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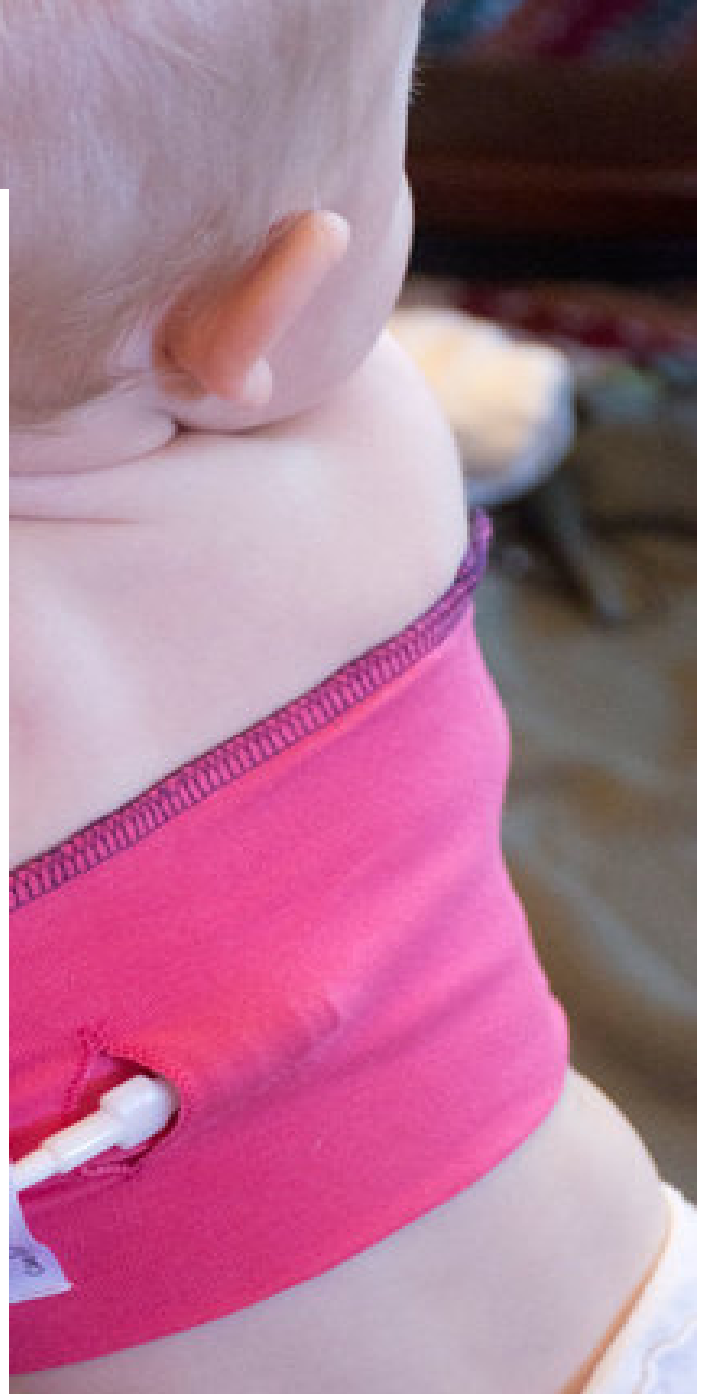
## Patient Safety Simplified

**“We have been using CareAline products for the last two years and we really feel they are the standard of care for children with central lines here at Rainbow.”**

DR. CLAUDIA HOYEN, UH/RAINBOW  
BABIES AND CHILDREN’S HOSPITAL

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# Patient Safety Simplified

## Necessary Improvements to Vascular Access Care (VAC)

Indications for use of catheters vary and can include administration of IV fluids, medications, or blood products.<sup>1,2,3</sup> In both adults and children, catheters may remain fixed to the body for prolonged periods of time ranging from days to months. Dislodgment, or unintended removal of these items can result in death, central line associated blood stream infections (CLABSIs), emergency department visits and admissions, and lengthened inpatient stays and treatments. Further, catheter dislodgments are closely linked to age, body size, and age-related immune status. These outcomes result in increased costs to hospitals and the healthcare system, and is distressing to patients and their families.<sup>4</sup>

***Dislodgment of catheters results in increased costs to hospitals and is distressing to patients and their families.***

## VAC Solutions

Research and quality improvement initiatives aimed to reduce complications and improve clinical outcomes have helped to advance safety protocols for VAC.<sup>5</sup> The Joint Commission offers evidence-based strategies and techniques for prevention of CLABSIs, but stops short for long-term management of existing lines.<sup>6</sup> Increasing awareness and concern for medical adhesive-related skin injury (MARSIs) in children and adults is causing many healthcare providers to turn toward solutions that help their patients manage vascular lines in an injury-free and standardized way.<sup>7,8</sup> Technology solutions with great promise, such as force sensitive break-away mechanisms for IV lines, are currently in development for inpatient care. But available today, CareAline products offer a simplified, cost-effective solution to inpatient and ambulatory management of Central and PICC lines.

