



Problem & PURPOSE

- Problem:** The Environmental Services Staff (EVS) have a knowledge gap regarding the LIV Process Microbiological Clostridioides difficile (C.diff) Visualization Cleaning System (LIV PROCESS)
- Purpose:** Determine whether an educational intervention improves EVS staff knowledge of the LIV Process Microbiological C.difficile Visualization Cleaning System

Available Knowledge & Rationale

- Healthcare-associated infections (HAI), including Clostridioides difficile infections (CDI), are not present on admission but become apparent after 48 hrs. inpatient.
- HAI is a significant cause of death and affects 1 in 31 inpatients in the USA.
- Clostridioides difficile (C.diff) is a highly contagious bacterium that causes diarrhea and colitis
- Contaminated high-touch areas serve as reservoirs, spread facilitated by the environment or the patient's microbiota
- Evidence-based education of the EVS staff & practices & organizational commitment helps reduce spread.

Methods

Context

- Conducted in an East Coast acute care hospital
- EVS staff are the target population- 8 females, 20 males, aged above 19 years; some with a high school diploma or above; Diverse ethnicity
- Obtained an Institutional letter of support; Nebraska Methodist College and site facility IRB approvals

Intervention

- Defined the research goals and specific research questions
- Met with the EVS staff to discuss the study's goals and objectives (explore what they know, improve knowledge) and process, verbal consent.
- Selected participants, coded, and pre-intervention surveys completed
- A week later - Education/Intervention given
- 3 weeks later- Return for post-intervention survey

Study of Intervention

- 12 dichotomous questions -knowledge of terminal cleaning and LIV Process
- Questions matched with codes for anonymity and connectivity-individual pre & post
- Comparison of pre- and post-intervention questions

Measure

- 12 dichotomous questions measuring baseline knowledge with post-intervention knowledge
- Questions aligned with the study objectives and the research process.
- Descriptive statistics (Mean, SD, SE) used to measure differences between the 2 sets of data
- Inferential statistics (95% confidence interval, paired-sample t test, degrees of freedom (df), and p-value generalized these conclusions about a larger population from sample data.
- No pre-existing reliability and validity data. Limited literature. Measuring tool designed by student

Data Analysis

- The entire data set was analyzed with Microsoft Excel's statistical tool from the paper survey
- The 2-point dichotomous questions captured participants' definitive stance on each knowledge tested
- Unique identifiers were used to link pre- and post-responses to individuals' responses for data accuracy
- Mean, SD, and SE of both data scores were analyzed and reported
- A dependent/paired t-test is used to determine the statistical significance between the two data sets

Results



- There are disparities in the average scores before and after the intervention; some variables show greater change than others.
- Most changes are noted in questions related to the LIV Process.
- Participants had poor knowledge of it and responded better after the training, demonstrating the training's impact on EVS staff participants
- Some improvement in the basic cleaning process, stressing the need for continuous education.
- No improvement in others.

Discussion

- Project explored if EVS staff education would improve their knowledge of the LIV Process, ensure proper implementation, and improve the cleaning of rooms occupied by patients with C. diff.
- Twelve questions were used in the survey. Six were practice-based, and six were knowledge-based.
- Questions assessed basic environmental cleaning procedures and the LIV Process.
- A paired-samples t-test revealed improvements across all measured outcomes related to the LIV Process
- Questions 5, 9, and 10 (Hand hygiene, personal protective equipment, the current hospital-approved disinfectant, and its dwell time) showed modest but sufficient improvement to reject the null hypothesis - Current practices
- Questions focusing on the LIV Process were strongly statistically significant.
- Findings support the study's hypothesis - Improved EVS staff knowledge post-education
- Outcomes align with the PDSA process improvement framework- leads to performance improvement.
- Findings are relevant to performance improvement, quality improvement, patient safety, and experience.
- Limited by generalizability and sample size
- Validity affected by selection bias. Potential subject bias, measurement accuracy - measurement tool
- Future Research:** Generalizability - conducted across many facilities with diverse populations, cultures, protocols, and procedures.
- Use standardized survey tools
- Blinding of the researcher (unaware of purpose and outcome) to avoid biased interpretation

Conclusions

- Squire 2.0 (Revised standard for QI reporting excellence) was the frame work for study reporting
- Study assessed if EVS staff education would improve their knowledge of the LIV Process
- Pre- and post-surveys analysis with Microsoft Excel statistical methods - Great improvements in knowledge
- Aligns with the theoretical foundation of the PDSA process improvement framework.
- Underscores the importance of Staff education to enhance understanding before implementation
- Underscores evidence that staff education improves knowledge and should be encouraged
- Implementation would improve knowledge and skills, the hospital environment, and reduce C. diff spores
- Further research is needed to address study limitations, despite promising results.

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