

Background

Vascular access is frequently required in hospitalized patients for various reasons. Peripherally inserted central catheters (PICC) are often preferred in pediatric patients due to their fragile, small vasculature and sensitivity to certain medications. Minor PICC movements can be more significant in children increasing their risks. The Centers for Disease Control and Prevention (CDC) and Infusion Therapy Standards of Practice (INS) recommend using a sutureless securement device and transparent dressing to prevent catheter movement as best practice.

Purpose

The purpose of this quantitative, evidence-based, quality improvement project was to determine if training nurses on how to use and implement an FDA-approved, evidence-based PICC line securement device (tissue adhesive) and current integrated securement dressing, per CDC and INS guidelines, reduces the frequency of unintentional, accidental, or negligent PICC line dislodgements when compared to the standard practice of an integrated securement dressing and tape among pediatric patients admitted to an acute care neuro/transplant unit.

Metrics

Data was collected using documentation from the electronic medical record on pre- and post-intervention unintentional PICC line migrations and dislodgements. The independent variable was the securement method - standard of care versus interventional method. Occurrences of unintentional migration or dislodgement was the dependent variable.

Methods

- ✦ Quantitative methodology using nonequivalent design
- ✦ Compared the outcome of standard of practice dressing and tissue adhesive dressing
- ✦ 48-bed inpatient neuro/transplant unit of a 457 freestanding, quaternary pediatric hospital
- ✦ IHI's Plan-Do-Study-Act cycle guided implementation
- ✦ Education on the interventional securement method was provided to all individual's responsible for dressing changes

Results

- ✦ 105 dressing changes performed on 53 patients
- ✦ 19% decrease in frequency of unintentional movement with the use of the interventional securement device

	Dislodgement				χ^2	p	η
	Before Implementation		Implementation Phase				
	#	%	#	%			
Dislodgements	10	19%	0	0%	10.1	.002*	.31
Total Dressing Changes	55	52%	50	48%			
Dislodgements by Dressing Change Frequency							
Once	2	20%	0	0%			
Twice	4	40%	0	0%			
Three Changes	2	20%	0	0%			
Four Change	1	10%	0	0%			
Five Changes	0	0%	0	0%			
Six Changes	0	0%	0	0%			
Seven Changes	1	10%	0	0%			

Note: $N = 53$, $\chi^2 =$ Pearson chi-square, * $p < 0.05$ -statistically significant, η -*eta* (effect size). Fisher's exact test $p = .001$

Discussion & Findings

- ✦ Altering current practice to include an evidence-based tissue adhesive and transparent dressing, and removing the CHG disk and tape strips, caused statistically significant reduction in line migrations and dislodgement
- ✦ The interventional dressing change fully aligns with CDC and INS guidelines
- ✦ Less frequent premature dressing changes with the interventional method
- ✦ Increased satisfaction by staff nurses applying the interventional dressing method
- ✦ Having a robust project design, stakeholder engagement and staff buy-in with standardized practice resulted in 100% compliance of the practice changes needed with the interventional method on the selected unit

Conclusion

Effectively implementing an effective practice change takes a robust project design with strong engagement and a standardized practice. Using the IHI's PDSA Cycle to guide implementation of an evidence-based tissue-adhesive with dressing on PICC lines, a 19% decrease in unintentional PICC line movements was demonstrated.

