Effects of Cleaning and Disinfecting Nasal CPAP Interfaces on Bacterial Growth and Ventilator Associated Pneumonia

The Basis

"Ventilator Associated Pneumonia accounts for 6.8- 32.2% of all Healthcare Associated Infections (HAIs) among neonates and is a major complication in neonates on mechanical ventilation." (Dipanjali, R. et al, 2021) After identifying an increase in suspected VAP infections in infants on non-invasive ventilation in our NICU we completed a site visit to Calgary Foothills/Alberta Health Services NICU. Our team observed a two person cleaning protocol from this site which was known to have a low rate of VAP. (Permission obtained to adapt protocol for use)

Pre Implementation

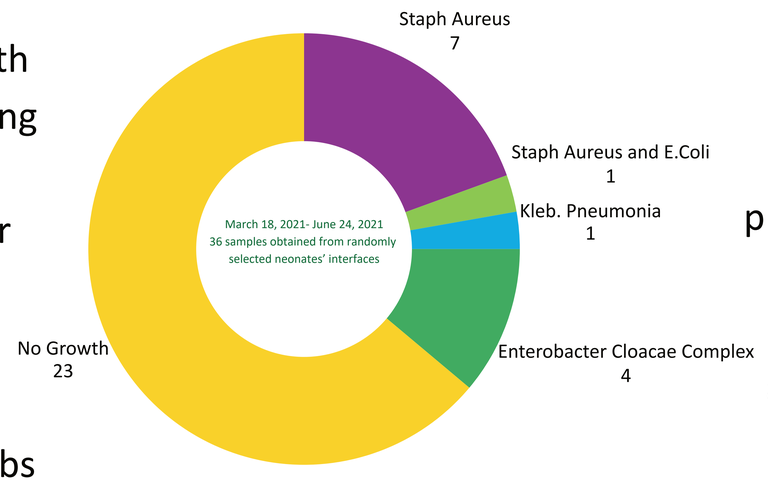
From March 18, 2021- June 24, 2021 36 swabs were taken from a random sample of interfaces. 36% of swabs showed abnormal bacterial growth.

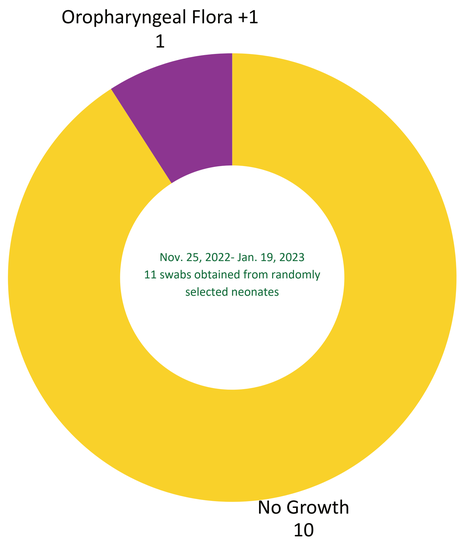
Protocol

Used interfaces are placed in a medicine cup and immersed in 2% Chlorhexidine/70% Alcohol Solution then cleaned thoroughly with a cotton-tipped swab. Interfaces soak for 5 minutes then are removed and placed in another medicine cup, half filled with sterile water to rinse off disinfectant. Interfaces are then placed in a sterile specimen container lined with a single layer of sterile gauze and allowed to air dry.

Implementation

The cleaning protocol was implemented on Feb. 28th, 2022 and was adapted to a 1 person cleaning process carried out by the RRT with support from RNs when necessary.





Results

A post implementation comparison survey was completed between Nov. 25, 2022-January 19, 2023. 11 swabs were collected, and 1 returned as Oropharyngral Flora +1, the remainder of swabs showed no growth. Survey was ended at 11 swabs after consistent negative growth observed.

Current State

Our NICU team continues to focus on lung protection and skin integrity for our infants on Nasal CPAP. Along with the cleaning protocol, a nasal injury scoring tool is utilized with each hands on assessment of the neonate. Interfaces are changed every six hours and cleansed in between. Since implementation of this cleaning protocol, there has been no documented VAP infection in our infants on non-invasive ventilation. Since many infants in NICU spend up to 6 weeks or longer on NCAP, this is a life saving, easily implemented and sustainable intervention.

Acknowledgements

Dr. Andrei Harabor, Sheldon Hrynowetsky, RRT., Mark Murray, RRT., RGH Respiratory department, RGH Microbiology department, Charlene HuberFlahr, RN, Carmen Chalupiak, RN., Andrea Green, RN., Kandace Holness, RN.

Saskatchewan Health Authority

References Dipanjali, R., Shivananda, P. M., & Yashoda, S. (2021). Effectiveness of an educational intervention on knowledge and practice of staff nurses on prevention of Ventilator Associated Pneumonia (VAP) among neonates in NICU. International Journal of Caring Sciences, 14(1), 8–17

moms & kids HEALTH SASKATCHEWAN