

The Influence of a Novel Needleless Valve on Central Venous Catheter Occlusions in Pediatric Patients

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BACKGROUND

Although it is common for central line catheters to develop a thrombotic occlusion, pediatric patients are at especially high risk of occlusion due to smaller vessels, smaller-gauge catheters, and slower rates of infusion. Mitigating catheter occlusions is costly, requiring tissue plasminogen activator, supplies, and nursing time. Our facility tested a novel neutral displacement needle-free valve designed to reduce occlusion.

METHODOLOGY

The organization determined a baseline occlusion rate for Hickman/Broviac catheters, in our 38-bed inpatient hematology/oncology department and our outpatient hematology/oncology clinic from August 2010 through October 2010. In 2011, a premarket test of the Neutron device (ICU Medical, San Clemente, CA) was conducted on the units. Based on the positive trial results, it was decided to implement the device housewide in December 2012.

RESULTS

A comparison of baseline central line complete occlusion rates from August to October 2010 with Neutron trial data from July to October 2011. This pilot project demonstrated a 74.3% reduction (from a rate of 3.82 to a rate of 0.98) in all hematology/oncology department Hickman and Broviac complete catheter occlusions. Subsequently, comparing 5 months of housewide occlusion data from June through October 2012 to 2013, complete occlusions fell by 32.1% (from a rate of 1.56 to a rate of 1.06).

CONCLUSIONS

The use of the Neutron needle-free catheter patency device was associated with a reduction in complete occlusions. The corresponding reduction in treatment delays, nursing time spent managing occluded catheters, and fewer needlesticks to patients likely translates to financial benefit for the organization and improved patient and family satisfaction.

Full Study Available In:

The Journal of the
Association For
Vascular Access

Dec 2015 | Vol. 20 | Issue 4

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