The Use of 3.15% Chlorhexidine Gluconate/70% Alcohol Hub Disinfection to Prevent Central Line-Associated Blood Stream Infections in Dialysis Patients.

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Summary: An observational study was conducted including central line device days, CLABSI events, and possible confounding variables in admitted dialysis patients. All CLABSI data was identified according to the Centers for Disease Control and Prevention's National Healthcare Safety Network's definitions for Central Line Associated Blood Stream Infections.

Experiment

- The intervention involved the removal of 70% alcohol swabs and alcohol hub disinfecting caps then replacing with swabs containing 3.15% chlorhexidine gluconate/70% alcohol for central line hub disinfection and vascular graft access skin disinfection.

Results

- The 5 year pre-intervention period (2008-2012) involved 7,568 central line days, 11 CLABSI events, and a 1.45 per 1000 device day rate.
- The 6 month trial period involved 1,559 central line days, and no CLABSI events.
- The 5 year post-implementation period (2013-2017) involved 9,787 central line days, 5 CLABSI events, and a 0.51 per 1000 device day rate.
- The post-implementation period represented a statistical significance (p-value = 0.0493) reduction with 65% fewer CLABSI events compared to the pre-implementation period.

Limitations

- Variations in scrub time and dry time during CVC hub access.
- While comparing two products, behavioral practices using these two products were possible influencers and represents a possible confounding variable.

Conclusions

- This study found that using alcohol with CHG prior to accessing central line hubs and vascular grafts allow for reduction in CLABSI events and sustains statistically significant lower CLABSI rates in the inpatient dialysis population.

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Background

Central line-associated blood stream infection (CLABSI) events in the dialysis inpatient population present significant challenges leading to adverse patient outcomes. Dialysis patients represent a much higher infection risk due to health frequency needs, frequent hospitalizations, comorbidity issues, fistula functionality, and frequent line access leading to additional complications, costs, morbidity and mortality. Chlorhexidine Gluconate (*CHG*) use may help prevent health care associated infections including CLABSI in dialysis patients.

Methods

A Quasi-experimental observational study was conducted reviewing inpatient CLABSI events, device days, and confounding variables in admitted dialysis patients over a 10 year period. Incidence density rates were used to compare the pre-intervention and intervention periods. All CLABSI data was identified according to the Centers for Disease Control and Prevention's National Healthcare Safety Network's (NHSN) definition for CLABSI. The intervention involved the removal of 70% alcohol swabs and alcohol hub disinfecting caps then replacing with swabs containing 3.15% chlorhexidine gluconate/70% alcohol for central line hub disinfection/vascular port access disinfection.

Limitations

Variations in scrub time and dry time during CVC hub access. While we were comparing two products, behavioral practices using these two products were possible influencers and represents a possible confounding variable.

Results

The 5 year pre-intervention period (2008-2012) involved 7,568 central line days, 11 CLABSI events, and a 1.45 per 1000 device day rate.

The 6 month trial period (1/2013- 6/2013) involved 1,559 central line days, and no CLABSI events for a 0.00 per 1000 device day rate.

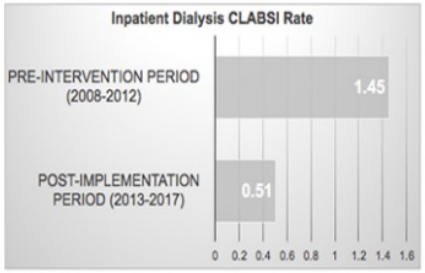
The 5 year post-implementation period (2013-2017) involved 9,787 central line days, 5 CLABSI events, and a 0.51 per 1000 device day rate. The post-implementation period represented a statistical significance (p-value = 0.0493) reduction with 65% fewer CLABSI events compared to the pre-implementation period.

Adult Inpatient Population	Pre-intervention period CLABSI's	Post-implementation period CLABSI's	+/- Change	Longest Time Between Infections (Post period)
Dialysis Unit	11	5	-6	26 Months

NHSN Statistical Analysis using a Two Incidence Density Rate.

	Pre-Intervention	Post-Intervention
Numerator	11	5
Denominator	7568	9787
Incidence Density Rate	1.45	0.51
IDR p-value	0.0493 (Statistically Significant)	

Dialysis Unit CLABSI Rate (2008-2017)



Central Line Swab Behaviors & Practices (wipe times)

Mean (sec)	1.8 (sec)
Minimum (sec)	0.4
Maximum (sec)	6.2
Count	266

Key Outcomes & Cost Analysis

Outcomes	Pre-Intervention	Post-Intervention	Savings Associated
Mortality Decreased *CDC stats avg.1 in 4	2.75*	1.25*	Saved 1.5 lives
Infections Avoided 1.45 ➡ 0.51	65% reduction in CLABSI infections for dialysis patients		
Excess Costs Averted **US DHHS/AHRQ 2018	$424.176**		

Conclusions

This study found that using alcohol with CHG prior to accessing central line hubs/dialysis vascular ports allow for reduction in CLABSI events, sustains statistically significant lower CLABSI rates, decreases mortality, and reduces overall cost in the inpatient dialysis population.

Nothing to Disclose

MAGNET RECOGNIZED