

# Finding Zero: One Vascular Access Team's Journey to Improve Patient Care

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## PURPOSE

A vascular access team (VAT) represents a group of skilled experts who focus on insertion, care, and management of central venous catheters (CVCs).<sup>1</sup> In addition, these teams provide patient education and support clinical staff with education and the adoption of evidence-based practice (EBP) promoting placement of the right line for each patient's specific needs. As such, VATs are integral to the delivery of high-quality care related to vascular access practices. VATs have many goals. One of those goals is to prevent central line complications such as catheter-related bloodstream infections (CRBSIs), venous thrombosis, and bleeding. In order to achieve these goals and to make a difference in patient care, VAT staffing needs to be adequate.

Using a retrospective analysis of data collected by one VAT at a 364-bed regional academic health center located in the Midwest, this poster aims to illustrate the reduction in the number of CRBSIs for patients with a central line as the staffing allotment for the VAT increased.

## BACKGROUND

CRBSIs are a common and costly cause of injury during hospitalizations. They present significant hospital burden by increasing hospital stay, morbidity, mortality, and health service costs.<sup>2</sup> Individual studies have documented wide variations in cost estimates for central line-associated bloodstream infections (CLABSI), ranging from \$18,000 to more than \$90,000.<sup>3</sup> This is in addition to the cost to the patient and caregivers related to time off work and quality of life and the increased risk of death.

Despite frequent patient need for some type of vascular access device (VAD), the insertion, assessment, care, maintenance, and removal of CVCs are usually shared across multiple disciplines. This practice can expose patients to a greater risk of injury.<sup>4</sup> Additionally, although VADs are prescribed by physicians, research has shown that few physicians have the same level of knowledge or experience that vascular access specialists do with peripherally inserted central catheters (PICCs).<sup>5</sup>

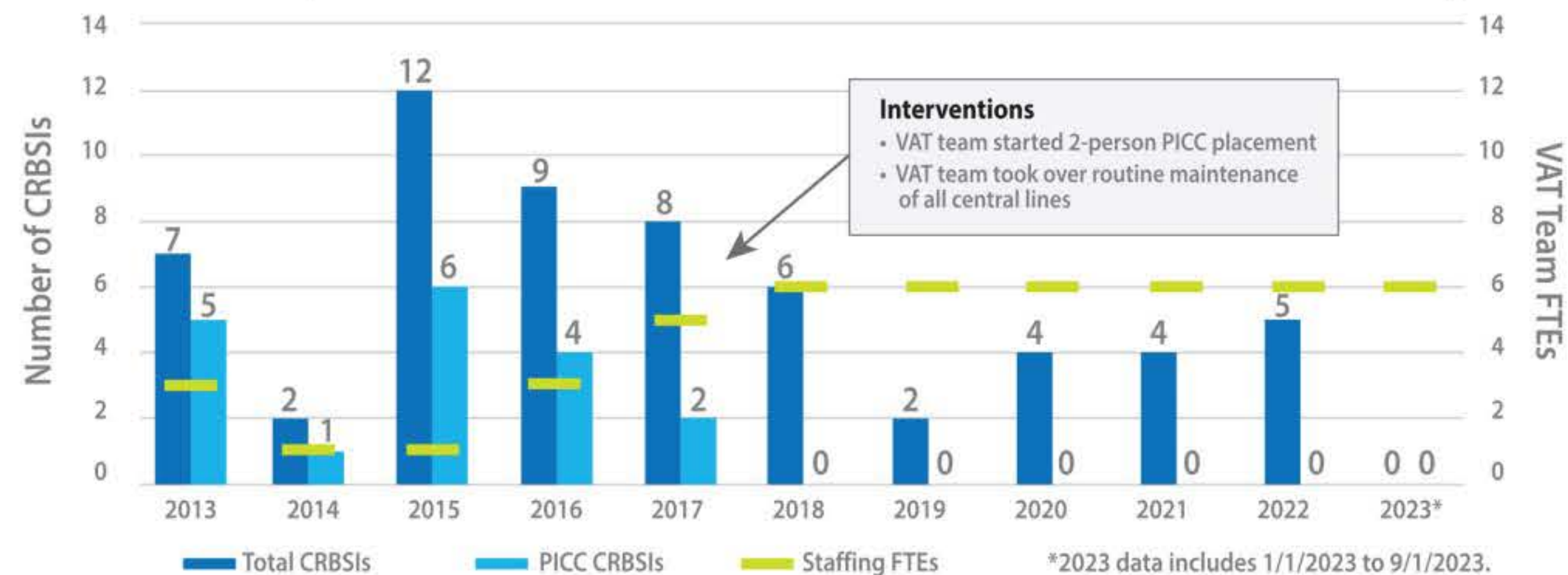
## INTERVENTIONS

In 2014, staffing for our VAT was reduced from 2.5 full-time equivalents (FTEs) to 1.5 FTEs. Subsequent to this change, CRBSI cases skyrocketed from 2 in 2014 to 12 in 2015. At that time, half of the CRBSIs occurred in PICC lines placed by our team. By 2017, VAT staffing had increased to 6 FTEs in response to CRBSI data collection we had performed. This change in staffing allowed for 2-person placements of PICCs and greater focus on the care and maintenance of all CVCs. In addition, our team members all achieved Vascular Access Board Certification (VA-BC).

Our team assessed all CVCs within 24 hours of placement or admission if CVCs were already in place. We placed only antithrombogenic and antimicrobial catheters to reduce CRBSI and deep vein thrombosis (DVT) risk. We also utilized a subcutaneous anchor securement system (SASS)<sup>1</sup> to prevent micro-pistoning and malposition of the catheter. In addition, we incorporated tissue adhesive at the insertion site to promote hemostasis and prevent the need for premature dressing changes.



## Relationship Between Number of CRBSIs and Vascular Access Team Staffing



Abbreviations: CRBSIs – Catheter-Related Bloodstream Infections; FTEs – Full-Time Equivalents; PICC – Peripherally-Inserted Central Line; VAT – Vascular Access Team

Figure 1: Reduction in CRBSIs follows increase in number and expertise of VAT staffing.

## RESULTS

Between January 2017 and September 1, 2023, our VAT placed 3729 PICCs and midlines. There have been no CRBSIs identified in the 3729 lines our VAT has placed since June of 2017 (Figure 1). CRBSIs occurred only in the lines placed by non-VAT team members.

## CONCLUSIONS

By maintaining an adequately staffed and certified VAT, patient harm related to vascular access therapy can be reduced and potentially even eliminated. This will reduce unnecessary hospital costs, improve patient satisfaction, and save lives. With increased FTEs, a VAT can more readily perform care and maintenance of CVCs, provide real-time education for staff and patients, and consult with providers using the most current EBP.

## FUTURE DIRECTIONS

Our goal includes maintaining the practice of 2-person central line placements. We would also like to increase our FTEs even further to expand the hours of our team and continue excellent care of our in-house central lines, decreasing overall CRBSIs and improving our patient satisfaction.

It is imperative for a highly skilled VAT to be able to place the most appropriate line for the patient as soon as possible. In 2021 our team was approved to place CVCs in adult patients using the internal jugular (IJ) or femoral vein. Continuing to incorporate temporary CVCs as a skill for the VAT is a logical and valuable path toward improved patient care.

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