CLABSI Reduction using Novel Technology and Nursing Best Practice

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Background
Healthcare associated infections (HAIs) contribute to increased mortality, increased hospitalization time, and higher medical expense for both patients and the healthcare facility. Patients in Long Term Acute Care Hospitals (LTACH) are at increased risk of developing a HAI because of their average length of stay of more than 25 days, medical complexity, comorbidities, and their greater need for invasive devices to provide appropriate medical care. We implemented an interdisciplinary Infection Control approach that consisted of novel technology and nursing best practices to reduce Central Line Associated Bloodstream Infections (CLABSIs).

Purpose
Determine the effectiveness of neutral pressure antimicrobial needleless connector with chlorhexidine and silver on reducing CLABSI rates and the financial impact on discontinuing the use of passive alcohol disinfection caps.

The Change

Jan-­‐Jun 2014
- High Infection Rate.
- Adopted the use passive alcohol disinfection caps and neutral pressure antimicrobial needleless connector.

Jul-­‐Dec 2014
- Provided staff education on best-practices.
- Continued the use of passive alcohol disinfection caps and neutral pressure antimicrobial needleless connector.

Jan-­‐Jun 2015
- Reinforced education on swabbing connectors prior to each access with standard alcohol wipes.
- Discontinued the use of passive alcohol disinfection caps.

The Results
Comparing rates per 6 month periods, we decreased CLABSI rates by 20% from 2.04 to 1.64 per 1,000 line days after staff education, followed by a 40% decrease from 1.64 to 0.99 per 1,000 line days after discontinuing the use of the passive alcohol disinfection caps. This resulted in an overall reduction on CLABSI rate of 51% during the 18 month period.

The Logic Behind the Change
The hypotheses was the staff was experiencing a false sense of security with the passive alcohol disinfection caps, thus creating a lack of compliance with proper disinfection prior to accessing the lines. Due to the antimicrobial nature of the neutral pressure needleless connector with chlorhexidine and silver, the manufacturer does not recommend the use of alcohol disinfection caps. In our efforts to decrease CLABSIs and reduce expenses we agreed to discontinue the use of alcohol disinfection caps and reinforced education on swabbing connectors prior to each access with standard alcohol wipes. The use of an antimicrobial needleless connector with chlorhexidine and silver would contribute significantly to protect the intraluminal pathway of the patients’ catheters, and education regarding best practices would protect the patients’ catheters from extra-luminal contamination, resulting in excellent overall outcomes.
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The Financial Impact

Cost per CLABSI for this hospital takes the estimated variable cost per CLABSI of $2,640 and adds 6 days of zero pay which results in an average lost net revenue per patient day of $1,770 to get an estimated overall dollar amount of $13,260 for CLABSI expense and lost net revenues.

- Alcohol disinfection caps: $2,898/period
- Neutral pressure antimicrobial connectors: $8,991/period
- Cost per CLABSI for this hospital: $13,260 (estimated)

CLABSI Cost + Supply Expenses per period

- January to June 2014: $117,969 (8 CLABSIs)
- July to December 2014: $91,449 (6 CLABSIs)
- January to June 2015: $48,771 (3 CLABSIs)

The Results

In total, CLABSIs related expenses and lost revenue decreased by 22% in the 2nd period after providing staff education only and by 47% in the 3rd period after reinforcing education and discontinuing the use of the passive alcohol disinfection caps. This resulted in an overall 59% decrease in CLABSIs related expenses and lost revenue from January 2014 to June 2015.

Conclusion

A hospital will significantly reduce their CLABSI rates and demonstrate improved financial performance by using neutral pressure antimicrobial needleless connectors with chlorhexidine and silver, without the use of passive alcohol disinfection caps, and by incorporating evidenced-based practice education, and implementing an interdisciplinary infection control approach to reduce HAIs.