Peripheral intravenous catheters (PIVCs) are used for:

- Intravenous therapy
- Medications
- Hydration
- Infusions

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

Up to 50% of catheters require replacement before the completion of therapy.

Central vascular access devices (CVADs) are used for:

- Intravenous therapy
- Extended and repeated access
- Administration of irritant or vesicant drugs

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

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

Contributing factors to complications...

- Variation in policy, practice and training
- Inappropriate device selection, placement, care and maintenance
- Variation in patients (>50% may be difficult intravenous access)

Vascular access complications cause substantial burdens...

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

- Patient experience
  - Treatment of CRBSIs can extend a patient’s length of stay.
  - Multiple insertion attempts increase pain to the patient.
  - Needlesticks are a fear in 1 of 4 adults and 1 of 3 children.

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

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

- Education and training of healthcare workers
- Products that support and align to industry best practices
- Surveillance and feedback

Care and maintenance of catheters should be the focus of performance improvement and quality assurance.
References


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