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Implementing Guidelines to Improve Hand Hygiene Compliance

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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MS, Walden University, 2011

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Project Submitted in Partial Fulfillment

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Abstract

Hand hygiene is the term for removing microorganisms with disinfecting agents, alcohol-based rub, or soap and water. Evidence supported the low rates of hand hygiene compliance among health care workers. This project addressed this gap in practice at a large acute care facility through an educational training program. Data from the facility on hand hygiene compliance revealed a compliance rate of 63%. The problem question explored whether an educational program on hand hygiene improve compliance. The focus of the program was to provide education on the World Health Organization's My 5 Moments for Hand Hygiene and the 7-step technique for performing hand hygiene to improve overall compliance. A 2-week education program was provided for a wide cross-section of health care workers involved in direct patient contact. A total of 266 employees participated in the hand hygiene education and training. Education was delivered using a Sure Wash Kiosk, which was portable from floor to floor. Pre- and post-education hand hygiene data were evaluated to determine the effect of education on health care workers' compliance. Pre-education data revealed low compliance with hand hygiene and knowledge gap with both indications (5 Moments) for hand hygiene and hand hygiene techniques (7 steps). Post education data showed a significant improvement of compliance with the 5 Moments and techniques outlined during education. The result of this study is significant as it provides evidence supporting point of care education to improve hand hygiene compliance. Chief beneficiary will be the patient population who will receive high quality safe care promoted by evidence-based practice.

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Dedication

Dedicated to my dearly beloved mother Melka Jane Currie who inspired me to achieve and dream

Acknowledgments

I would like to acknowledge the many friends and supporters who allowed this project to be possible; without your encouragement and assistance, I could not have done this. Thanks to Francine who became my preceptor when no one else would. Thanks to Marcia who put up with me; to Regina, Adriana, Maria Medina, you all play a role in journey. To Luz for letting me bother you all the time. To Dr. Whitehead who rescued me when I was floundering around, helping when I was so discouraged. The other members of the committee, thank you for your input. I could not have done it without you. To Simone, Shana, Dania, and Orlette, thank you for tech support, editing, design consults, and just being there.

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Section 1: Nature of the Project

Introduction

Effective hand hygiene has been known to reduce the incidence of hospital-acquired infections (HAIs). *Hand hygiene* is defined as the process of removing microorganisms from the hand, whether with disinfecting agents such as alcohol-based rub or with antimicrobial soap and water (Pfoh, Dy, & Engineer, (2010). Although the positive effects of hand hygiene compliance are known, compliance with hand hygiene among health care workers (HCWs) is traditionally low; HCWs often over estimate their compliance with hand hygiene. According to the Centers for Disease Control and Prevention (CDC, 2018), HCWs clean their hands much less than they should. Literature supports education as an effective method to reinforce hand hygiene practice among staff.

Problem Statement

HAIs are an ongoing problem for health care institutions (HAIs) that results in high cost and increased mortality and morbidity (CDC, 2016). There are almost 2 million cases of HAIs and 99,000 deaths reported in the United States each year (CDC, 2012). Approximately one of every 25 patients will acquire some form of HAI. More than $24 billion is spent caring for these patients (Mortell, 2012). Effective hand hygiene has been known to reduce transmission of pathogens primarily in the health care settings (Marra & Edmond,2014). Hand hygiene is recognized as the single most effective intervention for decreasing the spread of infection (Mortell, 2012).

Ongoing data collection is occurring for both hand hygiene compliance and hospital-acquired infections, adhering to requirements by National Healthcare Safety Network (NHSN) to monitor and report institutions' efforts to reduce infections. In a 250-bed community hospital in the southern United States, hand hygiene compliance was low, and high incidence was observed of HAIs. According to the CDC, on average, HCWs clean their hands less than half of the time they should (CDC, 2018).

Purpose

My purpose in this project was to improve hand hygiene compliance through staff education. I followed the DNP Manual for Staff Education. The practice question was: Will an education program on hand hygiene improve compliance?

Beginning in January 2018, The Joint Commission (JC) surveyors penalized facilities for any single observed hand hygiene infraction (Castelluci, 2018). No national benchmarks exist for compliance since each institution has different measuring criteria. The JC required organizations to develop and implement programs to improve hand hygiene compliance within their institutions (Castelluci, 2018). Each institution was responsible for monitoring and demonstrating improvement, as well as establishing institutions' goals for hand hygiene compliance.

Nature of the Doctoral Project

This education program was provided to nurses, patient care technicians, respiratory therapists, transporters, phlebotomists, and all staff involved in direct patient care. The program reviewed current hospital policy as well as current evidence on hand

hygiene practices, using the WHO and CDC guidelines on hand hygiene practice. In the facility, employees from a variety of units conducted daily hand hygiene surveillance. These “secret shoppers” observed hand hygiene moments and recorded compliance or infractions. They also provided feedback to employees observed, as well as provided a monthly report for the quality management department. In addition, infection control and prevention specialist and selected trained personnel conducted surveillance on patient care units.

Analysis of these reports for 6 months prior to developing educational program was conducted and results used to determine practice gaps. The use of chlorohexidine baths for all patients, use of antibacterial nasal swabs, and patient hand hygiene education had all been in place for longer than 6 months at the time of hand hygiene training for staff. Benefits to staff and institution was an increased awareness and reinforcement of hand hygiene importance. Patients benefited from staff who were maintaining proper hand hygiene as this reduced their exposure to infection.

Significance of the Practice Problem

HAIs are an international phenomenon that has placed patients at risk, affecting close 100 million patients (Pittet, 2012). One in every 25 patients in the United States is affected by HAIs; more than $24 billion is spent on HAIs annually; more than 99,000 deaths are associated with HAIs annually in the United States (Huis et al., 2012). HAIs have adversely affected patients’ outcomes, resulting in increased hospital stays, complications of previous illness as well as an increase psychological and emotional

effects on patients and their families. HAI is a worldwide problem affecting both developing and developed countries. Five percent to 10% of adults admitted to a hospital will be affected (Pincock, Bernstein, Wartman, & Holst, 2012). HAIs increase morbidity and mortality of the patient population. Hand hygiene is the leading measure for reducing antimicrobial resistance as well as reducing HAIs (Allegranzi & Pittet, 2009). Providing an education program to nursing staff and other employees helped to foster an environment of safety that results in improved patient outcomes and increase compliance with hand hygiene practices.

