

Universal Precautions to Reduce Hospital Onset Clostridium Difficile Infections in Intensive Care Patients Requiring Enteral Tubes and/or Enteral Feedings

Christina Wettengel Seeley BSN, RN; Brigit VanGraafeiland DNP, CRNP, FAAN



JOHNS HOPKINS
SCHOOL of NURSING

Background

- Clostridium difficile (c. diff), accounts for 12.1% of US health care associated infections (Barker, et al, 2017)
- Enteral tubes and/or enteral feedings have been identified as risk factors for development of a Hospital Onset Clostridium Difficile Infection (HO-CDI) (Wijarnpreecha, et al, 2016)
- Intensive care patients are at a specific risk for HO-CDI due to many of them requiring enteral tubes and feeding during their period of critical illness (Bouza, et al, 2015)
- Nursing education and training on universal precautions, with emphasis on handwashing, while handling enteral tubes/ feedings has been shown to decrease infection rates (Malhi, 2017)

Purpose

The purpose of this QI project was to determine whether implementing an educational intervention based on standard precautions, with emphasis on handwashing, when providing enteral feedings or manipulating enteral tubes will improve nursing knowledge and attitudes towards HO-CDI prevention, and lower rates of HO-CDI's in adult neurologic critical care patients.

Aims

Aim 1: Improve nursing knowledge and attitudes about universal precautions, including hand hygiene, when providing enteral feedings or manipulating enteral tubes in intensive care patients to reduce risk and transmission of c. diff spores as measured by pre and post knowledge and attitudes survey

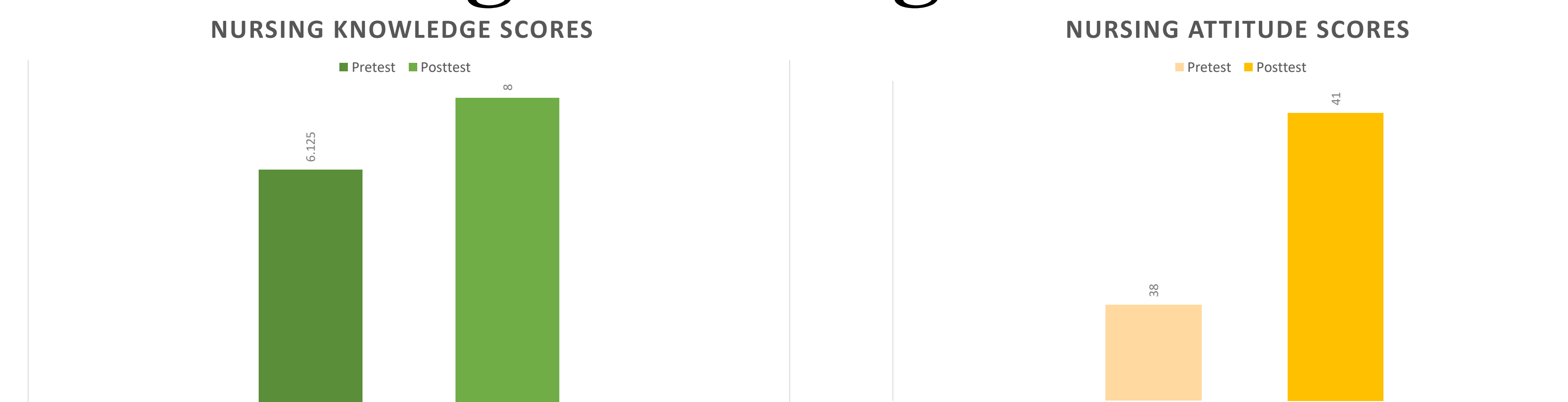
Aim 2: Decrease hospital onset c. diff infection rates in intensive care patients who require enteral feedings as measured by Neurological Critical Care Unit (NCCU) aggregate data on HO-CDI rates at two points; pre intervention and 12 weeks post intervention

Methods

- Design:** Pre and post intervention, Quality Improvement
Setting: Urban academic hospital in the Mid-Atlantic
Sample: 16 registered nurses, currently employed on the NCCU
Evidence Based Intervention: Educational Intervention provided via PowerPoint presentation on the current evidence based guidelines for c. diff prevention combined with clinical recommendations from existing literature, provided to nursing staff who provide enteral feedings or manipulate enteral tubes
Data Collection:
- Surveys collect from nurses before and after the education
 - Chart audits of unit aggregate HO-CDI data
 - Comparison of HO-CDI rates from the year previous (Sept- Dec)

Results

Nursing Knowledge & Attitudes



Knowledge

- Pretest knowledge score mean 6.125
- Posttest knowledge score mean 8.0
- Significance p=0.016 (Wilcoxon-Signed Rank, statistical significance)

Attitudes

- Pretest attitude score mean 38
- Posttest attitude score mean 41
- Significance p= 0.068 (Wilcoxon-Signed Rank, no statistical significance)

HO-CDI Rates

- Comparison of means from pre intervention time to post intervention
 - Pre Intervention Time September 2019- December 2019: 2
 - Project Intervention Time September 2020- December 2020 : 5
- Comparison was not significant to support lowering of HO-CDI rate

Conclusions & Dissemination

Conclusions

- **Improvement in nursing knowledge was a critical positive directly related to the knowledge gap**
- Although the results did not demonstrate a statistical significance in attitude score, the mean increased
- More time will be needed to fully appreciate the effect of the educational intervention on HO-CDI rates
- Demonstrates an area for nursing education and practice change within this unit

Dissemination/Sustainability

- This project model can be incorporated into intensive care nurse training, orientation, or within yearly education bundles
- Project can be sustainably maintained through continued emphasis on education, incorporation of policy, or inclusion in nursing competency or training
- Simple, cost effective intervention

Acknowledgements & References

Acknowledgements

Dr. Brigit VanGraafeiland DNP, CRNP, FAAN
Ruth Bertuzzi BSN, RN
Sherri Byers, MSN, RN
Theresa Harvey BSN, RN

References

1. Barker, A. K., Zellmer, C., Tischendorf, J., Duster, M., Valentine, S., Wright, M. O., & Safdar, N. (2017). On the hands of patients with Clostridium difficile : A study of spore prevalence and the effect of hand hygiene on C difficile removal. *American Journal of Infection Control, 45*(10), 1154–1156. doi: 10.1016/j.ajic.2017.03.005
2. Bouza, E., Rodríguez-Cr ixems, M., Alcal a, L., Mar n, M., Egea, V. D., Braojos, F., ... Reigadas, E. (2015). Is Clostridium difficile infection an increasingly common severe disease in adult intensive care units? A 10-year experience. *Journal of Critical Care, 30*(3), 543–549. doi: 10.1016/j.jcrc.2015.02.011
3. Malhi, H. (2017). Enteral tube feeding: using good practice to prevent infection. *British Journal of Nursing, 26*(1), 8–14. doi: 10.12968/bjon.2017.26.1.8
4. Wijarnpreecha, K., Sornprom, S., Thongprayoon, C., Phatharacharukul, P., Cheungpasitporn, W., & Nakkala, K. (2016). Mo1668 The Risk of Clostridium difficile Associated Diarrhea in Nasogastric Tube Insertion: A Systematic Review and Meta-Analysis. *Gastroenterology, 150*(4). doi: 10.1016/s0016-5085(16)32539-2