Author(s): Robert Cooney, MPH, MSE, BSN, RN, CIC - Infection Prevention Manager, UNC Rex Healthcare; Paul Becherer, MD, MPH, FACP - Infectious Diseases Physician, Raleigh Infectious Disease; Nisha Minickam, DO - Infectious Diseases Physician, Raleigh Infectious Disease; Liza Gregg, MSN, BSN, RN, CIC, CPHQ - Infection Preventionist, UNC Rex Healthcare; Zena Farkas, MSHCA, BSN, RN, CIC - Infection Preventionist, UNC Rex Healthcare; Louanne Shea, BSN, RN, CIC - Infection Preventionist, UNC Rex Healthcare; Wanda Shade, BSN, RN, VA-BC - Coordinator, Vascular Access Resource Nurse Team, UNC Rex Healthcare

Publication: Title and Journal/Conference
The Effectiveness of 3.15% Chlorhexidine Gluconate/70% Alcohol Hub Disinfection to Prevent Central Line-Associated Blood Stream Infections.

Poster presentation at the Association for Professionals in Infection Prevention and Epidemiology (APIC) Conference, June 2018

Methodology/Study Design:
• Quasi-experimental observational study conducted reviewing inpatient CLABSI events, locations, device days, and confounding variables over a 10 year period.
• Incidence density rates were used to compare the intervention and pre-intervention periods.

Experiment
• The 3 highest risk (of 16) inpatient units (Dialysis, Oncology and Medical Surgical Intensive Care Unit) were selected for a trial and represented 52.8% of all CLABSI infections.
• In 2013, 70% alcohol swabs and alcohol disinfecting caps were replaced by 3.15% CHG/70% alcohol swabs for central line hub disinfection prior to access.
• This intervention was trialed for a 6 month period, and then initiated on all adult inpatient units.
Results/Conclusions

- The 5 year pre-intervention period (2008-2012) showed a total of 79,191 central line days, 72 CLABSI events, and a rate of 0.90 per 1000 device days.
- The 6 month trial period involved 5,466 central line days, 3 CLABSI events, and a rate of 0.54 per 1000 device days.
- The 5 year post-implementation period (2013-2017) showed a total of 91,250 central line days, 53 CLABSI events, and a rate of 0.58 per 1000 device days.
- The post-implementation period represented a statistically significant (p-value = 0.013) reduction in CLABSI events compared to the pre-implementation period.
- 74% reduction in CLABSI over a 10 year period represented a statistically significant (p-value = 0.013) reduction in CLABSI events compared to the pre implementation period.
- This study found that using alcohol with CHG for central line hub disinfection prior to access makes it possible to achieve the goal of reducing CLABSI events while sustaining statistically significant lower CLABSI rates.

Limitations

- With many variables involved in CLABSI prevention, it is difficult to establish full effect of CHG/ALC device swab alone.
The Effectiveness of 3.15% Chlorhexidine Gluconate/70% Alcohol Hub Disinfection to Prevent Central-Line-Associated Blood Stream Infections

Robert M. Cooney, MPH, MSE, BSN, RN, CIC, Paul Becherer, MD, MPH, FACP, Nisha Manickam, DO, Liza Gregg, MSN, BSN, RN, CIC, CPHQ, Zena Farkas, MSHCA, BSN, RN, CIC, Louanne M. Shea, BSN, RN, CIC, Wanda Shade, BSN, RN, VA-BC

Background
Central-line-associated bloodstream infection (CLABSI) events lead to increased complications, costs, morbidity and mortality. A review of CLABSI events was conducted at a large community hospital showing the need for improvement. Chlorhexidine Gluconate (CHG) may help prevent certain health care associated infections, and may also prove beneficial for the prevention of CLABSI.

Methods
Quasi-experimental observational study conducted reviewing inpatient CLABSI events, locations, device days, and confounding variables over a 10 year period. Incidence density rates were used to compare the intervention and pre-intervention periods. The 3 highest risk (of 16) inpatient units (Dialysis, Oncology and Medical Surgical Intensive Care Unit) were selected for a trial and represented 52.8% of all CLABSI infections. In 2013, 70% alcohol swabs and alcohol disinfecting caps were replaced by 3.15% CHG/70% alcohol swabs for central line hub disinfection prior to access. This intervention was trialed for a 6 month period, and then initiated on all adult inpatient units.

Results
The 5 year pre-intervention period (2008-2012) showed a total of 79,191 central line days, 72 CLABSI events, and a rate of 0.90 per 1000 device days. The 6 month trial period involved 3,468 central line days, 3 CLABSI events, and a rate of 0.54 per 1000 device days. The 5 year post implementation period (2013-2017) showed a total of 91,250 central line days, 53 CLABSI events, and a rate of 0.58 per 1000 device days. The post-implementation period represented a statistically significant (p-value = 0.013) reduction in CLABSI events compared to the pre-implementation period.

Conclusions
This study found that using alcohol with CHG for central line hub disinfection prior to access makes it possible to achieve the goal of reducing CLABSI events while sustaining statistically significant lower CLABSI rates. 74% reduction in CLABSIs over a 10 year period.

<table>
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<tr>
<th>Hospital/Unit</th>
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National Healthcare Safety Network (NHSN) Statistical Analysis using a Two Incidence Density Rate.