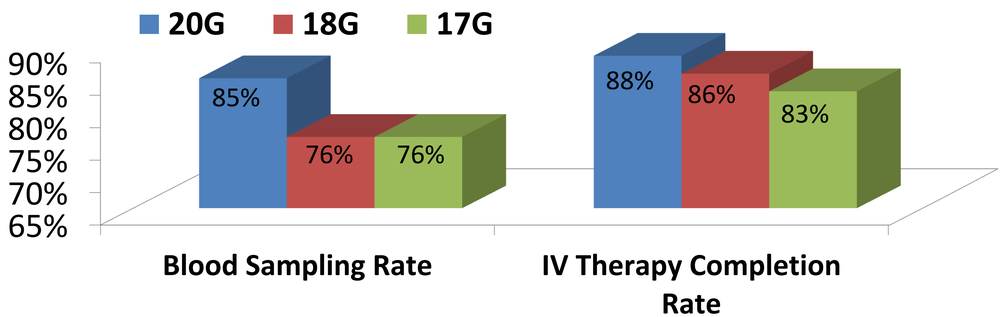
RESULT 2: With TKO anti-reflux connectors, midline blood draw capability lasted almost as long as the life of the catheter, regardless of dwell time.



RESULT 3: Smaller catheter size was associated with a consistently higher rate of blood sampling and a higher IV therapy completion rate.



DISCUSSION

- We introduced midlines to prevent unnecessary PICC placements and reduce overall central line catheter days.
- Based on our success reducing PICC occlusions, TKO connectors were also utilized with midlines allowing us to extend blood sampling capability far longer than the expectations set by the midline manufacturers.
- The smallest gauge midline catheters had the highest rate of blood sampling and highest IV therapy completion rate. This suggests that the anti-reflux properties of the TKO connector, in combination with the smaller gauge catheters, maximized blood return by reducing thrombosis.
- 1/3 of midlines were discontinued in 4 days, representing a vascular access need that may be better met with a less costly shorter dwell U/S guided PIV.

CONCLUSION

- Catheter-to-vein ratio is an important factor in maximizing midline function
- TKO anti-reflux connector maximizes blood draw capability of midlines

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