



Impact of Alcohol Impregnated Port Protectors and Needleless Neutral Pressure Connectors on Central Line-Associated Blood Stream Infections and Contamination of Blood Cultures in an Inpatient Oncology Unit

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ABSTRACT

- Background:** Patients with central venous catheters are at increased risk for central line-associated blood stream infections (CLABSI) and unnecessary treatment due to contaminated blood cultures. CLABSI and contaminated blood cultures (CBC) are associated with improper care of central line hubs. Oncology patients are at especially high risk for these complications.
- Objectives:** To decrease the rates of CLABSIs and CBCs by implementing alcohol impregnated port protectors and needleless neutral pressure connectors to all central venous catheters on the oncology ward.
- Methods:** During the intervention period the practice of central line hub care was changed from traditional alcohol wipes to using an alcohol impregnated port protector. To accommodate the port protectors, the needleless hubs were changed to a neutral pressure connector. The study locations were the 12-bed Blood and Marrow Transplant and 20-bed Oncology Units. We conducted an observational study to evaluate the impact of the interventions. The intervention period (January-July 2010) was compared to historical control (January-December 2009). Compliance with the impregnated caps was monitored weekly.
- Results:** During the control period, there were 895 admissions contributing 5494 line days and 16 infections (2.9 infections/1000 central line days). During the intervention period, there were 475 admissions with 2493 line days and 1 infection (0.4 infections/1000 central line days) (P=0.0318). Had the rate of infections not been reduced, we would have expected to see 7 infections during the study period. The rate of CBCs from central lines was 2.5% (17/692) and 0.2% (1/470) during the control and intervention period (P= 0.002), respectively. Estimated annualized costs associated with CLABSI and contaminated blood cultures was \$565,000 and \$65,000 during the two periods, resulting in a cost avoidance of \$500,000. The rate of compliance was >85% for the study period.
- Conclusions:** The implementation of an alcohol impregnated port protector and needleless neutral pressure connector significantly reduced the rate of CLABSI in our oncology population. In addition, the rate of CBCs was significantly reduced. This intervention was easily introduced, with a high rate of compliance and significant cost reduction to our hospital.

Introduction

- Central venous catheters increase risk for CLABSIs and CBCs
- Oncology patients are at increase risk for complications of CLABSIs and CBCs
- CLABSIs and CBCs are associated with improper hub care
- Optimizing hub care will decrease CLABSIs and CBCs
- New technologies of an alcohol impregnated port protectors and needleless neutral pressure connectors is one solution to optimize hub care

Goals

- To determine the decrease of CLABSI with intervention
- To determine the decrease of CBCs with intervention
- Assess cost avoidance associated with the intervention

Methods

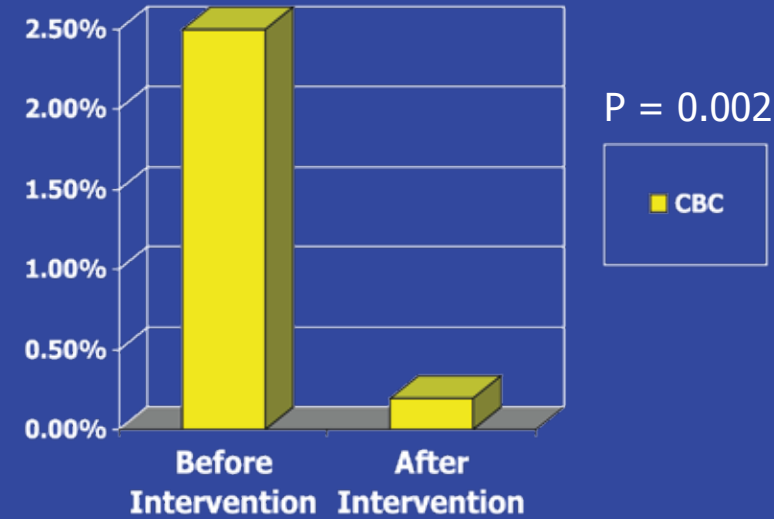
- Observational study
- Conducted in a 32 bed inpatient oncology unit
- During the intervention period the practice of central line hub care was changed from traditional alcohol wipes to using an alcohol impregnated port protector (CUROS® [Ivera Medical, San Diego, California])
- Needleless hubs were changed to a neutral pressure connector (MicroCLAVE® [ICU Medical, San Clemente, California])
- Control period for CLABSI January – December 2009
- Control period for CBC was July – December 2009
- Intervention period was January – July 2010
- Assigned cost avoidance of \$30,000 per CLABSI
- Assigned cost avoidance of \$2,500 per CBC