Summary

Hand hygiene is the single most effective tool HCWs can use to prevent transmission of pathogens to patients. Hand hygiene is a primary measure to reduce infections; it is described as "a simple action . . . . But the lack of compliance among health-care providers is problematic worldwide" (Pittet, 2012, p. 1). The link between disease reduction and hand hygiene has been well established and talked about (Pittet, 2012). According to Pincock et al. (2012), it is critical to have effective strategies in place to reduce the spread of infection and improve hand hygiene compliance while caring for patients; it is an essential step to the prevention of HAI. The link between the improvement of hand hygiene compliance and the reduction of infections has been recorded in literature. Early scientists Semmelweis and Labarrque presented compelling evidence that decontamination of hands prevents infections (Landers,2015). However, challenges remain with compliance. It is important for HCWs to perform effective hand

hygiene while engaging in patient care. Section 1 introduced the nature and significance of hand hygiene and identified the gaps in hospital practice in a community hospital. Section 2 explores Malcom Knowles' theory of adult learning as the framework for this project. I will address the relevance to nursing practice and the role of stakeholders in Section 2.

Section 2: Background and Context

Introduction

The issue of hand hygiene among HCWs is complex and has been ongoing throughout the years. Hand hygiene is a key component to reducing pathogen transmission and nosocomial infections, but the ability to sustain compliance have not always been successful (Neo, Sagha-Zadeh, Vielmeyer, & Franklin, 2016). The problem question for my study was: "Will an education program on hand hygiene improve compliance"?

In this section, I examine the concepts, theories, and models. I explore the relevance of hand hygiene compliance and findings from my literature review. This section also includes background data from the practice site and my role as the DNP student in education program development and implementation.

Concepts, Models, and Theories

The concept of hand hygiene and patient safety is an essential part of the health care settings. The education program was for all employees within the facility involved in direct patient care, starting with a single unit. Adopting an adult learning theory ensured

that education was tailored to meet the needs of the adults involved. Malcom Knowles's theory of adult learners was applied., Knowles's theory has five assumptions that makes the adult learner different from a child learner. These differences include the adults' self-concept, experiences, readiness to learn, orientation, and motivation to learn. The theory is based on four principles:

- Involving the learner in the planning and evaluation.
- The learner's experience provides a basis for activity.
- Topic must be relevant.
- Information is problem centered. (Papas, 2014)

Table 1 depicts the relationship between Knowles Theory of Adult Learning and the hand hygiene program.

Table 1

Relationship of Theory to Program

Malcom Knowles principles	Hand hygiene education program
Involving the learner in the planning and evaluation	Form focus groups for planning Act as facilitator
The learner's experience provides a basis for activity	Connect to prior experience Use champions to provide on unit training
Topic must be relevant	Clear goals and objectives
Information is problem centered	Provide data on institution's HH compliance

Operational Definitions

Hand hygiene: A general term referring to any action of hand cleansing with soap and water or alcohol rub.

Health care worker: Someone who works in a hospital or health clinic, with a job to protect and improve the wellbeing of their community; all people engaged in actions whose primary intent is to enhance health (WHO,2006).

Pathogen: An agent causing disease or illness to its host; an agent that disrupts the normal physiology of a multicellular animal or plant (Science Daily, 2017).

Surveillance: Method of collecting, consolidating, and analyzing data concerning the distribution and determinants of a given disease or event: followed by dissemination of information to those who can change the results (Barnard, 2012).

Hospital-acquired infections: Infections patients can get while receiving medical treatment in a health care facility (CDC, 2016).

Relevance to Nursing Practice

Nurses are the primary caretakers of patients. Providing knowledge on hand hygiene enhanced nurses' ability to deliver safe, high-quality care to their patients. Nurses can act as role models, implementing care based on best available evidence. When nurses are compliant with hand hygiene practices, other employees can copy their behavior, (Lankford et al., 2003). Hand hygiene has been promoted as a simple cost-effective method of reducing infection transmission; effective HH can significant affect patient outcomes.

Activities were aligned with guidelines from the JC, WHO, CDC, National association of health care quality (NAHQ), and Patient Safety Net. These organizations have provided detailed instructions for HCW hand hygiene practices (Landers, 2015). The Society for Healthcare Epidemiology (SHEA) collaborates with other organizations, including the Infectious Disease Society of America (IDSA), the American Hospital Association (AHA), the Association for Professionals in Infection Control and Epidemiology (APIC), and The Joint Commission and offers guidelines with critical components of hand hygiene practices in health care settings. These guidelines are based on years of collaborative international studies (Ellingson et al., 2014). Guidelines include step-by-step instructions on how to perform hand hygiene, techniques used for hand hygiene, length of time, use of gloves, choice of agents, as well as optimizing infrastructure to facilitate compliance (JC, 2017).

A systemic review of literature revealed several strategies for improving hygiene compliance in health care settings; most tailored interventions to meet the needs of their facility. Articles were selected based on how current they were, their activities, and settings they examined. The most common interventions were increasing awareness and knowledge through educational programs (Walker et al., 2014); monitoring and feedback (Boyce, 2013); and increased surveillance (Chang et al., 2013); reminders through increased signs (Neo et al., 2016); accountability through feedback and violation letters in some cases (Kingston, Slevin, O'Connell, & Dunne, 2017).

Although different strategies were mentioned, programs all included education and training for staff and feedback as effective methods to improve compliance. Literature supports a multimodal approach, with education as a core element. I sought to establish the effects of education on hand hygiene compliance, and the aim of this project was to evaluate the effect of education as a single method to improve hand hygiene compliance.

Several barriers to hand hygiene compliance were also identified throughout literature. These can be separated in different categories: environmental, personal, or self. Some environmental factors are sink location, or absence of sinks, not enough hand sanitizers, inadequate access to hand hygiene products. Several of these factors were addressed, with appropriate placement of sinks and hand sanitizers at the practice site, yet HH compliance was still below organization expectations. To gain compliance employees, must be convinced HH is a worthwhile and relevant to their role as HCW (Mortell, 2012).

Personal attitude barriers to compliance include skin irritation from products, the belief that there is not an indication for hand hygiene, and the belief that not enough time exists to perform hand hygiene. Consideration for skin-user-friendly product selection may address these concerns. Under category of self, employees forget, express work overload, feel rushed, and the belief that patient care is more important than performing hand hygiene. Ignorance of guidelines and lack of scientific information were also identified as barriers to hand hygiene compliance (Pittet, 2012). Literature suggests that

compliance to hand hygiene practices is part of the individual's conscious decision making (Lutze et al., 2017). Being male or being a physician predisposes an individual to be noncompliant with hand hygiene, suggesting special attention may be needed when educating these employees (Lutze et al., 2017).

