



# Evaluating the Impact of a 3-Phase Project on Sustaining Hand Hygiene Compliance on a Transplant Unit

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## Background

- HAI in the U.S. is a significant problem
- 1.7 million patients develop a hospital acquired infection (HAI) in the U.S.
- Annual treatment cost of \$6.7 billion (CDC, 2000; Graves, 2004)
- 100,000 patients die annually or 270 persons each day because of HAI (CDC)
- Hand washing is a National Patient Safety Goal (Joint Commission)
- Although many factors impact HAI, poor hand hygiene is considered a major contributor
- Despite the magnitude of the problem, low compliance among healthcare workers continues to be reported (Haas & Larson, 2008)
- Strategies to improve hand hygiene compliance
- Campaigns directed at increasing awareness are associated with improved compliance in hand washing
- Little is known regarding interventions that are associated with long-term compliance

## Purpose

To evaluate the impact of a performance improvement project on healthcare workers compliance with hand hygiene practices, including any long-term sustainable effects.

## Research Questions

Can a performance improvement project both improve and sustain hand hygiene compliance in healthcare workers on a transplant unit?



## Proposed questions related to a transplant unit:

- What is the baseline hand hygiene compliance rate in healthcare workers?
- Is there a difference in hand hygiene compliance rates between physicians and nursing personnel?
- Does a hand hygiene awareness campaign improve compliance in healthcare workers?
- Is there a difference in hand hygiene compliance rates between physicians and nursing personnel following implementation of a hand hygiene awareness campaign?
- Are changes in hand hygiene compliance rates in healthcare workers sustained over time?
- Are there differences in sustained changes in hand hygiene compliance rates between physicians and nursing personnel over time?



## Design

Prospective, descriptive, exploratory research design.

## Methods

### Setting and Sample

- Research Setting
  - 34-bed transplant unit in a 518 bed tertiary acute care teaching hospital (Ochsner Medical Center, New Orleans).
- Sampling Procedure (N = 1599 observations from 7 physicians and 42 nurses)
  - A convenience sample of healthcare workers caring for patients from 0700 til 1500 Monday through Friday
  - 8 to 10 healthcare workers were selected weekly.

### A 3-Phase Performance Improvement Project Description

**Phase 1: Increasing awareness**

- Posters describing appropriate hand hygiene techniques
- Dissemination in common unit areas and patient rooms
- Self-learning module and test for nursing personnel

**Phase 2: Direct feedback**

- Direct observation was used for all audits
- Compliance rates were reported for physicians, nurses, and both groups at staff meetings and transplant councils
- Individual physician's names and compliance rates were reported at the physician's transplant council meeting
- Individual nurse's were informed about their individual compliance but not publicly disclosed

**Phase 3: Sustaining compliance**

- Continuation of audits using direct observation
- Continued reporting of results to all groups



## Data Analysis

Data was analyzed using

- Descriptive statistics
- Chi-square analysis to test for differences in compliance between groups
- Simple linear regression to measure longitudinal outcomes for a 12-month time period

## Results

- Baseline hand hygiene compliance rate = 67% (physicians & nurses)
- Findings for first 3 months following project implementation
  - 286 observations from 7 MDs (n = 105) and 42 nurses (n = 180)
  - Nurses were more compliant than MDs,  $\chi^2(1, N = 286) = 9.6, p < .001$
  - Time was a significant predictor of improvement in overall compliance rates,  $\beta = .19, t(284) = 12.25, p < .0001$ 
    - Physician compliance explained a significant proportion of variance in compliance rates over time,  $R^2 = .04, F(2, 1597) = 10.31, p < .01$
- 1599 observations over 12 month period
  - 564 observations from 7 physicians
  - 1035 observations from 42 nurses
- Mean 12-month compliance rates
  - 89% Physicians
  - 96% Nurses
- Overall, nurses were significantly more compliant in hand hygiene than MDs,  $\chi^2(1, N = 1599) = 28.5, p < .0001, Goodman \& Kruska \tau = .02, p < .01$

