



# Central Line Dressing EBP & QI Project Leads to CLABSI Reduction in the PICU/PCICU

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## Background

- Central line-associated bloodstream infections (CLABSI)
- Major source of hospital-acquired infection (HAI) in the pediatric intensive care unit (PICU)
- Associated with increased morbidity, mortality, and health care costs
- In **Fiscal Year (FY) 2019**, the PICU/pediatric cardiac intensive care unit (PCICU) had a CLABSI **count of 6** and **Standardized Infection Ratio (SIR) of 1.3**

## Objective

- Reduce the CLABSI rate in the PICU/PCICU at UC Davis Children's Hospital
- AIM: **Reduce** the PICU/PCICU CLABSI **count to ≤ 4** and **SIR to ≤ 0.5** in FY 2020

## Design & Methods

Setting: 24-bed combined PICU/PCICU at UC Davis Children's hospital

Method: Implementation of evidence-based practice for maintaining central line dressings. Evidence-based practice was discovered through a recent literature search and "deep dive" with similar institutions.

Nurse-driven team implemented **3 interventions** that led to CLABSI reduction in the PICU/PCICU:

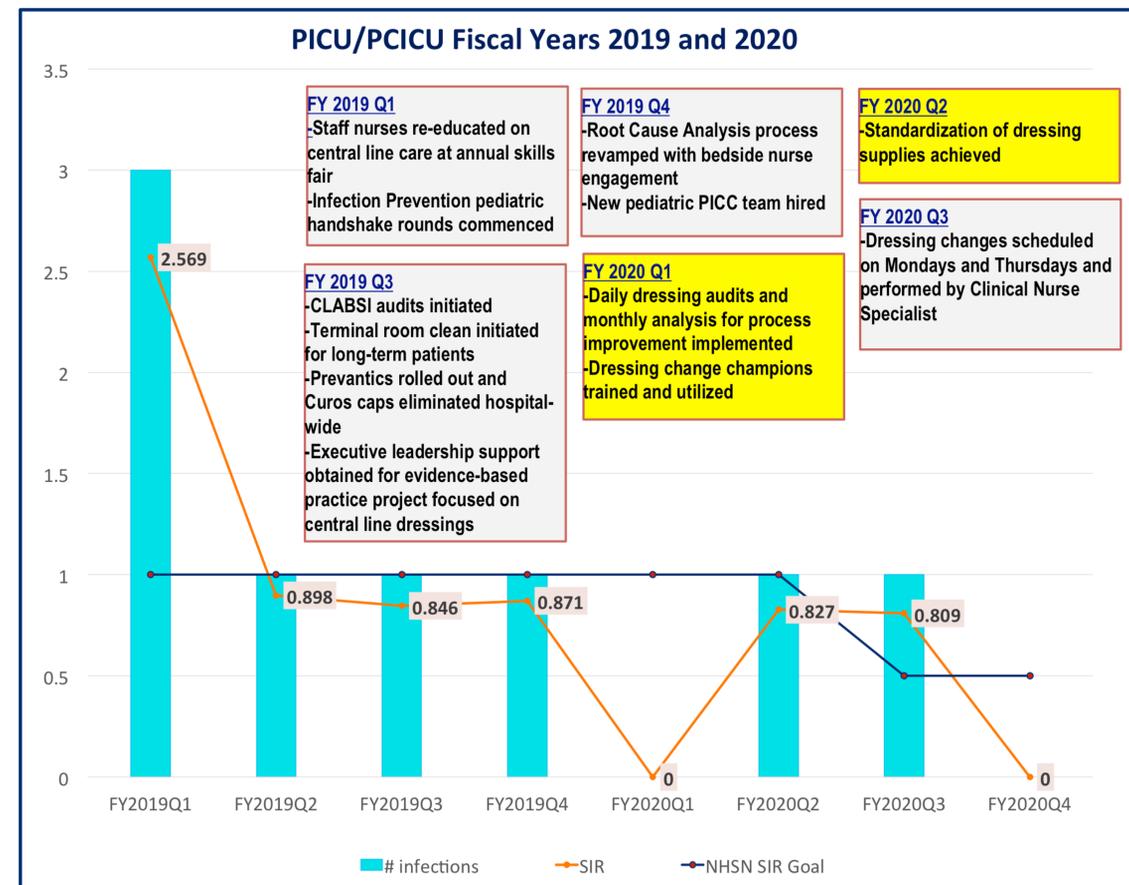
- Daily central line dressing audits
- Standardization of dressing supplies in the PICU/PCICU
- Designation and training of "dressing change champions" to perform all dressing changes

## Data Collection & Analysis

- Daily audits** of dressings from July 2019 - June 2020: Approximately **200 per month**, for 12 months, totaling approximately **2,400 audits in one year**
- Data collected on audits (included but not limited to):
  - Is dressing intact?
  - Is dressing up to date?
  - Is dressing applied appropriately?
  - Does dressing need to be changed?
  - Any concerns regarding dressing?
- Monthly analysis of data collected from audits to guide QI process
- Compare PICU/PCICU CLABSI count and SIR, before and after intervention

## Results

Prior to intervention, the PICU/PCICU had a CLABSI **count of 6** and **SIR of 1.3** in FY 2019. After intervention, the PICU/PCICU had a CLABSI **count of 2** and **SIR of 0.458** in FY 2020.



## Conclusions

- Teamwork and vigilance amongst our nurse-driven, multidisciplinary team in following the interventions led to a reduced CLABSI rate and SIR in FY 2020
- Findings of this project suggest that implementing this project in your own unit may help to decrease CLABSI rate

## Limitations

- Short time frame
- Single patient setting
- Other coinciding interventions limit ability to isolate effect of dressing change interventions alone
- Unpublished UCDH data may indicate improved staff hand hygiene compliance during the Covid-19 pandemic, coinciding with data for FY 2020 Q4

## Further Study

- Expand to other units
  - Can the interventions be replicated?
  - Would it result in a reduction in CLABSI rate?
- Are the interventions sustainable and result in continued lowered CLABSI rates?
- Will the alteration of the frequency of central line dressing audits affect the result?
- Will covert audits reflect a unit's culture change?

## References

Holzmann-Pazgal, G., et al. (2011). Utilizing a line maintenance team to reduce central-line associated blood stream infections in a neonatal intensive care unit. *Journal of Perinatology*, 32:281-286

Kramer, C., et al. (2019). A quality improvement approach in standardizing pediatric central venous catheter dressings and its impact on the reduction of central line-associated bloodstream infections and costs. *Journal of the Association for Vascular Access*, 24(2): 11-19

Wood, K.L. (2017). The impact of a team approach to central line care in preventing central line-associated bloodstream infections. *American Journal of Infection Control*, 45(6):S84-S85

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