All literature reviewed supported a multimodal approach to improving hand hygiene compliance, with knowledge transfer through education being the key intervention. Simple educational modules that included varying forms of presentation, allowing participants to have discussions, role play, and return demonstrations, have been found to improve compliance (Phan et al., 2018). This improvement was sustained. Literature supports the interventions are to fit the specific roles and settings of the employees, involving the total patient journey (McInnes, Phillips, Middleton, & Gould, 2014).

Although strategies for improvement of hand hygiene compliance are present throughout literature, "there is a dearth of high-quality robust evidence demonstrating which intervention is most effective at improving and sustaining compliance" (McInnes et al., 2015, p. 5). Science validates the transmission of pathogens from HCWs' hands and the dominant role effective decontamination plays in reducing the spread of infection in the health care setting (Loveday et al., 2014). This can be demonstrated with simple culture of an individual's hands before and after hand hygiene is performed. Hand hygiene is simple, cost-effective method of preventing hospital-acquired infections (Mathur,2011). The Agency for Healthcare Research and Quality (AHRQ) targeted and

funded hand hygiene as effective intervention for reducing surgical site infections (SSI), blood stream infections (BSI), ventilator associated pneumonia (VAP) and catheter associated urinary tract infection (CAUTI) four of the more common HAIs (AHRQ,2010)

The WHO has documented research on the impact of improved hand hygiene compliance in reducing major HAIs caused by multidrug resistant organisms (MDRO). These include the most common types of HAIs, including methicillin resistant staphylococcus aureus (MRSA) and Vancomycin resistant enterococcus (VRE). Results of research conducted between 2002-2013 demonstrated a significant reduction in incidence of MDROs with improved hand hygiene compliance (WHO, 2014).

The Association for Professionals in Infection Control and Epidemiology (APIC) developed extensive guideline for hand hygiene training to reduce HAIs. These guidelines outlined essential components of education for HCWs. They provided detailed instructions on facilities' responsibilities to meet regulatory bodies' requirements. They have information for education of staff, including education promotional activities, training modules, educational staff support, and opportunities for reinforcing hand hygiene compliance (Landers, 2015).

The WHO also offers a Template Action Plan that includes tools for Training and education. These include HH films, 5 Moments posters, and the how, when, and why, hand hygiene brochures, among other educational information. (WHO, 2009).
Larson (2015) developed a YouTube video discussing the steps to wash hands, explaining the importance of proper procedure for effective hand washing. She explained

that no matter the quality of soap, or length time, it is vital to rub all areas of the hands and fingers as well as ensure enough product covers hands completely.

Local Background and Context

Hand hygiene compliance at my institution ranged between 83% to 90% during 2016 but fell between April and September 2018 to 60% to 78%. Literature reveals that HCWs' beliefs on their compliance are often overestimated. According to Landers (2015), traditional compliance among HCWs is low. Over the last 3 years, I have shadowed my preceptor in the quality department, specifically in the area of infection control. Through participation in hand hygiene surveillance, I was able to identify the gaps that existed between employees' hand hygiene practices and the established guidelines for hand hygiene. This has formed the basis for my DNP project.

Analysis of existing data revealed the gaps with practice and guidelines, the WHO five moment s hand hygiene guidelines and the seven steps technique were used for the education program. Guidelines are based on research and collaboration of multiple groups and provide detailed information on best available evidence for HCWs' compliance with hand hygiene practices (Ellingson, 2014).

Role of the DNP Student

My role was to coordinate and collaborate with key stakeholders, nursing leaders, management, and information technology to gain support for this project. I was able to develop and propose the educational program as well serve as role model and mentor to other staff, supporting the ongoing training and education on hand hygiene compliance.

My facility provided The Sure Wash portable trainer, and I helped to customize the information used for our facility training.

Some essential properties should be present to enhance the change process; these properties include effective leadership, an organizational culture that supports learning, dynamic teams, and a technology system that ensures that the organization stays abreast of acceptable trends in patient quality improvement (Ferlie & Shortell, 2003). Applying new skills and knowledge to effect change, expanding the scope of practice, and utilizing a variety of perspectives to address problems within organizations and communities are all elements of the DNP essentials outlined by American Association for Colleges of Nursing (AACN) (Terry, 2015).

Summary

Hospital-acquired infections (HAIs) are a major global problem with an estimate that between 20% and 40% of HAIs are preventable (Pincock et al., 2012). Each organization has a responsibility to reduce its infection rate and improve patient safety. Section Two discussed the relationship of Malcolm Knowles theory of adult learning to this project. Operational definitions of concepts supporting this project were discussed. Section 3 will discuss collection and analysis of evidence, examine the sources of evidence, discuss the data collection and review, as well as analyze and synthesize evidence

Section 3: Collection and Analysis of Evidence

Introduction

Change is defined as "the transformation of tasks, processes, methods, structures, and/or relationships" (White & Dudley-Brown, 2012, p. 49). This definition suggests that change must be planned, managed, and considered based on the people to be affected. According to Institute of Healthcare Improvement (IHI, 2010), effective change requires cultural change—redesigning processes and systems is not enough. Instead, health practitioners' education should be ongoing, including the most accurate information on infection control. This section will discuss the planning, implementation, and evaluation of the education program.

My purpose in this project was to increase hand hygiene compliance and reduce the incidence of HAIs through development of an educational module. The practice question is: Will an educational program on hand hygiene improve compliance? This project was in keeping with the evidence discussed in Section 2 that ongoing education on hand hygiene leads to improved compliance. Hand hygiene is a core component of infection control and can have a significant influence quality on patient outcomes; HCW compliance results in improve patient quality and safety (Gaikwad, Tankhiwale, & Kulkarni, 2018).

Sources of Evidence

In this project, I followed the development of a staff education program outlined in the DNP manual for staff education.

Planning

Educational needs, which were identified during my participation in hand hygiene rounds as a student during practicum experience, were addressed in the educational program. This education program was based on the guidelines for hand hygiene in HCWs developed by CDC and WHO. Instruction was in form of a PowerPoint presentation with handouts and a Sure Wash kiosk. Demonstrations on HH techniques as well as opportunity for return demonstration were done with this portable kiosk. Educational material was obtained from the CDC and WHO websites and used for handouts.

