

Improving Practice Efficiency: Central Line Connector Changes in the PICU

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#1 Pediatric Hospital in Florida

- 259 Bed Pediatric Hospital.
- 50 pediatric Medical & Surgical Subspecialties.
- 63% of beds are ICU level
- 6,750 inpatient admissions annually
- 7,814 total surgeries
- 48,985 Emergency Center visits
- 303,892 outpatient visits
- 3751 employees.
- 10 Specialized Units



Pediatric Intensive Care Unit (2025 By the Number)

Patient Demographics (~1800 Total)

- Male 55.8%
- Neonate (<29d) 1.4%, Infant (29d-2y) 28.5%, Child (2-6y) 21.5%, Child (6-12y) 17.8%, Adolescent (12-18y) 26%, (18-21y) 4.6%, Adult (>21y) 0.2%
- Unscheduled Admission 84.5%
- Post Operative 21.9%
- Primary Diagnosis Category: Respiratory/ENT 39.5%, Neurologic 13.1%, Poisonings & Adverse Effects 9.1%, Endocrine 6.9%, Infectious 6.7%, Gastrointestinal 3.7%, Cardiovascular 3.7%, Oncologic 3.2%, Trauma 2.5% ...

- ❖ 28 bed unit & 123 Nurses
- ❖ Years of Experience: <2 yrs: 40%, 2-5 yrs:36%, 5 - 15yrs: 17%, > 15 yrs: 7%
- ❖ New Hires: Experienced: 10; Fellowship: 3; Residency: 21
- ❖ Advanced Therapies include: CRRT, ECMO, Peritoneal Dialysis

Central Venous Lines (CVLs) & Connectors

- Catheter-related bloodstream infections (CLABSI) are a serious threat for critically ill pediatric patients.
- To minimize this risk, our institutional policy requires central line connectors to be changed at least every **96** hours and *PRN*.
- Traditionally, this procedure involved two nurses: a sterile nurse to perform the change under sterile conditions and a clean nurse to assist.



