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Author(s): Marian Pokrywka MS, CIC[a,*], Michele Buraczewski BSN[b], Debra Frank MSN, BSN[c], Heather Dixon MSN, BSN[d], Juliet Ferrelli MS, MT(ASCP), CIC[a], Kathleen Shutt MS[e], Mohamed Yassin MD, PhD[f]

[a] Infection Control, UPMC Mercy Hospital, Pittsburgh, PA
[b] Nursing Education, UPMC Mercy Hospital, Pittsburgh, PA
[c] Nursing, UPMC Mercy Hospital, Pittsburgh, PA
[d] Quality Improvement, UPMC Mercy Hospital, Pittsburgh, PA
[e] Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA
[f] Division of Infectious Diseases and Department of Infection Control, UPMC Mercy Hospital, University of Pittsburgh, Pittsburgh, PA

Publication: Title and Journal/Conference

"Can improving patient hand hygiene impact *Clostridium difficile* infection events at an academic medical center?"

American Journal of Infection Control, Volume 45, Issue 9, 959 – 963

Methodology/Study Design: Biphasic, quasi-experimental, single-center study.

Experiment

- Single-center study performed at a 495-bed university-affiliated medical center in a large health care system between November 2013 and December 2015.
- Phase 1
  - Baseline surveys to assess patient hand hygiene (PHH) on 4 medical-surgical nursing units with an average daily census of approximately 35 patients.
  - Staff on each of 4 participating units were provided with an educational presentation prepared by nurse educators on the role of HH (hand hygiene) in preventing infection. They also received reminders and flyers in the break room, etc.
  - Staff members provided verbal PHH education to all patients along with HH reminders, assistance, and encouragement.
  - HH signs were posted in each patient room with reminders for staff to assist patients in washing their hands throughout the day.
  - Prepackaged alcohol wipes (**Sani-Hands®**, 65.9%)* were made available at the patient's bedside during room setup for those patients unable to get to the sink.
  - Soap and water handwashing was encouraged along with use of the bedside alcohol hand wipes.
  - Staff assisted patients with HH, especially those with mobility issues.
  - After education of staff, 90 patient before and after patient surveys were completed on each of the 4 participating medical-surgical units. These results led to whole hospital implementation of the PHH initiative.
- Phase 2
  - Whole-hospital implementation in March 2015.
  - Baseline surveys obtained for phase 2 from all hospital inpatient units.
  - Education of staff and placement of reminder signs on the patient units began in March; fully in place by April 2015.
  - Follow-up surveys for phase 2 completed in March 2016.
- Standardized infection ratios (SIRs) for Hospital Onset (HO) *Clostridium difficile* LabID events were obtained using the CDC's NHSN website for requested time periods.

Results/Conclusions

- PHH education and opportunities increased significantly (P < .0001) in phase 1 of the study.
  - The largest percentage change occurred in providing education to the patient (88.2%), in HH opportunity provided by staff (43.3%), and in specified times such as before touching dressings-incisions (131.2%), in performing HH before and after having visitors (74.2%), and after returning from testing or a procedure (73.7%).
  - Average frequency of PHH reported by patients surveyed increased from 2.7 to 3.75 times.
  - 99% of patients rated HH as a 4 or 5 on the 1-5 scale regarding importance to infection prevention.
- Phase 2 showed HH opportunities for cleaning hands prior to meals, after toileting, before touching dressings and incisions, after coming back from testing, and after having visitors had also increased between 6% and 52%.
  - Overall opportunities for PHH offered did not change during phase 2. The average frequency of PHH reported by the patients did not change (average 2.4 before vs 2.6 times after the initiative).
- ***C. difficile* SIRs for the study period showed a statistically significant decrease in the number of observed HO LabID events in the first 2 quarters (Qs) after the implementation of PHH in March 2015.**
  - Note: The Q4 SIR did show an increase to 0.3844; not statistically significant. This may be due to difficulty with sustainability of the initiative; emphasizing a continued need for support and education of staff to maintain a PHH initiative.
- **Notes: ''The authors concluded that improving HH in general influences CDI (C. difficile Infection) incidence. Similarly, although the alcohol wipes may not kill CD spores, improved compliance of PHH may potentially assist in controlling CD events in the hospitalized patient.''**
  - "Although alcohol is not considered to be an effective agent for killing CD spores, it can be theorized that the alcohol wipes provided mechanical cleansing of the patients' hands, which removes organic debris and, potentially, spores from the skin surface."

Limitations

- Study relied on a patient interview survey approach which can be biased/ skewed by patient's ability to recall events accurately, state of health/alertness of patient, etc.
- Patient selection bias possible-
  - Only patients who were awake, alert, and available at the time of the surveys were included as participants.
- Interviewer bias could have influenced patient responses (verbal survey).
- No direct observation of patient HH was done by the surveyors.
- Variations in units may have impacted study. Staff may have easier time educating patients on a unit with less acuity or more mentally alert patients.
- Staff HH initiative may have influenced the decrease in *C. diff* events.
- Sustainability another possible limitation.
- Possible confounders during phase 2 due to other *C. diff* initiatives (specific interventions not stated in article).

*AJIC article contains a typo displaying formulation as 69.5%

PDI10179548