Protection of Human Subjects

There was no risk to patients or personnel, as the project used de-identified data from the institution's database. Participation in the class was through unit huddles and mandatory skills training. Benefits to staff and institution included increased awareness and reinforcement of HH importance. Data were handled confidentially. Results will be stored in secured files. The results of project will be published in ProQuest and available Walden University. The Walden University IRB approval number is 05-24-18-0136509.

Implementation

Approval was obtained from the director of nursing as well as research committee (Appendix A and B). A flyer inviting health care providers to attend the hand hygiene program was sent to Chief Nursing Officer (Appendix C). Educational sessions were conducted on different shifts in the course of 3 weeks to accommodate the varying shifts of the providers. Other members of staff were required to complete hand hygiene training

as part of a mandatory skills training. These included any groups of HCW who were involved in direct patient contact.

Evaluation

- Some participants completed an evaluation of the program (Appendix C) and questionnaire built in Sure Wash.
- Data on hand hygiene compliance and hospital-acquired infections were collected and reviewed 1-month post education program.
- Results of the above data were analyzed and shared with nursing administration. Recommendations for further hand hygiene education were presented to CNO administration and infection control department.

Archival and Operational Data

Currently, the facility conducts daily hand hygiene surveillance using secret shoppers. The secret shoppers observed hand hygiene moments and recorded compliance or infractions, using de-identified information. Secret shoppers were coached in observation technique to ensure consistency with information being entered. Collection is done using the tool that was designed by WHO for hand hygiene observation (Appendix F). Secret shoppers were independent persons with no alliance to any unit Feedback was provided to employees observed; this formed a quarterly report for the infection control and prevention department Direct observation is considered the gold standard of surveillance, as direct observation can capture all five hand hygiene moments indications and allow for feedback at the point of an event (Boyce, 2013).

Analysis and Synthesis

Evidence from the facility to support this project was analyzed. Data were examined to include percentage of compliance, trends, patterns among groups, and shifts. Data also included the type of infractions and contributing factors. I de-identified data and did not include names of employees or any patients. Analysis of these reports from April to September 2018, 6-month period prior to education program and 1-month post education were examined.

Gaps between literature review, findings, and WHO guidelines and recommendations for future studies were addressed once the project outcomes were revealed. Participants evaluation of the program were analyzed, and the results shared with nursing administration. In Section 4, I will discuss the relevance of findings, recommendations, and future investigation of hand hygiene education for HCWs.

Summary

It is important to recognize what influences hand hygiene compliance and implement strategies that will support behavior changes among HCWs. In Section 3, I described the process for planning, implementing, and evaluating the hand hygiene education program. In section 4, I discussed the findings and implications of the project and further recommendations to support a practice change.

Section 4: Findings and Recommendations

Introduction

Hand hygiene is an important aspect of infection prevention. Evidence supports this practice among HCWs, but low compliance has been an ongoing problem for the health care industry. Multiple strategies are documented for improving compliance among HCWs with education as a key component. My purpose in this DNP project was to improve hand hygiene compliance among the staff of a large acute care facility in the southeast U.S. The practice question was: Will an educational program improve hand hygiene compliance? I examined the results of hand hygiene compliance after an education program on hand hygiene and compared the results to the compliance rate prior to the hand hygiene program. In Section 4, I reported the results of the pre- and post-education data implications for practice, recommendations, strengths, and limitations of the DNP project.

Findings and Implications

Monitoring of hand hygiene compliance was done by each unit on a monthly and on quarterly basis by the infection prevention specialists. Monitoring was done through direct observation by secret shoppers and individuals trained by the infection prevention specialists. Results are reported from observers. Deidentified reports were provided to me by the facility.

Direct observation continues to be the standard practice recommended by the WHO (Loveday,et al 2014). The WHO's (2009) 5 Moments for Hand Hygiene

emphasize the indicated times for employees to perform hand hygiene: (a) before touching a patient, (b) before clean or aseptic procedures, (c) after body fluid exposure, (d) after touching a patient, and (e) after touching the patient environment.

Pre-Education Program Data

The data for 6 months (2 quarters) prior to initiating hand hygiene training were examined. The results showed overall compliance among the staff ranging from 60% to 79%. Nurses demonstrated higher levels of compliance compared with other health care providers. The two-quarter data from the facility scorecard revealed a 53% compliance with hand hygiene before care, 77% after contact with patient care, 40% compliance after contact with patient environment, 83% after exposure to body fluid, and 43% before aseptic procedures. More than 420 opportunities for hand hygiene existed. Only 254 observations met the standards for appropriate hand hygiene.

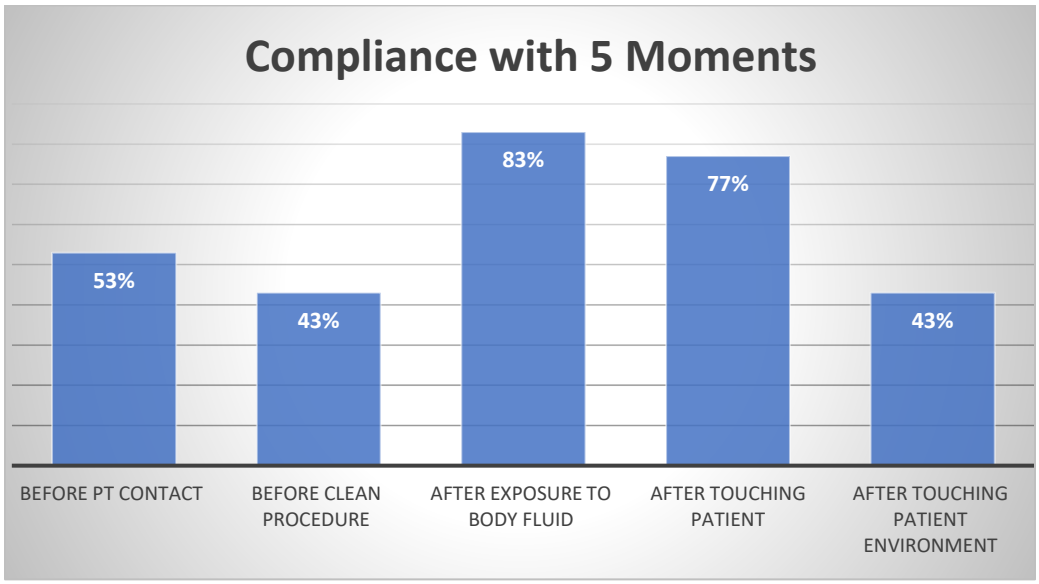


Figure 1. Compliance with 5 Moments (JHS, 2018).

