**Verifying PICC Line Placement Using 3CG Technology**

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**BACKGROUND**

Problem Focused Trigger
Currently using BARD 3CG PICC Technology
Vascular Access Department

**CLINICAL QUESTION**

For patients requiring central venous access, does 3CG Placement vs Traditional Method decrease time to medication delivery, decrease radiation exposure, and increase patient/nurse satisfaction?

**METHODS TO OBTAIN EVIDENCE**

Literature Search using key words: PICC, ECG, Tip Placement, Accurate Verification Method, Poster presentation at INS

**APPRaisal AND SYNTHESIS OF THE evidence**

John's Hopkins Grading System

<table>
<thead>
<tr>
<th>Number of Articles</th>
<th>Strength of Evidence</th>
<th>Description of Type of Evidence</th>
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<tr>
<td>1</td>
<td>B</td>
<td>Qualitative Experimental Design</td>
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<tr>
<td>1</td>
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<td>Quantitative Experimental Design</td>
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<td>Non-Experimental Design</td>
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Evidence elicited from Chest Journal article

"In Traditional Reading of Bedside CXR Appropriately to detect Internal Central Venous Catheter Position" 2009

- CXR not the gold standard for assessing CVC tip position
- In patients with sinus rhythm, ECG guidance allows CVC placement close to the cavo-atrial junction where a max p-wave amplitude is detected

**SELECTED INTERVENTIONS**

After evaluating available materials, 3CG technique was selected as the technology of choice.

- BARD system was preferred to other system trialed using 3CG allows for precise tip placement in the lower 1/3 of SVC
- Infusion Nurses Society “CVADs shall have the tip dwelling within the superior vena cava near the junction with the right atrium”
- Association for Vascular Access “The most appropriate location for the tip of the PICC line is in the lower one-third of the SVC”
- Eliminating x-ray confirmation saves more than just time- it eliminates exposure to harmful radiation to both the patient and clinician, and it eliminates costs to healthcare facilities.

**IMPLEMENTATION PLAN**

- 3CG Training Period
  - Nov. 1, 2013-December 31, 2013
  - Training session with KRH Radiologist by BARD representative
  - Bard online 3CG training certification
  - Classroom training sessions by BARD
  - Initial insertions by individual Vascular Access RN precepted by BARD
  - 5 - 3CG insertions by each Vascular Access RN verified placement with corresponding CXR

**IOWA MODEL FOR EVIDENCE BASED PRACTICE USED AS A FRAMEWORK**

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**RESULTS**

- Immediate confirmation of PICC tip position at the bedside and immediate release of the PICC line
- Preferred method to CXR and fluoroscopy for PICC tip placement confirmation
- Increase placement efficiency and reduces catheter malposition as compared to “blind” catheter placements
- Decreased costs by eliminating CXR and nursing staff time spent waiting for confirmation readings
- Eliminates CXR exposure to patient and clinician

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**CONCLUSIONS AND RECOMMENDATIONS**

3CG vs Traditional Method

- Patient and Nurse satisfaction was increased due to decrease in average wait time from 60 minutes to immediate release of the line to provide life-sustaining therapy at the bedside
- 3CG technology has become the preferred method to confirm PICC tip location among nursing staff since the implementation process
- By helping to position the PICC tip in proximity to the cavo-atrial junction, the 3CG system helps clinicians comply with AWA and INS guidelines for proper PICC placement
- Patient exposure to CXR radiation has been reduced through this current performance improvement process
- Patient discharge to home has been hastened as patients no longer have to wait for verification of PICC tip placement by CXR
- Cost savings to KRH using 3CG technology $55,476 for 2014

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For additional information please contact:
Vascular Access Team
Kalsperr Regional Healthcare
300-2340
Total PICC lines placed: 40
19 Successful 3CG or 47.5% Success Rate
Total PICC Lines placed: 42
37 Successful 3CG’s or 100% Success Rate