

# The Impact of Procedural Checklist Competency Requirements on Early Chest Port Infections

Steven Zangan, Rakesh Navuluri,  
Jonathan Lorenz, Brian Funaki,  
Thuong Van Ha, Jeff Leef



## Purpose

- Central line associated blood stream infections (CLABSI)
  - Prolong hospital stays
  - Increase cost
  - Important cause of morbidity and mortality

## Purpose

- While subcutaneous port catheters have a lower incidence of infection, adverse events still occur

## Purpose

- Early infections (within 30 days of placement) may be due to a variety of factors
  - Insertion technique
  - Patient skin preparation
  - Operator experience

## Purpose


- We undertook a continuous quality improvement project to evaluate the impact of a multilevel intervention of formalized training and certification of residents, fellows, and technologists on the early infection rate.

## Methods

- Baseline early infection (<30 days) rates as defined by the CDC were obtained in 152 consecutive patients
  - These were segregated by
    - primary operator (Attending, Fellow, Resident)
    - Timeframe (greater than or less than 14 days)

# Methods

- Following establishment of a baseline infection rate, formalized training of residents and fellows was undertaken
  - Hands on suture workshop
  - Satisfactory completion of a skill set with attending level certification



**THE UNIVERSITY OF CHICAGO**  
Department of Radiology

Procedure Competency Checklist  
Section: Interventional Radiology  
Procedure: Central Venous Access  
Catheter type: Port

Resident Name: <input style="width: 80%;" type="text"/>		Date: <input style="width: 15%;" type="text"/>		
Rotation: <input style="width: 40%;" type="text"/>	PGY Level: <input style="width: 10%;" type="text"/>	PGY 3 (PG2)	Yes	No
Obtains informed consent			<input type="checkbox"/>	<input type="checkbox"/>
Completes "Time-Out" form			<input type="checkbox"/>	<input type="checkbox"/>
Resident is wearing scrubs			<input type="checkbox"/>	<input type="checkbox"/>
Resident follows standard scrub protocol			<input type="checkbox"/>	<input type="checkbox"/>
Respects patient's privacy			<input type="checkbox"/>	<input type="checkbox"/>
Wears lead and radiation badge			<input type="checkbox"/>	<input type="checkbox"/>
Able to maneuver fluoroscopic unit/table			<input type="checkbox"/>	<input type="checkbox"/>
Responsive to patient's discomfort			<input type="checkbox"/>	<input type="checkbox"/>
Ultrasound guided puncture performed			<input type="checkbox"/>	<input type="checkbox"/>
Catheter/port placed correctly			<input type="checkbox"/>	<input type="checkbox"/>
Incision is closed satisfactorily			<input type="checkbox"/>	<input type="checkbox"/>
Catheter is flushed with heparin/saline			<input type="checkbox"/>	<input type="checkbox"/>
Caps are placed on catheter(s)			<input type="checkbox"/>	<input type="checkbox"/>
Sticky dressings applied			<input type="checkbox"/>	<input type="checkbox"/>
Paperwork is signed			<input type="checkbox"/>	<input type="checkbox"/>
Report is dictated in timely manner			<input type="checkbox"/>	<input type="checkbox"/>
Uses minimal fluoroscopy time necessary for the study			<input type="checkbox"/>	<input type="checkbox"/>
Exposure time: <input style="width: 50%;" type="text"/>				
Comments: <input style="width: 95%;" type="text"/>				
Competency with procedure achieved			Yes <input type="checkbox"/>	No <input type="checkbox"/>
Faculty Name: <input style="width: 95%;" type="text"/>				

## Methods

- Formalized training of technologists included
  - Observation of a demonstration about sterile technique
  - Completion of an inservice on prevention of port infection
  - Completion of a port placement checklist during subsequent cases

## Methods

- Following the training period infection rates of 415 consecutive patients were calculated

## Results

- During the intervention period, a total of 8 eligible residents (PGY3 or higher) rotated through our section who had completed the suture workshop
- 4/8 (50%) satisfactorily demonstrated competency and were certified as primary operators for port insertion
- Both of two Interventional Radiology Fellows were certified

## Results

- Following the training period infection rates of 415 consecutive patients were calculated

## Early Infection Rate

	Prior to Intervention	Following Intervention
Resident	3.0% (2/67)	2.2 % (2/89)
Fellow	NA	0.6 % (1/170)
Attending	2.4% (2/85)	1.9% (3/156)
Total	2.6% (4/152)	1.4% (6/415)

## Acute Infection Rate

	Prior to Intervention	Following Intervention
Total	0.7% (1/152) (Resident)	0.5% (2/415) (Resident, Attending)

## Conclusion

- Early infection rates of port catheters slightly decreased following the intervention period though this decrease was not statistically significant
- The intervention and formalized process received positive feedback

## Conclusion

- The procedural competency checklist served as a method to document resident ACGME competency in patient care
- We continue the practice of holding an annual suture workshop and formally certifying residents during their Interventional Radiology rotation