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Department of Emergency Medicine

Impact of an Interprofessional Central Venous Catheter Insertion Training Program

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Background:

Evidence suggests that central venous Catheter (CVC) insertion training,^{1,2} the use of ultrasound guidance,^{3,4} and compliance with the Institute for Healthcare (IHI) central line bundle⁵ improve patient outcomes.

Objectives:

Reduce CVC complications including central line associated bloodstream infections (ČLAB).

Methods:

The CVC course is required of all residents who place central lines at LVHN upon entry into residency. A precourse elearning module with video vignettes sets behavioral and collaborative expectations among all providers surrounding the procedure. The course includes: a half-day practical portion with manikin practice, ultrasound for target





vessel verification, and a checklist based competency evaluation. Nurses participate in the course and ensure that the bedside checklist, which includes the IHI bundle, is used as it would be at the bedside. Assessments included post course surveys, focus groups, pre/post/delayed knowledge tests, and registry data that tracks compliance with the IHI bundle and CLAB.

> **Behavior and Communication Around the Procedure**

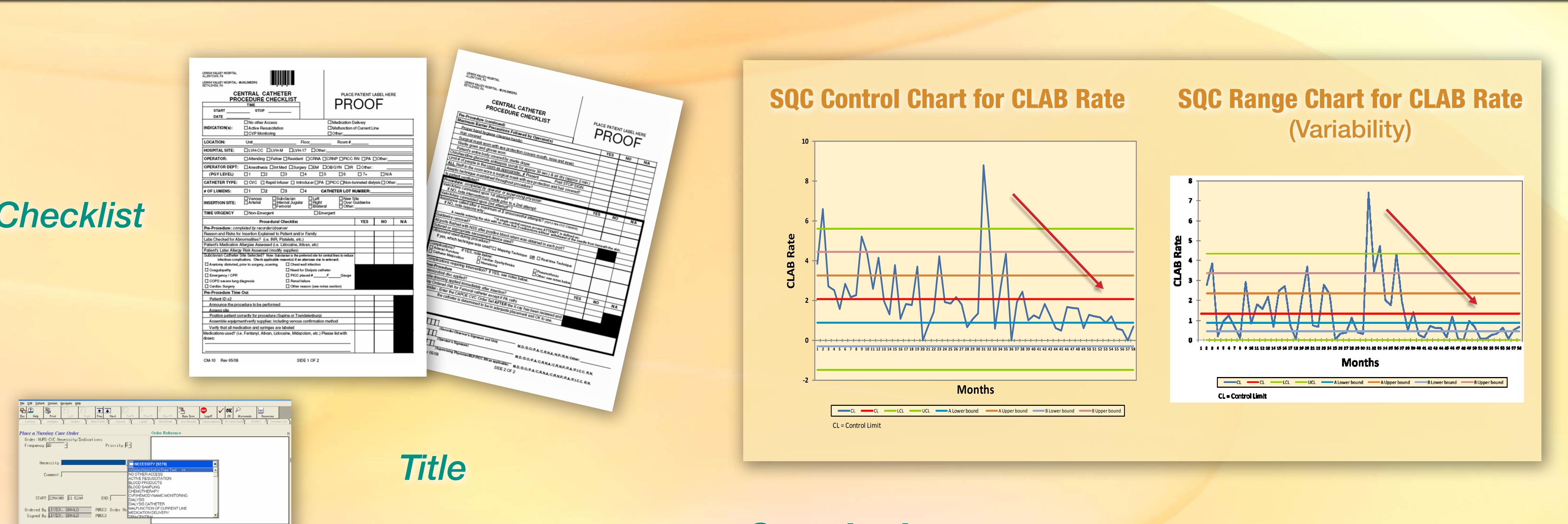
Practice in Seldinger Technique

Technical Aspects of Maintaining Sterile Field

Technical Aspects of nsertion, Complications

Understanding the **Process Surrounding** and post Insertion

The CVC Course



Results:

Place This Order

Focus groups confirmed the need for a check off run and that nurses are helping ensure sterile conditions and challenging residents on the number of needle stick attempts. Statistical quality control measures were used to track the effect of the training process on the CLAB rate for CVCs (peripherally inserted central catheters, PICC lines, excluded) which improved from 3.4 to 0.8 per 1000 line days (P=0.001). Reduced variability in the downward trending rate was reflected by the standard deviation decreasing from 1.45 pretraining to 0.40 post-training.

Print Reference

Skip Remaining Orders Skip This Order

Fiscal Year	Non-PICC Line Days	Infection Rate / 1000 Line Days	Training Cohort (begins with FY)
2006	15,004	3.4	
2007	15,138	2	А
2008	14,136	2.5	В
2009	19,463	1.4	С
2010*	15,781	0.8	D

* = year to date

Conclusion: The CLAB rate was successfully reduced. Check off competency runs and nurse collaboration in the checklist are plausible contributing factors to success.

Next Steps:

Central line training paradigms, including bedside checklists, interprofessional training protocols, and registry methods for performance tracking require refinement and broader application.

References:

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