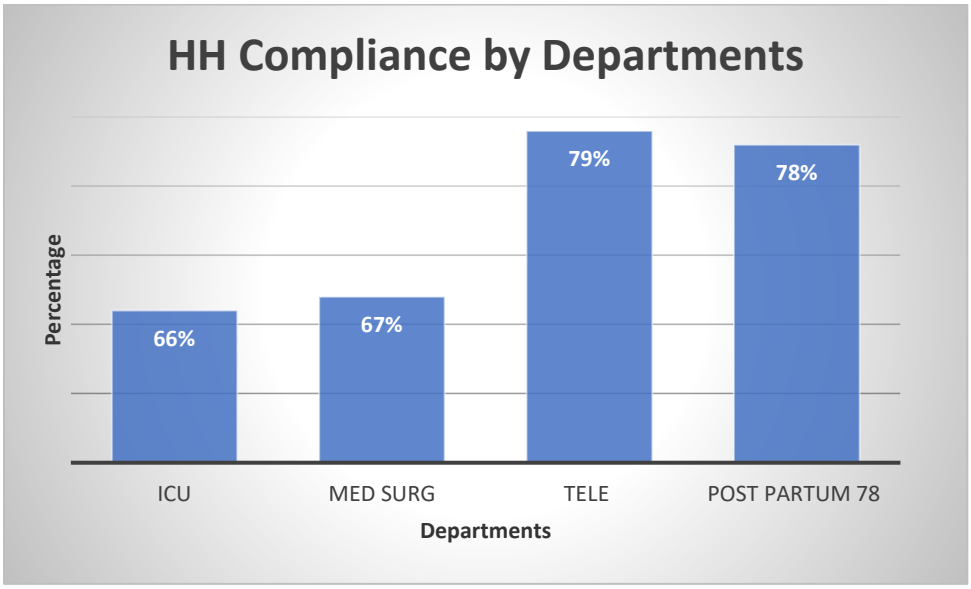


Figure 1. HH compliance by departments (JHS,2018).

Using the observation tool/form recommended by WHO (Appendix F), observers documented the contributing cause of noncompliance. Despite many factors that can contribute to noncompliance with hand hygiene, distraction and forgetfulness were the most commonly documented reasons for noncompliance. Shortage of time was not listed as a contributing factor, and shift of work did not appear to play a significant role in noncompliance based on analysis of data. This result may be because very limited observation was conducted on the night/evening shift.

Education Program

From November 6-20, 2018, the infection prevention team and I conducted the hand hygiene education Med-Surg, ICUs, emergency room and post-partum units. On November 15 and 20, we participated in mandatory skills training of radiology techs,

transporters, rehabilitation staff, phlebotomists, lab workers, nurses, and patient care technicians. Training included both day and night shifts using the Sure Wash mobile portable kiosk. Two hundred sixty-six employees participated in the training.

Sure Wash is a portable training kiosk that uses a live video camera to measure the performance of the individuals as the wash their hands (Sure Wash, 2014). This system was designed to detect the hand-washing techniques and provide immediate feedback. Employees create a profile and their information is stored electronically; this can be retrieved, and data extracted by the administrator. The Sure Wash allowed members of staff to perform the seven steps technique to hand hygiene proposed by WHO, as well as identify the 5 Moments through questionnaires at the end of the session. The machine critiques their performance providing feedback with a passing or failing grade. Participants also reviewed a PowerPoint handout on the golden rules of hand hygiene and the hospital policy and procedures on hand hygiene.

Post Education Program Data

Post education data revealed an increase in hand hygiene performance by employees. The percentage of compliance increased from 60% to 81% over a period of 1 month. The reports obtained from the Sure Wash revealed that deficits existed with both knowledge and technique of HH among the staff. Two hundred and sixty-six hand hygiene events were recorded on the Sure Wash station. One hundred and twenty-eight of these events were nurses. Respiratory therapists, patient care technicians, physical therapists, phlebotomists, radiology technicians, and transporters comprised the other

members of staff who participated in training. Reports revealed the specific hand washing techniques that participants had difficulty completing. Thirteen percent of participants were able to accurately simulate the techniques demonstrated, and 43% obtained passing grades on the questionnaires.

During these sessions, opportunities to educate participants on the 5 Moments as well as seven steps were provided, using PowerPoint and handouts. Although early, the resulting improvement in compliance following the education is an indication that point of care education can result in improved compliance.

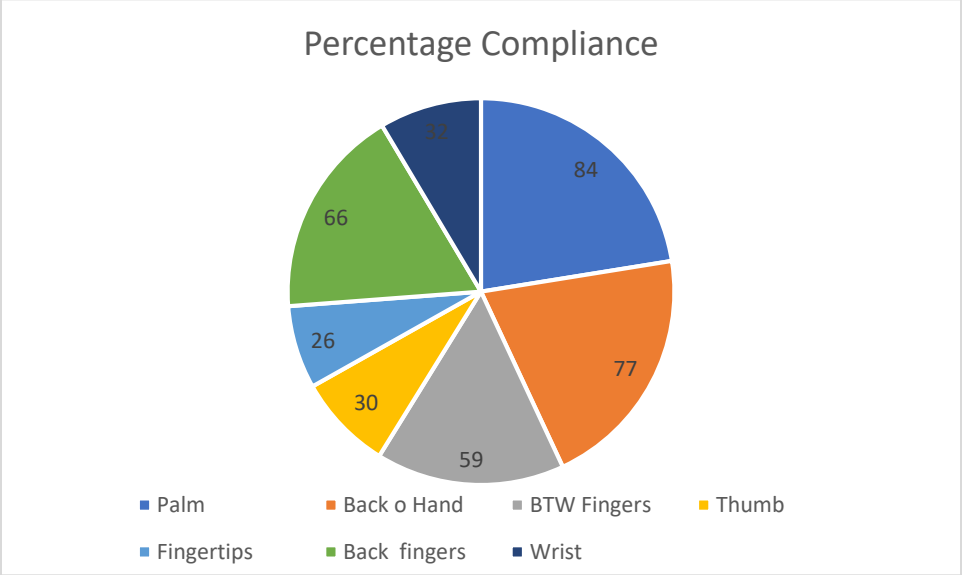


Figure 2. Percentage of compliance with seven steps.

