

Effectiveness of a Comprehensive Hand Hygiene Program for Reduction of Infection Rates in a Long-Term Care Facility: Lessons Learned.

Steven J. Schweon, RN, MPH, MSN, CIC, HEM
Pleasant Valley Manor Nursing Home, Stroudsburg, PA

Sarah L. Edmonds, MS
GOJO Industries, Inc., Akron, OH

Jane Kirk, MSN, RN, CIC
GOJO Industries, Inc., Akron, OH

Douglas Y. Rowland, PhD
D. Y. Rowland Assoc., Cleveland Hts., OH

Carmen Acosta, RN, BSN
Pleasant Valley Manor Nursing Home, Stroudsburg, PA

ABSTRACT

Background / Objectives

Hand hygiene has been recognized as the most important intervention for preventing the transmission of pathogens in health care settings. Alcohol-based hand rubs (ABHRs) play a key role in reducing the transmission of pathogens and preventing infections in acute care settings, especially as part of a comprehensive hand hygiene program. ABHRs are associated with reduced hospital-associated infection (HAI) rates, including respiratory tract infections, and those caused by methicillin-resistant *Staphylococcus aureus* (MRSA). However, their use and impact in long-term care facilities (LTCFs), where the residents have increasingly higher acuity levels due to changing health care delivery systems, has been virtually unstudied.

Methods

Infection surveillance data, including those meeting McGeer et al. and the Pennsylvania Patient Safety Authority's reportable surveillance definitions, for lower respiratory tract infections (LRTIs) and skin and soft tissue infections (SSTIs), as well as hospitalization data were collected in a 174-bed skilled nursing LTCF for 22 months (May 2009 and February 2011). In March 2010, a comprehensive hand hygiene program including increased product availability (touch-free dispensers, alcohol based sanitizing wipes, 2 oz. personal carriage bottles), education for health care personnel (HCP) and residents, posters promoting hand hygiene, a

resident hand hygiene program, a monthly hand hygiene champion, and an observation tool to monitor compliance, was implemented.

Results

Pennsylvania reportable infection rates for LRTIs were reduced from 0.97 to 0.53 infections per 1,000 resident-days ($P = 0.01$) following the intervention; a statistically significant decline. McGeer LRTI (non-pneumonia) also demonstrated a statistically significant reduction. Pennsylvania reportable infection rates for SSTIs were reduced from 0.30 to 0.25 infections per 1,000 resident-days ($P = 0.65$). There was a reduction with McGeer SSTIs that failed to attain statistical significance. A 54% hand hygiene compliance rate was observed among HCP. No statistically significant changes in hospitalization rates due to LRTI and SSTI were observed during the study period.

Conclusions

This study demonstrates that the use of ABHRs, as part of a comprehensive hand hygiene program for HCP and residents, can decrease infection rates in LTCFs.

STUDY OBJECTIVE

Determine the impact of a comprehensive hand hygiene intervention consisting of:

- Increased alcohol-based hand rub availability
- A resident hand hygiene program
- HCP education
- Hand hygiene compliance monitoring

UPON

- LRTI and SSTI rates based on the Pennsylvania Department of Health and McGeer LTC definitions
- Resident hospitalization rates
- Antibiotic usage
- MRSA and VRE prevalence
- *Clostridium difficile* and gastrointestinal infection rates

INTERVENTIONS

- Educational training on hand hygiene was given to both residents and HCP.
- Touch-free dispensers were placed in prominent locations throughout the facility, including the resident dining room
- 2 ounce personal carriage hand sanitizer bottles were given to all employees
- Alcohol based sanitizing wipes were placed in resident common areas and on all food trays
- HCP were asked to "cue" the resident with using the sanitizing wipes before meals or to use the wipe on the resident's hands if incapable
- Ongoing observational hand hygiene compliance monitoring was initiated
- A monthly hand hygiene champion was chosen
- Educational posters were displayed and rotated



Resident Education



Hand Hygiene station by front entrance

TABLE 1. SUMMARY OF INFECTION RATE RESULTS

SUMMARY OF INFECTION RATE RESULTS			
INFECTION TYPE	PRE-INTERVENTION RATE*	POST-INTERVENTION RATE*	STATISTICAL ANALYSIS
LRTI (PA reportable)	0.97	0.53	p = 0.01
LRTI (McGeer)	0.61	0.32	p = 0.03
SSTI (PA reportable)	0.30	0.25	p = 0.65
SSTI (McGeer)	0.30	0.25	p = 0.65
MRSA prevalence	0.53	0.55	p = 0.89
VRE prevalence	0.07	0.05	p = 0.80
C. difficile	0.08	0.04	p = 0.36
Gastrointestinal	0.10	0.09	p = 0.87

*Rate of infection per 1000 resident-days

SUMMARY

- Pa. reportable LRTI rates for the entire facility showed a statistically significant drop from 0.97 to 0.53 infections per 1,000 resident days (p=0.01)
- McGeer LRTI, non-pneumonia, demonstrated a statistically significant drop from 0.61 to 0.32 (p=0.03)
- Pa. reportable SSTI rates for the entire facility showed a statistically non-significant drop from 0.30 to 0.25 infections per 1,000 resident days (p=0.65)
- McGeer SSTI demonstrated a statistically non-significant reduction from 0.30 to 0.25 infections per 1,000 resident days (p=0.65)
- No statistically significant changes in hospitalization rates occurred
- Antibiotic usage units decreased from 12.9% to 10.8% (p=0.03)

The introduction of a comprehensive hand hygiene program involving residents and staff resulted in a reduction in infection rates and decreased antibiotic utilization, including a statistically significant LRTI decline.

References

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**For more information, contact Sarah Edmonds, GOJO Industries, Inc.
330-255-6745
edmondss@GOJO.com**