



# PICC Lines:

## Preventing Complications Using Best Practice

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### Abstract

As PICC lines have become more prevalent in the healthcare field, complications associated with them have become illuminated. Common complications associated with PICC lines include infection, occlusion, embolism, dislodgment, bleeding associated with dressing changes, issues with skin integrity, etc. Due to the increase in the use of PICC lines, complications are of increased concern. The research team contacted Spencer Hospital and obtained their current central line policy. The hospital wished for the team to analyze their current policy and make changes necessary to provide a PICC specific policy that is clear and consistent. The research team then dove into a plethora of articles regarding PICC line maintenance. This team found ten articles, in which they yielded interventions related to maintenance and care regarding PICC line care. Based on these findings the researchers reviewed Spencer Hospital's policy, as well as changes we found beneficial, and encouraged Spencer Hospital to incorporate these interventions into their PICC specific policy.

### Purpose

Compare & contrast current PICC line practices at Spencer Hospital to best practices to decrease common complications: infection, emboli, and improve best care of maintaining PICC line care in long term antibiotic use in the adult population.

### Significance

The research will aid in ensuring decreased complications, decreased rate of infections, decreased number of times the PICC needs to be replaced, and overall better care of patients at Spencer Hospital.

### Methods

CINAHL, PubMed, Science Direct, and UpToDate were used as databases. For the literature review various keywords were used: maintenance, care, infection, PICC, PICC line, indications, qualifications, interventions, safety, dressings, assessment, seal, cap, emboli, thrombus, occlusion, occlusion maintenance, CLABSI, central line associated bloodstream infections, nidus, and best practice

### Results

- Daily assessment of PICC line
- Use of needleless connectors and strong chlorhexidine patches and cleansers
- Proper hand hygiene
- Education
- Correct use of sterile technique with insertion, care, and medication administration of PICC line
- Proper healthcare education
- Documentation of PICC line assessment
- Need for dressing changes immediately upon loss of integrity and every 24 hrs. with dressings requiring use of sterile gauze/tape
- Use of passive disinfection caps and push-pause flushing technique
- Implementing use of Bioseal CVC powder with maintenance or antimicrobial catheter during the insertion process
- Having orders added sooner by physicians for the PICC line protocol

### Recommendations

- Daily flush of PICC line
- Cleansing of the port or hub with 70% alcohol and 2% chlorhexidine for 30 seconds and allowing for airdrying of the port or hub for another 30 seconds
- Passive disinfecting caps to replace normal hub caps. These remove the human error of cleansing the hub by cleaning the hub when left on for 60 seconds and removing the need for scrubbing the hub; these hubs can remain on for up to 7 days.
- Insertion of the catheter in regard to using the least amount of lumens possible and using an antimicrobial catheter.
- PICC specific nursing teams as they increase knowledge and confidence when working with all PICC lines and can provide additional education to other nurses on the team.
- Maximum barrier precautions to allow for 30 minutes after domestic cleansing or linen manipulation before PICC line use or care to prevent dust contamination.
- BioSeal CVC powder

### Interventions correlating with Spencer Hospital PICC policy

- Dressing changes done weekly, when compromised, or according to dressing specific recommendations
- Daily assessment of PICC line
- Aseptic technique during all steps of care
- Hand hygiene
- Avoiding the femoral site
- Push-pause method to help avoid occlusions and pushing an occlusion into circulation
- Documentation to prevent major complications
- Prompt removal to decrease complications when PICC line deemed unnecessary

### Conclusion

- Spencer Hospital almost perfectly matches best practice maintenance guidelines found through current studies and literature review
- Increased number of PICC lines being used thus, complications are rising due to healthcare workers unfamiliarity with PICC lines
- Interventions and best practice methods found by the research team were all centered around decreasing most common complications associated with PICC lines: infections, occlusions, emboli, dislodgement, and bleeding associated with dressing changes
- Much of Spencer's central line policy referencing PICC lines coincided with best practice methods found in recent studies and research
- Research team also found slight policy recommendation changes and suggested additional tools be used to help decrease complication rates (i.e., BioSeal CVC powder and passive disinfecting caps)
- Findings concluded in this project will significantly benefit the patients, the staff, and the hospital in Spencer, Iowa

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