Recommendations

Data supports the positive effects of education on HH compliance; the recommendation is therefore for continued point of care education to all staff to ensure the institution's goal of 100% compliance is achieved. One method can be through

identifying and training HH champions who would support the education process. Online training, which exists in our facility, should be complemented by face-to-face training to ensure staff an opportunity for feedback (WHO, 2009).

Second recommendation is for education through poster boards posted on the units with the 5 Moments (indication for HH) and the seven steps technique, highlighting steps for completing hand hygiene. These signs would always be available and visible to staff and provide easy access to educational information.

The compliance scores of each unit should be posted, with incentives offered for units that achieve the highest percentage of compliance quarterly. These incentives may motivate staff not only to improve performances but may create competition among departments.

Strengths and Limitations of the Project

The strength of the project is the use of direct observation to evaluate and determine hand hygiene compliance among HCWs, as this has been described as the gold standard. It allows the observer to note compliance with hand hygiene throughout the entire care event and provide feedback to HCW. Using the portable Sure Wash kiosk allowed more employees to participate in hand hygiene training and provided an "augmented reality competence training in hand hygiene" (Sure Wash, 2014) at the point of care.

Limitations include that direct observation, education, and training can be labor intensive. Direct observation can also produce Hawthorne effect where HCW will

comply because they are being observed. The individual will comply if they are being observed, but the behavior is not sustained.

Summary

Literature supports education as a primary step to improving compliance with hand hygiene. Using the point of care method, the Sure Wash allowed employees to engage in training and receive instant feedback. Not practicing hand hygiene can result in serious negative consequences for our patient population, while ongoing education can help to create a culture of quality and safety. Although hand hygiene is for all members of staff, nurses can take the lead in ensuring and sustaining hand hygiene compliance. (Hart, 2013). Section 4 discussed the findings pre and post hand hygiene training, shared information on Sure Wash technology and discussed strengthens and limitations of the project and offered recommendations. Section 5 will discuss dissemination of findings and include a self-analysis.

Section 5: Dissemination Plan

Introduction

Hand hygiene plays a pivotal role in reducing HAI. HAIs cost hospitals $35-$45. billion annually and result in thousands of patients' deaths (Becker's Clinical leadership and Infection control, 2015). Compliance with hand hygiene practices are important in preventing and reducing infection. Education is identified as a significant strategy in improving compliance. Phan et al. (2018) published findings of significant improvement in compliance and knowledge post educational program. "Studies support an interactive educational program ... to significantly increase hand hygiene compliance" (Mathur, 2011, para 15).

In Sweden, a single lecture on hand hygiene was enough to improve and sustain hand hygiene compliance (Mathur, 2011). Formal education and feedback resulted in $2.8 million savings in an ICU setting (Akanji, Walker & Christian, 2016). With these documented findings, there is evidence to support education as an effective strategy to improve hand hygiene compliance.

Dissemination Plan

Translating evidence to practice is important, as this may be used in decision making on patient care and inform our professional practice. According to White et al. (2016), in order to improve health outcomes, there needs to a reliable method of translating best evidence to practice.

On January 8,2018 I met with infection control and prevention personnel to review results of this project. We discussed plans for continuing HH education. Along with the facility-wide plan to improve HH compliance through multiple initiatives, the goal is 100% compliance. The recommendations will be considered for ongoing education, and currently, other methods of monitoring hand hygiene compliance are being discussed. The chief nursing officer was also provided with pre- and post-education findings as the reports from the Sure Wash training sessions as well as the recommendations for increased education program in HH to improve compliance. These highlighted the different departments and their compliance, which will be shared with department leaders.

Analysis of Self

The DNP program prepared me for the role as a leader and a change agent. The DNP essentials emphasized ways in which I could become involved in implementing change. Hand hygiene compliance and the issues we faced as a facility were identified early in my practicum experience. According to the AACN (2001), this practice-based doctoral degree seeks to identify a practice problem then seek to address the problem.

As a nurse scholar, I sought to contribute meaningfully to the practice of nursing through inquiry, curiosity, and critical thinking. I sought the resources and evidence needed to implement change in my present environment. Nursing scholarship is characterized by curiosity, critical thinking, continuous learning, reflection, inquiry, and

creativity among other activities as the individual seeks evidence to improve clinical interventions (AACN, 2001).

Throughout my studies as a DNP student, I have grown as a researcher, educator ,and a leader, seeking to influence the practice environment. Developing a DNP project was challenging; I was able to learn more about myself and how to handle adversities and disappointments. I discovered how to collaborate with other health care professionals, assuming a lead role in scheduling meetings appointments, and classes. The DNP courses taught me how to evaluate evidence and review scholarly works that support or add value to my current subject. I was able gain knowledge on infection control issues and was able to share with other members of the health care team. I discovered a passion for infection control and prevention as well as quality improvement measures.

Summary

My DNP project focused on the role of hand hygiene and the use of an educational program to improve compliance among HCW in a small community hospital. The concept of HH as a method of reducing the transmission of pathogens to our patients is one that is over 200 years old (Landers, 2014). Yet, there are still struggles with compliance among HCW. The program focused on increasing the knowledge of employees in order to change practice and improve patient outcome. According to WHO (2009), every employee needs clear and comprehensive education and training on hand hygiene.

Through evaluation of data from the practice setting, needs were identified and addressed through training on HH. The initial response was that everyone knew how to wash their hands; in the end, it was evident that there were gaps between recommended guidelines and practice. Through an education program, we provided knowledge to the staff in order to bridge the existing gaps. The interactive method of education appealed to the different style of learners and provided immediate feedback on individuals' performances.

Reports from the Sure Wash validated that HCW needed additional instructions on how to and when to perform HH, with only 43% of HCWs scoring a passing score on their questionnaires and 13% returning the demonstration accurately. Additional education and instruction were provided for those who were not able to score a passing grade initially. Providing handouts with facts on HH practice allowed participants to review information and serve as a guide for their performance

Comparing pre and post education data demonstrated that behavior change could be obtained through education. Maintaining and sustaining improvement can be done through regular evaluation and monitoring as well as leadership that supports change initiatives (WHO, 2010). It is important to put programs in place that will promote positive patient outcomes. Providing ongoing education may be labor intensive; however, the long-term benefits of increased compliance will be well worth the cost. Long-standing improvement through sustained education can focus on education as an improvement strategy, which enhances other improvement measures.

