Central Line Associated Blood Stream Infections

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Abstract
This project will provide an overview of the effects of universal disinfectant cap implementation on reducing central line associated blood stream infections (CLABSIs). Central venous catheters are used in hospitals across the world to administer medications, blood products, and fluids, as well as hemodynamically monitor the most vulnerable patients. Although central venous catheters are an essential tool for treatment and diagnosis, they pose a high risk for bloodstream infections.

Purpose/Intro
CLABSIs may present a risk to a patient’s overall health causing increased hospital stays, costs, and increased patient mortality. There is a vast amount of research on the prevention and management of CLABSIs; however, new technologies are being used that may help reduce these rates all together. The implementation of a universal disinfectant cap in the clinical setting can help to reduce central line infection rates. This project will use the literature to investigate the effects of the disinfectant caps on reducing CLABSIs.

Methods
In this study, the effectiveness of ClearGuard HD cap was investigated in regards to decreasing central line associated blood stream infections. This study was a prospective cluster-randomized comparative-effectiveness trial was done in forty different facilities to receive accurate results. All standard procedures regarding central venous catheters was followed and after every access a ClearGuard HD cap (intervention) or standard CVC cap (control) was placed on the CVC (Central Venous Catheter) hubs. When clinical indications for blood stream infections were present in blood cultures were collected from the CVC or a peripheral vein.

Results
This is a picture of the ClearGuard HD cap on a central venous catheter. The ClearGuard HD cap is intended to prevent CLABSIs by eradicating outside organisms within the lock solution proximal to the clamp.

This figure shows a twelve month comparison of rates of blood stream infections, cause-specific hospitalizations, and IV antibiotics.

Discussion
Overall, this study supported the hypothesis that ClearGuard HD caps in comparison to the standard CVC caps significantly lowered the incidence of blood stream associated infections. The purpose of using the ClearGuard caps is to prevent the colonization of bacteria, not to eradicate bacteria that was already present within the catheter. This finding is a great improvement in the efforts to reduce central line associated blood stream infections and thus obtain better outcomes for patients.

Within this study, the use of ClearGuard HD caps were used over a period of twelve months. After looking at all the recorded data these ClearGuard caps demonstrated a 69% lower rate of blood stream infections, 43% fewer hospital admissions for a blood stream infection, and 51% fewer hospitalization days for patients diagnosed with a blood stream infection.

This study presents a great tool to prevent blood stream infections. Hospitals around the country have started to implement the use of ClearGuard or similar caps in order to best protect their patients from bloodstream infections. There is always more research to do, but this study demonstrates a great advancement in the fight against CLABSIs.

References