## Data Collection Procedure

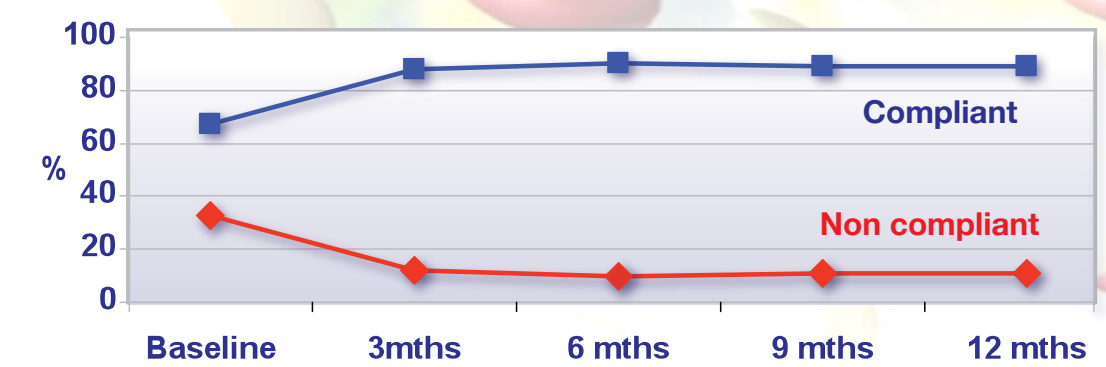
- Study personnel used direct observation to audit healthcare workers hand hygiene practices
- Hand hygiene compliance rates were measured at baseline and weekly thereafter
- The day of the audit was randomly selected based on convenience

## Audited information included:

- Whether the healthcare worker demonstrated hand hygiene using either soap & water or hand sanitizer before and after entering a patient's room
- The identity of the healthcare worker, including physician or nursing personnel status will be recorded

- Improvement in hand hygiene compliance was identified within 3 months of project implementation & sustained through 12-month period
- Time was a significant predictor of improvement in overall compliance rates,  $\beta = .14, t(1598) = 5.69, p < .0001$
- However, nurse compliance explained a significant proportion of variance in compliance rates over time,  $R^2 = .04, F(2, 1598) = 32.53, p < .0001$

Comparison of Hand Hygiene Compliance Rates Over Time



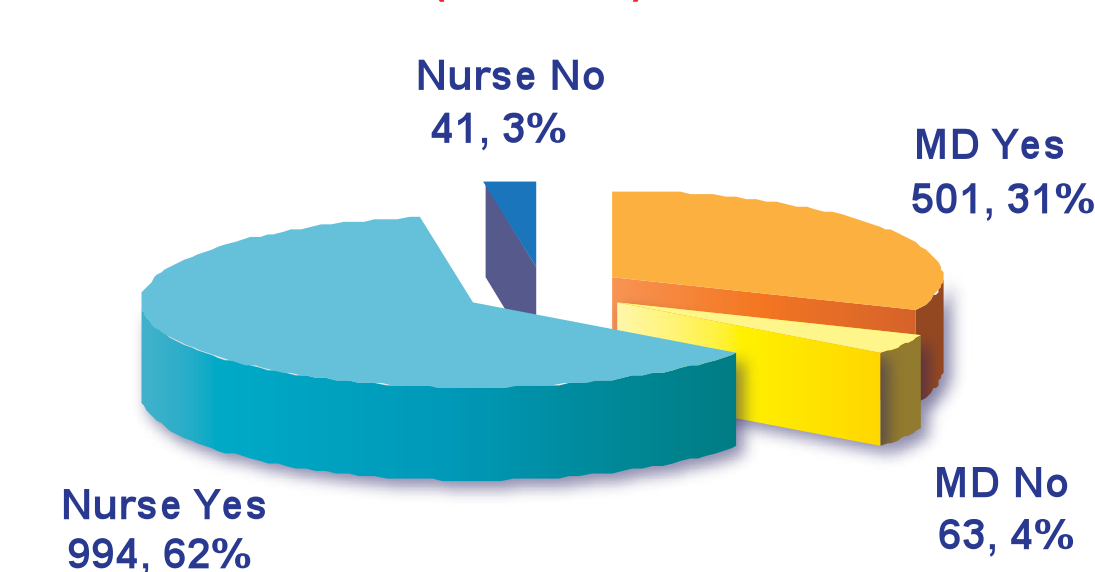
## Conclusion

- Strategies focusing on both hand hygiene awareness and direct feedback to both physicians and nurses were associated with early and sustained improvement in compliance with hand hygiene practices on this transplant unit
- Although MD hand hygiene practices explained a significant proportion of variance in compliance at 3 months, nurses' compliance was responsible when 12-month data was analyzed
- Findings from linear regression suggest that individual feedback may be more effective in sustaining compliance than public reporting of noncompliance

## Implications for Nursing Practice

- The findings of this study provide direction in identifying potentially effective strategies to improve and sustain hand hygiene compliance
- Additional research focusing on the 2 feedback mechanisms used in this study in sustaining long-term compliance is warranted

Comparison of MD & Nurse Compliance Rates (N = 1599)



## References

Centers for Disease Control (CDC) (2000). Hospital infections cost U.S. billions of dollars annually. Retrieved on February 17, 2009. <http://www.cdc.gov/od/oc/media/pressrel/r2k0306b.htm>  
Graves, N. (2004). Economics and prevention hospital-acquired infection. *Emerging Infectious Diseases*, 10(4), 561-566.  
Haas, J. P. & Larson, E. L. (2008). Compliance with hand hygiene. *American Journal of Nursing*, 108(8), 40-44.