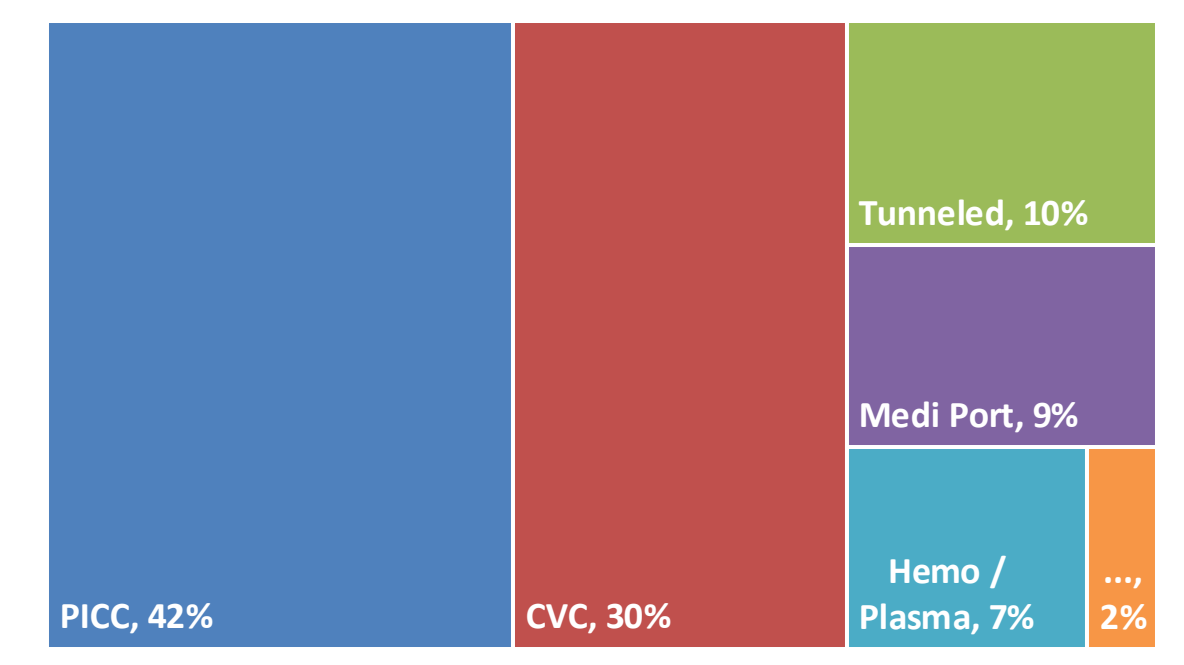
Hopkins Policy CLNPOL079

- ✓ Always handle catheter hubs and caps aseptically
- ✓ Scrub all connections with alcohol for 15 seconds and allow it to dry for 5 seconds