References

AHRQ (2010) AHRQ'S Efforts to prevent and reduce healthcare associated infections Retrieved from https://www.ahrq.gov/sites/default/files/publications/files/haiflyer.pdf

Akanji, J., Walker, J., & Christian, R. (2016). Effectiveness of formal hand hygiene education feedback on healthcare workers' hand hygiene compliance and hospital -associated infections in adult intensive care units: A systemic review protocol. *JBI Database Systemic review implementation reports 15(5)1272-1279 doi:1011124/JBISRIR 2016-003019*

Allegranzi, B., & Pittet, D. (2009, December). Role of hand hygiene in healthcare-associated infection prevention. *Journal of Hospital Infection, 73*(4). https://doi.org/10.1016/jhin2009.04.019

Barnard, B. (2012). Effective presentation of infection control data. Retrieved from http://www.webbertraining.com

Becker's Clinical leadership and Infection control, (2013) Evidence-based Approaches to hand hygiene: best practices of collaboration. Retrieved from https:// www.beckers hospital review.com evidence-base-approaches-to-hand hygiene-best-practices-for collaboration htlm

Boyce, J. (2013) Update on hand hygiene *American Journal of Infection Control, 41*(5) supplement, Ps94-S96 doi:https://doi.org/10.1016/j.ajic.2012.11.008

Boyce, J. M., & Pittet, D. (2002). Guideline for hand hygiene in health-care settings Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Morbidity and Mortality Weekly Report, 51*(RR.16). Retrieved from https://www.cdc.gov/mmwr/PDF/rr/rr5116.pdf

Cambridge Dictionary Online. (n.d.). Microorganism, Retrieved. https://dictionary.cambridge.org/us/dictionary/english/microorganism

Castellucci, M., (2018) Joint Commission cracks down on hand hygiene *Modern Healthcare.* Retrieved from https://www.modernhealthcare.com/article/20180103/NEWS/180109976

Centers for Disease Control and Prevention. (2009). *Hand hygiene*. Retrieved from https://www.cdc.gov/nceh/cruising

Centers for Disease Control and Prevention. (2016). *HAI data and statistics*. Retrieved https://www.cdc.gov/hai/data/index.html

Centers for Disease Control and Prevention. (2018). *Hand hygiene in health care settings.* Retrieved from https://www.cdc.gov/handhygiene/index.html

Chang, C., Reisinger, H., Jesson, A. R., Scheizer, M. L., Morgan, D. J., Forest, G. N., & Perencevich, E. N. (2016). Feasibility of monitoring compliance to the My 5 Moments and Entry/Exit hand hygiene methods in U.S. hospitals. *American Journal of Infection Control, 44*(8), 938-940. doi.org/http://doi.org/10.1016/ajic.2016.02.007

Ellingson, K., Haas, J. P., Aiello, A. E., Kusek, L., Maragakis, L. L., Olmsted, R. N., … YoKoe, D. S. (2014). Strategies to prevent healthcare-associated infections through hand hygiene. *Infection Control and Hospital Epidemiology*, *35*(8), 937-960. doi.org/10:1086/677145

Ferlie, E. B., & Shortell, S. M. (2003 June). Improving the quality of health care in the united kingdom and the united states: A framework for change. *The Milbank Quarterly.* doi.org/10.1111/1468-0009.00206

Gaikwad, U., Tankhiwale, N., & Kulkarni, B. (2013,). Microbial efficacy of traditional hand washing & alcohol-based hand washing staff of a tertiary care rural hospital a comparative study, *Journal of Datta Meghe Institute of Medical Sciences university 8*(2), 115-17. Retrieved from https://www.researchgate.net/publication/286536791

Hart, T., (2013). Promoting hand hygiene in clinical practice *Nursing Times* https://www.nursingtimes.net/clinical/promoting-hand-hygiene-in-clinical-practice/5063464.article

Huis, A., van Achterberg, T., de Bruin, M., Grol, R., Schoonhoven, L., & Hulscher, M., (2012). A systemic review of hand hygiene improvement strategies: a behavioral approach. *Implementation Science, 7*(92). doi.org/10.1186/1748-5908-7-92

Ibrahim M. A., Chow, C., Pfoh, B. F., Ang, B., & Chow, A. (2018). Difference in psychosocial determinants of hygiene between health care professional groups:

Insight from a mixed methods analysis. *American Journal of Infection Control, 46*(3), 253-260: dx.doi.10.1016/ajic2017

Institute for Healthcare Improvement (2009). How-to-Guide: Improving Hand Hygiene Retrieved from www.ihi.org/resources/Pages/Tools/HowtoGuideImprovingHandHygiene.aspx

The Joint Commission. (2017). Measuring hand hygiene adherence: Overcoming the challenges. Retrieved from https://www.jointcommission.org/assets/1/18/hh_monograph.pdf

Kingston, L. M., Slevin, B. I., O'Connell, N. H., & Dunne, C. P. (2017). Hand hygiene: Attitude and practices of nurses, a comparison between 2005 and 2017. *American Journal of Infection Control*, *45*(12), 1300-1307.

Landers, T. (2015). AIPIC implementation guide: Guide to hand hygiene programs for infection prevention Retrieved from https://apic.org/For-Media /Announcements Article? id=b56a685f-7ee9-4206

Lankford, M., Zembower, T., Trick, W., Hacek, D., Noskin, G., & Peterson, L. (2003). Influence of Role Models and Hospital Design on Hand Hygiene of Health-Care Workers. *Emerging Infectious Diseases*, *9*(2), 217-223. https://doi:10.3eid0902.020249

Loveday, H. P., Wilson, J. A., Pratt, R. J., Golsorkhi, M., Tingle, A., Bak, A., ... Wilcox, M. (2014). National evidence-based guidelines for preventing healthcare

associated infections in NHS hospitals in England. *Journal of Hospital Infection, 86*, S1-S70. doi.org/https://doi.org/10.1016/S01956-6701(13)60012-2

Lutze, B., Chaberny, I., Graf, K., Krauth, C., Lange, K., Schwadtke, L., Stahmeyer, J., & von Lengerke, T. (2017), Intensive care physicians' and nurses' perception that hand hygiene prevents pathogen transmission: Belief strength and associations with other cognitive factors. *Journal of Health Psychology.22(1).89-100* https://doi.org/10.1177/1359105315595123

