

Impact of Simple Intervention on Hand Hygiene Compliance from Two Hospital Units Using Electronic and Manual Data Collection Methods

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Background

- My practicum site was the University Hospital (UH) Cleveland Medical Center Department of Infectious Diseases. (11100 Euclid Ave, Cleveland, OH 4410)
- My work focused on examining hand hygiene (HH) compliance on two medical-surgical hospital units using manual and electronic monitoring techniques.
- Maintaining proper HH is critical in healthcare settings to prevent the spread of healthcare associated infections (HAIs) among patients, employees, and visitors.
- In 2009, the World Health Organization introduced the '5 moments of hand hygiene.'

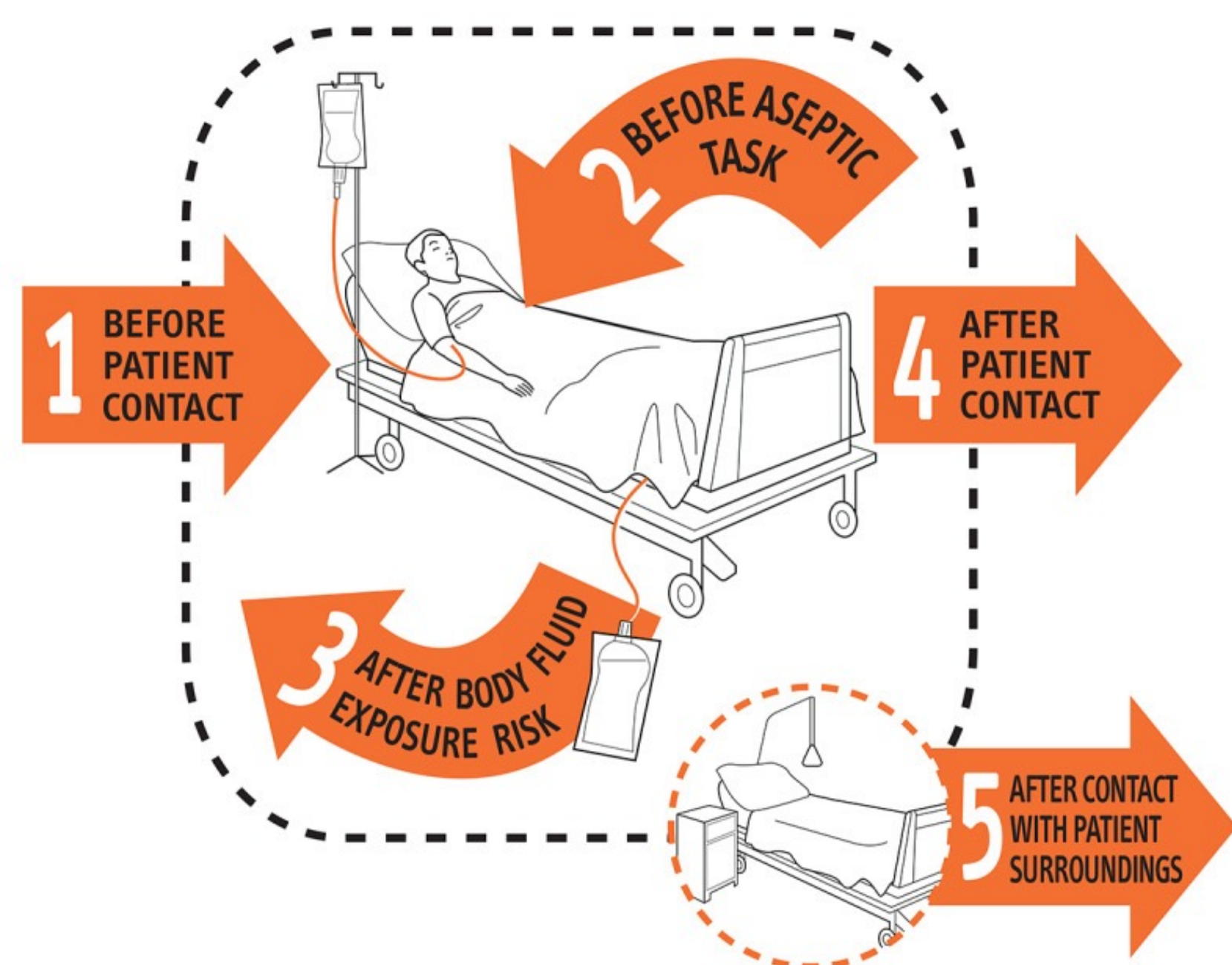


Figure 1—WHO '5 Moments of Hand Hygiene': (1) Before touching a patient, (2) Before a clean/aseptic procedure, (3) After a body fluid exposure risk, (4) After touching a patient, and (5) After touching a patient's surroundings

Population

This practicum aims to reduce the transmission and prevalence of illnesses and infections among hospitalized patients.