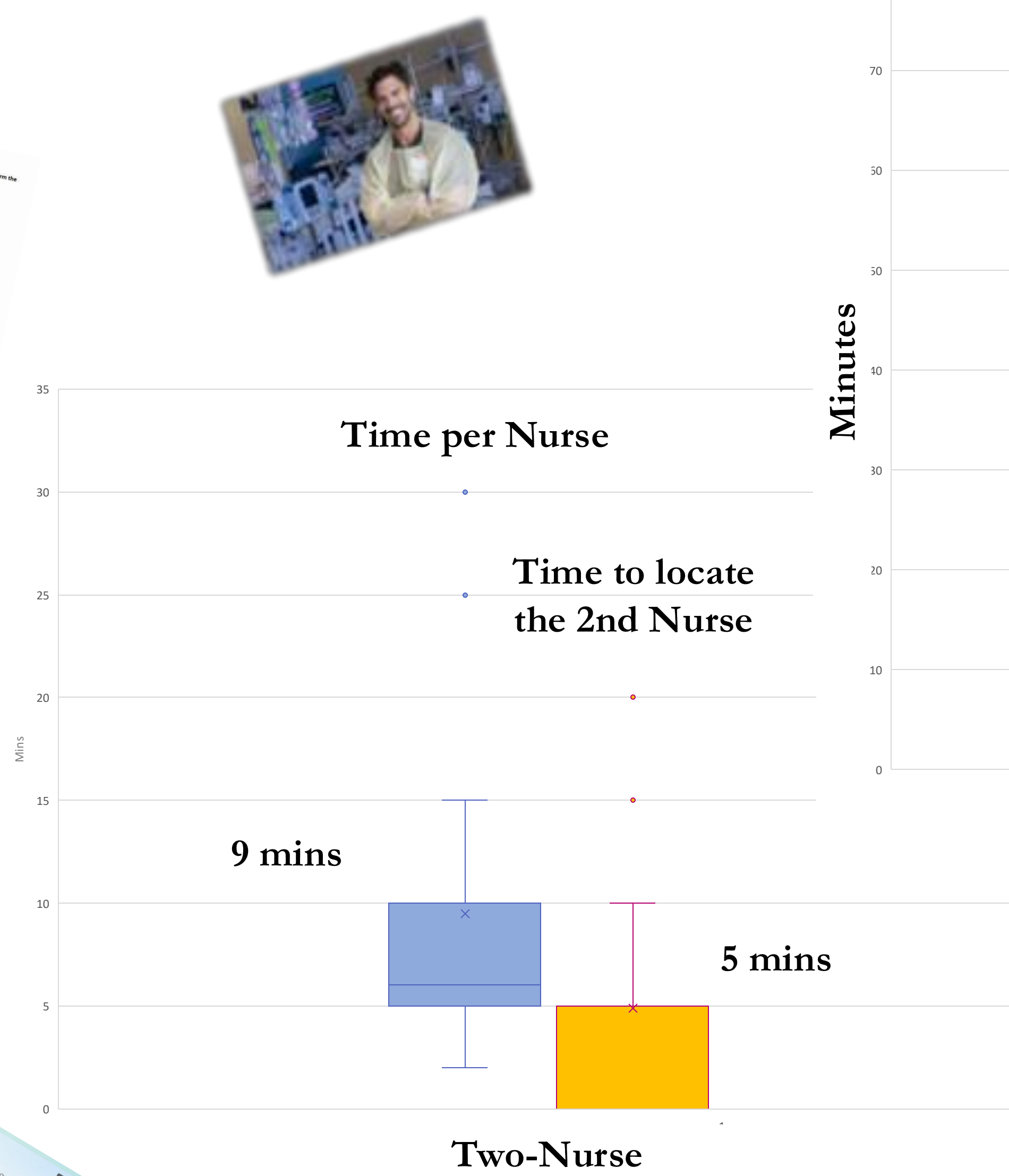