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## Drive efficiencies. Decrease costs. Improve outcomes.

CareAline’s securement devices are clinically proven to reduce vascular access line dislodgment, line breaks, and CLABSIs. When added to safety bundles, our products lower per patient costs, reduce readmissions, and line complication rates.

- ✓ **The Children’s Hospital of Colorado** carried out a proof-of-concept analysis within the Center for Cancer and Blood Disorders (CCBD). In a cohort of patients aged between 4 months and 9 years, the CCBD care team was successful in preventing all accidental line breaks and removals with CareAline Line Wraps and PICC Lines Sleeves in use.

- ✓ In a quality improvement intervention at **C.S. Mott Children’s Hospital** (Figure 1), nurses found that the utilization of CareAline products demonstrated a decrease in CVC breakages in pediatric oncology patients less than four years of age.

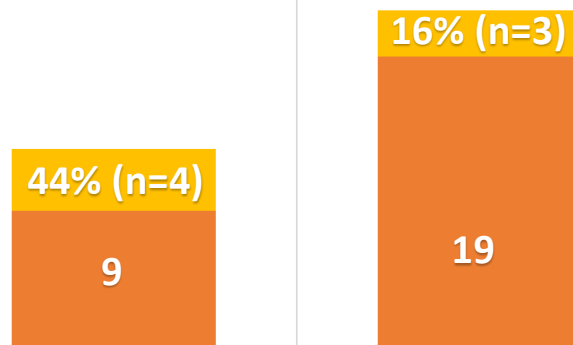


Figure 1: That's a Wrap: Preventing Central Venous Catheter Replacements in Pediatric Oncology Patients by Nancy Tena, MSN, RN, CNS-BC, CPHON, BMTCN and Elizabeth Duffy, DNP, RN, CPNP, C.S. Mott Children's Hospital, University of Michigan.

- ✓ A collaborative team of infection control, central line, and quality experts at **University Hospitals Rainbow Babies and Children’s Hospital** aimed to reduce CLABSI rates in their inpatient population with implementation of the Clean Campaign and CareAline products as part of this safety bundle. CareAline Wraps and Sleeves were used to protect lines from body fluid or environmental contamination (e.g. diapers and mouths) and accidental dislodgment or manipulation that could lead to a CLABSI. The team met their target, seeing a reduction from 1.47 per 1000-line days to .90 after one-year surveillance of infection rates.

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## Your Partner in Patient Safety

At CareAline, our mission is to help patients live safely and fully by providing clinically proven vascular access securement devices to hospitals and patients. Our goal is to increase safety, comfort, and style for patients with implanted lines. Our team is heavily involved in innovation and we work with hospital teams to meet clinical needs for rapidly evolving protocols and standards for care. While the greatest opportunity for potential improvement in clinical outcomes and patient experience will be from the use of CareAline products for line management in the home setting, including CareAline in safety bundles in the hospital establishes standardized, consistent management for the life of the line. It is critical that hospital staff utilizes and recommends the products so that they are used correctly and function seamlessly before discharge.

***“I had nightmares of the line getting loose and pulling out my PICC line before I started using the CareAline sleeve.” – Daniel L. Pease, RN***

To learn more visit [www.CareAline.com](http://www.CareAline.com) and connect with us @CareAlineTweet.

## References

- <sup>1</sup> de Jonge, R. et al. “Central venous catheter use in the pediatric patient: Mechanical and infectious complications”, *Pediatric Critical Care Medicine*, 2005. 6(3):329-339.
- <sup>2</sup> Matsuzaki, A. et al. “Long-term use of peripherally inserted central venous catheters for cancer chemotherapy in children”, *Supportive Care in Cancer*, 2006. 14(20):153-160.
- <sup>3</sup> Hetzler, R. et al. “Securing Pediatric Peripheral IV Catheters – Application of an Evidence-Based Practice Model”, *Journal of Pediatric Nursing*, 2011. 26(2):143-148.
- <sup>4</sup> Jumani, K. et al. “Risk Factors for Peripherally Inserted Central Venous Catheter Complications in Children”, *JAMA Pediatrics*, 2013. 167(5):429-435.
- <sup>5</sup> <http://app.ihl.org/imap/tool/processpdf.aspx?processGUID=e876565d-fd43-42ce-8340-8643b7e675c7>
- <sup>6</sup> [https://www.jointcommission.org/assets/1/6/CLABSI\\_Toolkit\\_Tool\\_3-18\\_CVC\\_Insertion\\_Bundles.pdf](https://www.jointcommission.org/assets/1/6/CLABSI_Toolkit_Tool_3-18_CVC_Insertion_Bundles.pdf)
- <sup>7</sup> Farris, MK. Et al. “Medical Adhesive-Related Skin Injury Prevalance Among Adult Acute Care Patients: A Single-Center Observational Study”, *Journal of Wound Ostomy and Continence Nursing*, 2015. 42(6):589-98.
- <sup>8</sup> Hitchcock, J. et al. “Medical adhesive-related skin injuries associated with vascular access”, *British Journal of Nursing*, 2017. 26(8):S4-S12.