Learning Objectives

- Use the Redcap web application to collect data manually on HH compliance in medical-surgical units at UH.
- Assess the usage of electric hand hygiene monitoring (EHHM) among healthcare providers and hospital employees in UH.
- Compile a dataset containing this data and write a report discussing the importance of HH in hospitals settings.

Activities

- My activities included:
- Conduct HH manual observation on two hospital units and uploading these observations to the Redcap software.
 - Meeting with GOJO Purell staff to learn how their EHHM products are designed and discuss their effectiveness.

Deliverables

- Interactive data display in Power BI software from data gathered in Redcap and the EHHM.
- Manuscript for submission to the American Journal of Infection Control.
- Tables: (1) Total events and observations before and after simple intervention (2) Statistical analysis.

Methods

We collected de-identified data from three weeks before (June 7, 2023 – June 27, 2023) and three weeks after (June 29, 2023 – July 20, 2023) the simple intervention implementation on June 28, 2023. We used two methods of data collection:

1. Manual Data Collection:

- UH Redcap web application was used.

2. Electronic Data Collection:

The EHHM GOJO Purell system was installed in Unit 1 and contained three main components:

- The smart module on the dispensers
- The wall gateway counters
- The Microsoft cloud software (stores aggregate HH compliance data and calculates compliance using the following equation):

$$\text{Performance rate \%} = \frac{\text{events}}{\text{opportunities}} \times 100\%$$

events = the total dispenses of soap or hand sanitizer anywhere on the unit

opportunities = the total number of patient room entries and exits by any personnel



Figure 2—GOJO Purell System Components: GOJO Purell smart module and Microsoft cloud system

- The **simple intervention** consisted of flyers posted at the nursing station and door to Unit 1 that informed anyone entering of the constant EHHM.

Results

Unit	Before			After		
	Total Observations:	HH Events:	Percent Compliance:	Total Observations:	HH Events:	Percent Compliance:
1 (manual)	309	68	22.01%	302	113	37.42%
2 (manual)	336	56	16.67%	314	69	21.97%
1 (electronic)	79,562	13,424	18.03%	81,451	18,395	24.91%

Table 1—Total Observations and Compliance Percentages: Total observations, HH events, and percent compliance collected before and after implementation of the simple intervention for Units 1 and 2.

Units 1 and 2:		
	p-value	chi-squared
Before intervention	0.0858	2.951
After intervention	<0.0001	17.64
Unit 1 (manual)		
Before and after	<0.0001	17.367
Unit 1 (electronic)		
Before and after	<0.0001	548.659
Unit 2		
Before and after	0.0869	2.931

Table 2—Statistical Analysis: P-value and chi-squared values for Units 1 and 2 before and after simple intervention.

Conclusions

- Our findings suggest that the simple intervention increased HH compliance on Unit 1 compared to Unit 2.
- Electronic data from Unit 1 indicate a significant increase in compliance percentages before and after implementation of the simple intervention.
- EHHM systems have the potential to reduce the overestimation of HH compliance on quality assurance reports by hospital managers that undercut the issue of HH in hospitals.

Public Health Implications

- Increased Patient Safety:** The observed rise in HH compliance suggests a positive impact on patient safety, potentially reducing the risk of HAIs.
- Quality Improvement:** Comparing compliance rates and implementing targeted interventions allows for continuous improvement in healthcare practices, fostering a culture of patient safety.
- Cost Savings:** Improved HH practices can lead to cost savings by reducing HAIs, minimizing the need for additional treatments and resources.

Lessons Learned

- I learned how to formulate research questions, develop practical interventions, and collect data to assess their effectiveness.
- Working on this project enhanced my understanding of the importance of evidence-based practices in public health and the need for continuous evaluation to inform decision-making.
- This research experience provided me with a deeper understanding of the many challenges that often accompany these endeavors and the importance of efficacious problem-solving.

Acknowledgements

I would like to thank my preceptor, Dr. Elie Saade and his excellent research team for their continuous support and guidance throughout my practicum. I would also like to express my sincere gratitude to UH and GOJO Purell for providing the resources necessary to complete this project.



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