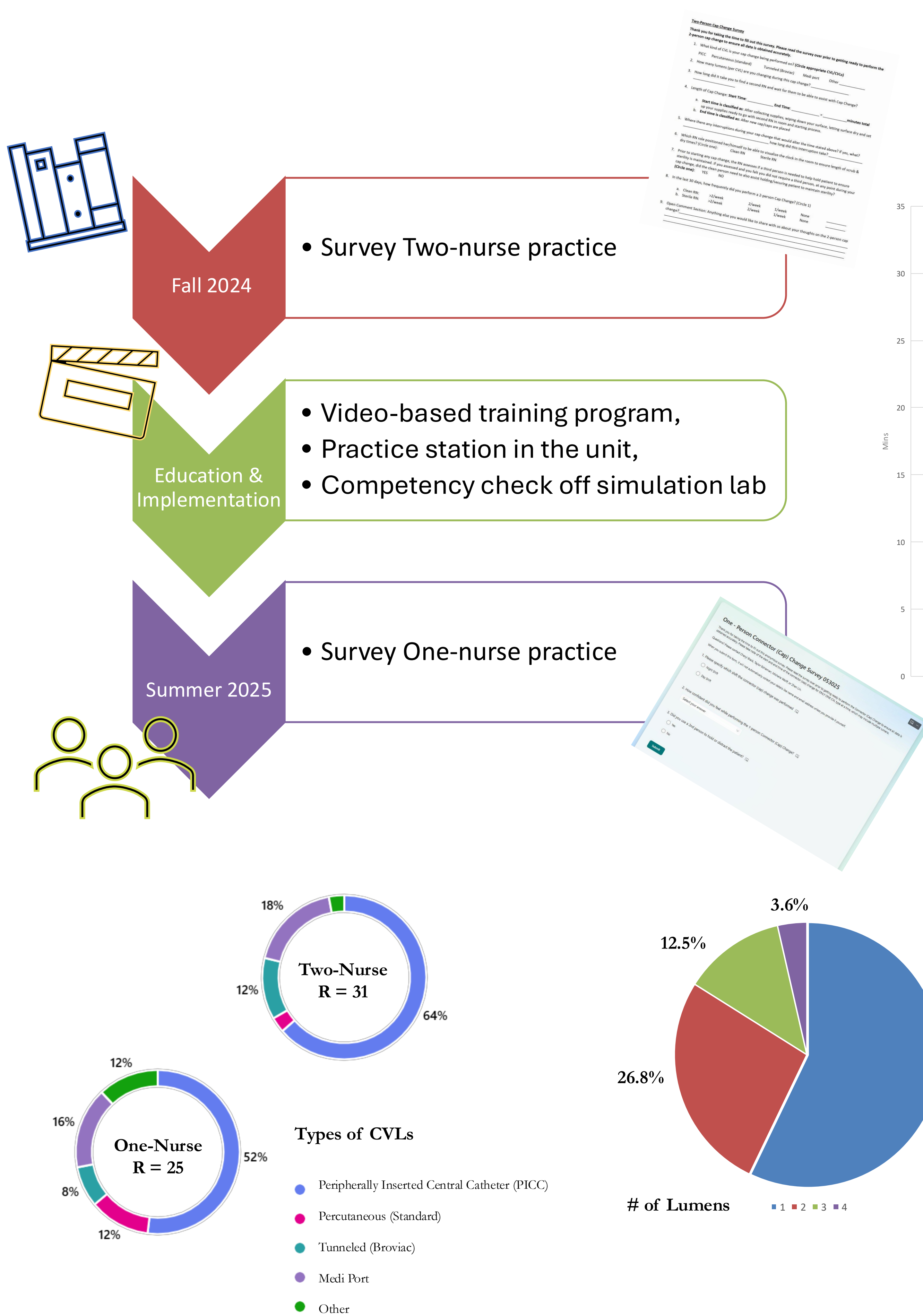
Single, Double, and Triple Lumen CVLs

