## Background

Since the mid-1980’s Peripherally Inserted Central Catheters (PICCs) have been accepted as an appropriate vascular access device in patients requiring midterm access. Over the past decade, PICCs have proven to be an appropriate and safe vascular access device for the acute care setting. With the addition of ultrasound technology, bedside placement has become safer and successful. PICCs are supported by the AHRQ (2001), CDC (2002), INS, and AVA. The IHI initiative however did not include PICC insertion, care and maintenance in their guidelines for CRBSI reduction. In December 2005, we were a small team focused on peripheral intravenous (IV) starts and few peripherally inserted central catheter (PICC) insertions. It was determined that to improve patient outcomes, become more cost-effective, and improve continuity of central venous catheter care, we needed to change our service model. The team would be lead by Suman Kaushal RN, BSN. Ultrasound guided PICC insertion and maintenance of vascular access devices allows for development and implementation of an advanced vascular access team that would take complete ownership of PICC process from assessment to insertion and beyond. This would improve patient safety and satisfaction and become the cornerstone of a CRBSI reduction bundle.

## Description of Project

- **January 2006**: Our primary peripheral IV team was redirected towards an advanced vascular access team.
- **2006 thru June 2008**: 4-5 team members covering Monday—Friday from 7 a.m.—7 p.m.

## Outcomes

- **2005**: 33 PICC insertions
- **2006**: 115 PICC insertions
- **2007**: 260 PICC insertions
- **2008**: 448 PICC insertions (1st & 2nd Qtr.)

## Incidence of CRBSI in PICC Lines

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## System metrics

- **CRBSI rate**: 1.5 per 1000 PICC days.
- **Maximum Barriers Precautions**: Staff Orientation: Vein Assessment, Ultrasound placement, Chest X-ray confirmation class with competency, Competency Checklist, Needleless Connector, Septum Disinfection, Radiographic Interpretation, Anti-microbial interventions, Catheter flushing, Staff education.
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## Conclusion

The development of SRMC’s advanced vascular access team set the standard of practice for choosing the right line for the right patient, based on patient’s diagnosis and therapy. Taking full ownership of the PICC process from assessment, to insertion, to maintenance, and to catheter disconnection, has improved outcomes, decreased patient-related complications, and improved continuity of care for our patients. Minimizing or eliminating high risk PICC team at SRMC, achieved over 2000 PICC line insertions with a 2% CRBSI rate.

## Antimicrobial Interventions

- **Flushing Protocol**
  - Normal saline followed by flush
  - No pressure dressing
  - Completed daily during site checks and dressing changes
  - Change dressing then weekly
  - Irrigation
- **Insertion Site**
  - Antimicrobial Biopatch
  - Maximum Barrier Precautions
  - Skin preparation Chloroprep

## Staff Education

- **Training for PICC Team**
  - One-on-One Training at the bedside
  - Ultrasound Guided PICC Placement
  - Catheter Care / Daily Maintenance

## PICCs in Interventional Radiology

- **PICCs placed in Interventional Radiology**
  - Upper Arm, Basilic Vein
  - Upper Arm, Brachial Vein

## PICC Line Insertions

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## Ultrasound Guided PICC Placement

- **Consistent Ultrasound**
- **Maximum Barrier PICC team only**
- **All central lines**
- **All central lines**
- **All central lines**

## Catheter Flushing

- **Flushing Protocol**
  - Normal saline followed by flush
  - No pressure dressing
  - Completed daily during site checks and dressing changes
  - Change dressing then weekly
  - Irrigation

## Conclusion

The development of SRMC’s advanced vascular access team set the standard of practice for choosing the right line for the right patient, based on patient’s diagnosis and therapy. Taking full ownership of the PICC process from assessment, to insertion, to maintenance, and to catheter disconnection, has improved outcomes, decreased patient-related complications, and improved continuity of care for our patients. Minimizing or eliminating high risk PICC team at SRMC, achieved over 2000 PICC line insertions with a 2% CRBSI rate.