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Cyanoacrylate glue as part of a new bundle to decrease neonatal PICC-related complications
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Abstract

A "bundle" is defined as a combination of evidence-based interventions that, if followed collectively and reliably, improve patient outcomes. The aim of this quasi-experimental study, conducted in a level-III NICU in Belgium, was to assess the impact of central line dressing and maintenance bundle implementation on the rate of catheter-related mechanical complications. We performed a quality improvement (QI) project. Prior to bundle implementation, neonatal PICC lines were secured by Steri-Strip® and occlusive dressing. We implemented a new PICC bundle consisting of the use of glue, sutureless device (Griplock®), and a transparent dressing to secure the catheter to the skin. We compared the rate of infections, mechanical complications, and dislocations before and after bundle implementation (periods 1 and 2, respectively). The use of glue resulted in a significantly decreased rate of central line-associated bloodstream infection (CLABSI) ($p < 0.001$), dislocations, and mechanical complications ($p < 0.0001$). During period 2, there was a significant increase for the average number of days the catheter stayed in place ($p < 0.05$). We did not observe catheter breakage or patient skin irritations attributable to the use of glue (not even in ELBW infants). Conclusion: The implementation of the new bundle to secure neonatal PICCs in our NICU was associated with a significant reduction in CLABSI and dislodgment rates, without glue-related complications. Active surveillance of CVC placement procedure, positioning, and management, as well as analysis of related complications is crucial for improving patient safety. Continuous implementation of up-to-date central line bundles based on best practice recommendations is a key for quality improvement in NICUs. What is Known: • Stable vascular access is crucial in the NICU. Neonatal PICC securement issues can have serious consequences and are associated with device failure. What is New: • Catheter securement with tissue adhesive is safe and effective in reducing failure and complication rates in the neonatal population. © 2023, The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords

Central venous catheter; CLABSI; Glue; Neonate; NICU; PICC; Securement

Index Keywords

chlorhexidine, cyanoacrylate, polyurethane, surgical glue, cyanoacrylate derivative; Article, birth weight, catheter dislocation, catheter occlusion, catheter related bloodstream infection, clinical practice, controlled study, demography, female, gestational age, hospital hygiene, human, infant, major clinical study, newborn, patient safety, skin decontamination, total quality management, vein thrombosis, catheter infection, central venous catheterization, neonatal intensive care unit, procedures; Catheter-Related Infections, Catheterization, Central Venous, Central Venous Catheters, Cyanoacrylates, Humans, Infant, Infant, Newborn, Intensive Care Units, Neonatal

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