

Staff Education/Training Aids Implementation of Advanced Midline Catheter



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New York Queens Hospital (NYHQ) sought to implement an advanced, power-injectable, extended-dwell peripheral IV catheter (POWERWAND® by Access Scientific, Inc.) that is technically a midline due to its 3.1” length. Using the catheter would address the following patient safety and operational challenges that were part of NYHQ’s then-current IV therapy routines:



POWERWAND®

- NYHQ’s emergency room serves a large volume of patients, many of whom require a peripheral IV (PIV). Although many of these patients are well enough to be sent home to continue therapy, it is often not appropriate to send patients home with a PIV. Yet the hospital does not have sufficient bed space to accommodate all patients required to stay there for this reason.
- NYHQ had previously tried to solve the problem by fitting some patients with conventional midline catheters, because patients can be sent home with midlines. However, the catheters used had insufficient dwell times and high leakage rates.
- Because the previous midline solution failed, the hospital began fitting these patients with peripherally inserted central catheters (PICCs). This solution was problematic because it 1) exposed patients to the increased infection risk associated with PICCs, 2) decreased patient satisfaction because the additional skills needed to insert PICCs led to unsuccessful insertion attempts and delayed therapy, and 3) ultimately increased costs.

The advanced midline promised to address all of the above issues while providing other evidence-based advantages, including long average dwell times, a high completion-of-therapy rate, and a low overall complication rate. The hospital was concerned, however, that the learning curve associated with adopting new technology would undermine IV/PICC team nurses’ acceptance of the new device.

INITIATIVE

To facilitate the IV/PICC team’s acceptance of the advanced midline, the hospital decided to:

- Utilize training and education to reduce nurses’ learning curve
- Track data associated with the midline’s use, in hopes that documented benefits would increase nurses’ acceptance

IMPLEMENTATION

- Each IV/PICC team nurse had to complete five successful insertions under supervision of a clinical nurse educator provided by the midline manufacturer, plus ongoing follow-up over a several-month period.
- Each team nurse had to complete an additional 30 successful insertions under close supervision of the team coordinator, including follow-up on patients.
- Data tracked included: number of advanced midlines lasting to completion-of-therapy, number of midlines not lasting, reason for removal, and ability to draw blood.

RESULTS

The advanced midline was implemented in Dec. 2011 with the learning curve (training and education) period lasting through Feb. 2012.

Notable statistics:

Large improvement in ratio of PICCs to midlines. In 2011, the ratio of PICCs to midlines was more than 4:1. In 2012, it was about 1:1.

High percentage of midlines lasting through completion of therapy. Even with the learning curve data included, 93% of the 906 advanced midlines placed from Dec. 2011–Dec. 2012 lasted through the completion of therapy.

Excellent blood drawability. Clinicians were able to draw blood for 99% of inpatients for up to three days (with saline flush before and after each use) and for

more than three days for outpatients (with heparin flush after each use).

Low complication rate. For example, in the post-learning curve period (Mar. 2012 – Dec. 2012), infiltration occurred in 2% of advanced midlines.

Zero catheter-related bloodstream infections

(CRBSI). The midline resulted in 0.0 catheter-related bloodstream infections in 8,426 catheter-days during patients' stay in the hospital.

Non-statistical outcomes observed by poster presenter and colleagues:

- Increased patient safety
- Increased patient satisfaction
- Increased staff satisfaction

CONCLUSIONS

NYHQ's strategic use of training, education, and data tracking helped overcome nurses' emotional barriers to accepting a power-injectable, advanced midline catheter. This device enabled the hospital to provide patients with an appropriate IV line upon admission while improving patient safety/ satisfaction and lowering costs. The hospital observed greatly extended dwell times; improved blood drawability; reduced complications; zero CRBSI; and better utilization of scarce bed space by continuing appropriate patients' therapy at home.

LIMITATIONS

Prospective observational study following interventions. Not a randomized controlled study.