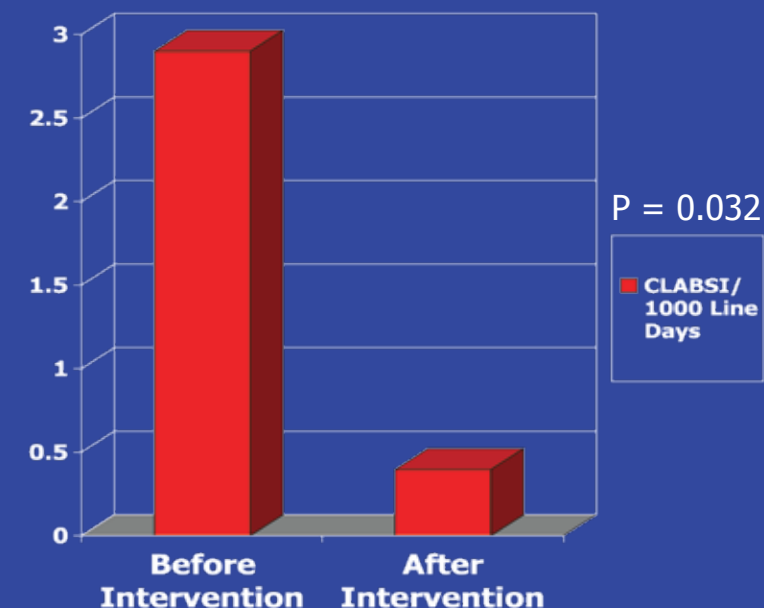
Results

	Before Intervention	After Intervention
CLABSI	16	1
Central Line Days	5494	2493
CBC	17	1
Cultures Drawn	692	470

Percentage of CBC

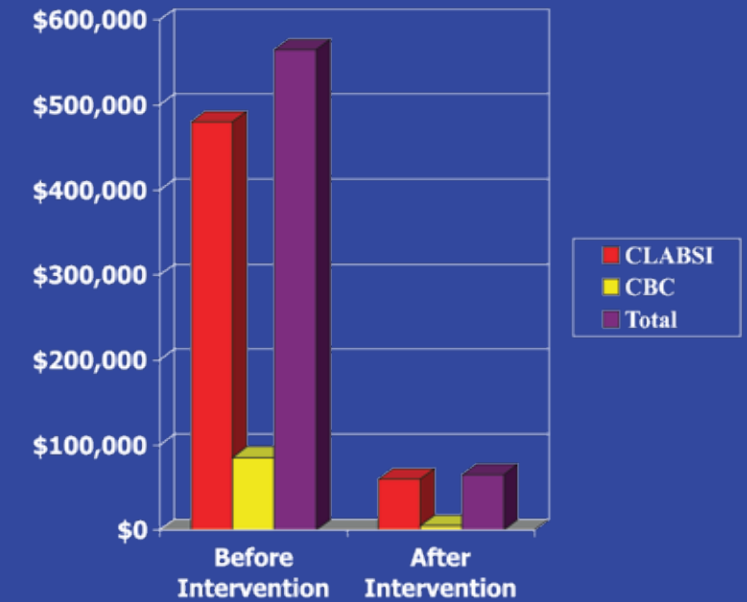


CLABSI Rate



Results

Estimated Annualized Costs



Conclusions

- There was a significant reduction in the rate of CLABSI/1000 line days from 2.9 to 0.4
- There was a significant reduction in the percentage of CBC drawn from central venous catheters from 2.5 to 0.2
- There was an estimated annualized savings of ~\$500,000 after subtracting the cost of protectors and connectors
- This intervention was successful in our oncology unit

References

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Disclosure: Product was supplied by Ivera Medical, San Diego, California