CVLs Utilization at PICU (395 Total for 2025)



Two-nurse -> One-nurse

GOAL: To determine whether connector changes could be safely performed by a single nurse, consistent with national best practices, while improving efficiency and preserving quality and safety.



Estimation:
Min. of 25 Connector Changes per Month -> ~ 300 mins (5 hrs) saving in Nurse Time (for enhancing patient and family education and satisfaction)

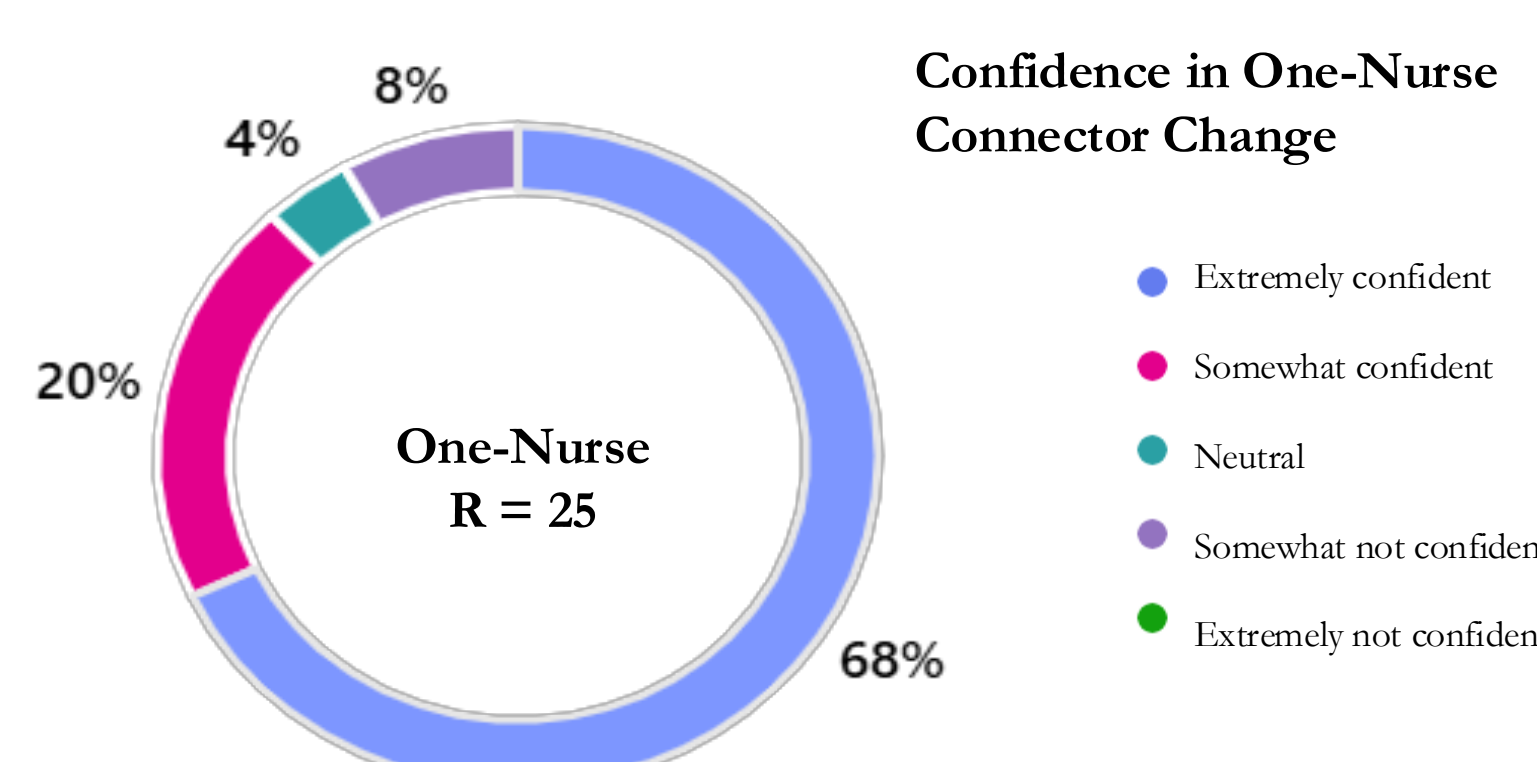
Day Shift Responses

32%

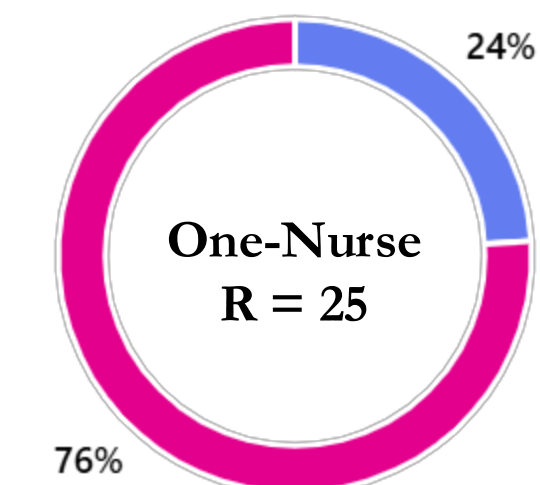
Night Shift Responses

68%

Confidence in One-Nurse Connector Change

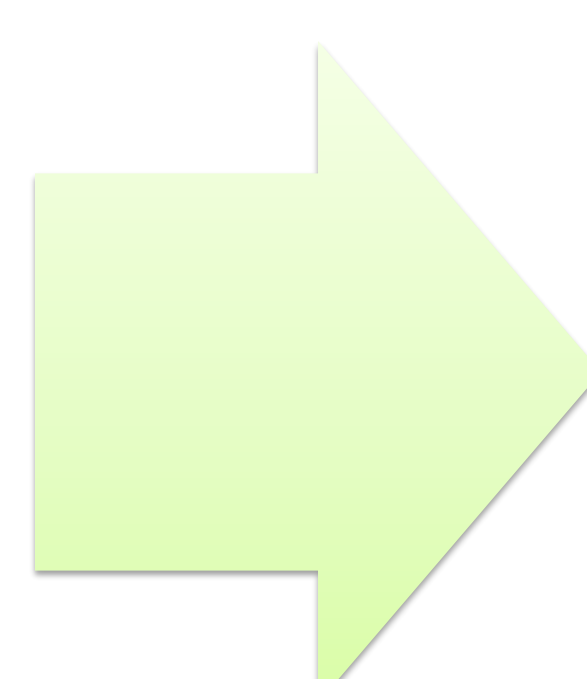


Assistance Requested from a 2nd Person



Lessons Learned and Next Steps

- Involve scientific partners from the start of the project.
- Multidisciplinary support is essential for success.
- Human factors should be considered to reduce errors.
- Conduct spontaneous process audits after the trial begins.
- Gather feedback from nursing staff through surveys.
- Analyze CLABSI incidents for patient types and prevention compliance.
- Document additional CLABSI initiatives throughout the trial.



- Explore alternative methods or approaches for the One Nurse Connector Change.
- Conduct further pilots with different patient populations or expand the initiative to multiple units.
- Foster engagement for future research or quality control studies.
- Continue future nurse-led studies that could impact clinical practice.

We extend our heartfelt thanks to our PICU nurses for their unwavering support of this pilot and for providing outstanding care to our patients and families. every day.

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