

The Challenges of Vascular Access

Vascular access device insertion is one of the most frequently performed invasive procedures¹

Peripheral intravenous catheters (PIVCs) are used for:¹




Central vascular access devices (CVADs) are used for:²





More than 400 million
 PIVCs are sold in the U.S. each year³


Up to 50%
 of catheters require replacement before the completion of therapy¹


Up to 25%
 of central lines need to be removed prior to completion of therapy in pediatric patients⁴


More than 4 million
 CVADs are sold in the U.S. each year³


 **Up to 90%**
 of hospitalized patients receive a PIVC¹

 **Up to 1 in 4 patients**
 who acquire a central line-associated blood stream infection (CLABSI) will die⁷


 **An estimated 1 in 3**
 healthcare-associated *S. aureus* catheter-related bloodstream infections (CRBSIs) are due to PIVCs⁵

 **On average, up to 82 patients**
 acquire a CLABSI everyday¹²

 **Up to 63%** of ED PIV insertions resulted in a breach in aseptic technique⁸

 **Up to 28%**
 of CLABSIs are antimicrobial-resistant in acute care settings⁶

 **46% of clinicians**
 experience monthly blood exposure during IV catheter insertion and


 **Occlusions occur in up to 36%**
 of long-term central venous catheters⁹


 **42% at removal**¹⁰


 **72% of CLABSIs**
 occur more than 5 days after insertion¹¹

Contributing factors to complications...



 **Variation in policy, practice and training**¹³

 **Inappropriate device selection, placement, care and maintenance**^{13,24}

 **Variation in patients** (>50% may be difficult intravenous access)¹⁴

Vascular access complications cause substantial burdens...

Economic outcomes


- Unnecessary PIV restarts can cost a 200-bed hospital more than **\$980,000** annually.¹
- CLABSIs are estimated to cost the U.S. healthcare system **\$45,814** per occurrence or **~\$1.9 billion** every year.¹⁶
- Bloodstream infections (BSIs) not associated with a central line captured as hospital onset bacteremia (HOBs) cost **\$23,998** per occurrence.¹⁵

Patient experience

- Treatment of CRBSIs can extend a patient's **length of stay**.¹⁶
- Multiple insertion attempts **increase pain** to the patient.¹⁸
- Needlesticks are a fear in **1 of 4** adults and **1 of 3** children.¹⁷

Clinical outcomes

- CLABSI patients have been associated with **2.27x greater risk** of mortality than non-CLABSI patients.²⁰
- In the ICU setting HOBs represent **up to 17x** the occurrence rate of CLABSIs alone.²²
- The overall median rate of HOB is **up to 0.124 per 100** admissions.¹⁹
- In a systematic review of disinfection practices, **33% to 45%** of needleless connectors were contaminated with a **10%** compliance rate to decontamination.²¹

 **Quality assurance and performance improvement plans should include multidisciplinary functions and an integrated multimodal approach such as:**

- Education and training of healthcare workers²³
- Products that support and align to industry best practices²³
- Surveillance and feedback²⁴

Care and maintenance of catheters should be the focus of performance improvement and quality assurance²⁴



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Glossary

BSI: Bloodstream infection

CLABSI: Central line associated bloodstream infection

CRBSI: Catheter-related bloodstream infections

CVAD: Central vascular access device

HOB: Hospital-onset bacteremia

ICU: Intensive Care Unit

PIVC: Peripheral intravenous catheter