Marra, A., & Edmond, M. (2014). Innovations in promoting hand hygiene compliance. Retrieved https://psnet.ahrq.gov/perspectives/perspective/158/Innovations-in-Promoting-Hand-Hygiene-Compliance

Mathur, P. (2011). Hand hygiene: Back to basics of infection control. *Indian Journal of Medical Research*, *134*(5), 611-620. https://doi.org/10.4103/0971-5916.90985

McInnes, E., Phillips, R., Middleton, S., & Gould, D. (2014). A qualitative study of senior hospital managers views on current and innovative strategies to improve hand hygiene. *BMC Infectious Diseases*, *14*(611). doi: org/10.1186/s12879-014-0611-3

Mortell, M. (2012). Hand hygiene compliance Is there a theory practice gap? *British Journal of Nursing*, *21*(17), 1011-1014. doi.org/10.12968/bjon.1212.12.17.1011

Nasroor, N., Doll, M., Stevens, M., & Bearman, G. (2016). Approaches to hand hygiene monitoring from low to high technology approaches. *International Journal of*

Infectious Diseases, 65, 101-104. doi.org/https://doi.org/10.1016/j.ijid2017.09.031

Neo, J. R., Sagha-Zadeh, R., Vielmeyer, O., & Franklin, E. (2016, June). Evidence-based practices to increase hand hygiene compliance in health care facilities: An integrated review, *American Journal of Infection Control*, *44*(6), 691-704. doi: 10.1016/j.ajic.2015.11.034

Pappas, C. (2014). The adult learning theory – Andragogy of Malcom Knowles Retrieved from https://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowleshat does

Pathogen definition (2017) *Science Daily*. Retrieved from https://www.sciencedaily.com/terms/pathogen.htm

Pfoh, E., Dy, S., & Engineer, C. (2010). Interventions to improve hand hygiene compliance. In *Making health care safer: An updated critical analysis of the evidence for patient safety Chp 8* (pp. 67-72). Retrieved from http://www.gestionerischio.asl3.liguria.it/pdf/AHRQ%20Improve%20hand%20hygiene%20originale.pdf

Phan, H., Tran, H. T., Tran, H. T., Dinh, A. P., Ngo, H. T., Theorell-Haglow, J., & Gordon, C. J. (2018). An educational intervention to Improve hand hygiene compliance in Vietnam. *BMC Infectious Diseases*, *18*(116). doi.10.1.86/s12879-018-30295

Pincock, T., Bernstein, P., Warthman, S., & Holst, E. (2012). Bundling hand hygiene

interventions and measurement to decrease health care-associated infections *American Journal of Infection Control, 40,* S18-S27 doi:10.1016/ ajic2012.02.008

Pittet, D. (2012). Improving hand hygiene compliance: A multi-disciplinary approach. Retrieved from http://www.who.int/gpsc/5/may/tools/who-guidelines-hand hygiene-summary

Sure Wash. (2014). The science of hand hygiene. Retrieved from https://surewash.com/

Terry, A. J. (2015). *Clinical research for the doctor of Nursing practice* (2nd ed.). Burlington MA: Jones & Bartlett Learning.

Walker, J., Sistrunk, W., Higginbotham, M., Burks, K., Halford, L., Goddard, L., ... Finley, P. (2014, October). Hospital hand hygiene compliance improves with increased monitoring and immediate feedback. *American Journal of Infection Control*, *42*(10), 1074-1078. https://doi.org/https://doi.org/10.1016/j.ajic.2014.06.018

White, K. M., & Dudley-Brown, S. (2012). *Translation of Evidence into Nursing and Health Care Practice* (ed.). New York, NY: Springer.

World Health Organization. (2006). Health care Workers: Global profile. Retrieved from https://www.who.int/whr/2006/06_chap1_en.pdf

World Health Organization. (2009). *Template Action Plan*. Retrieved from https://www.WHO.org

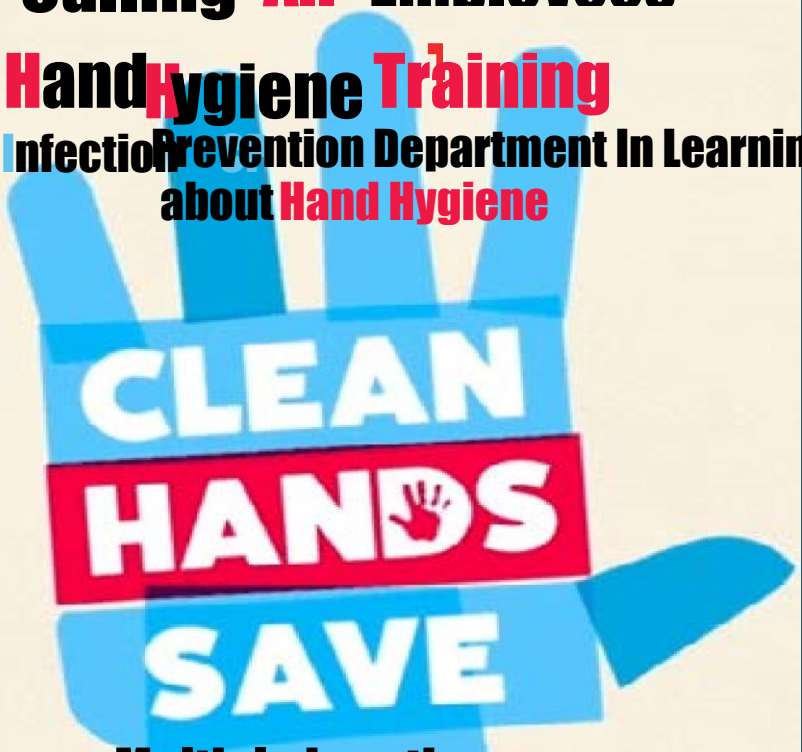
World Health Organization. (2016). Evidence of hand hygiene to reduce transmission and infection by multi-drug resistant organism in health-care settings. Retrieved from www.who.int/gpsc/5may/MDRO_literature-review.p

Appendix A Flyer

Calling All Employees

Hand Hygiene Training

Join Infection Prevention Department In Learning about Hand Hygiene



Where: Multiple Locations
When: Nov 6-20,2018.
At: 8am-10am; 12-2pm;4p-6pm;
; pm-10pm; 12mn-2am

Let's Keep our Patients Safe

Appendix B: Program Evaluation

EDUCATION EVALUATION FORM

As a learner please assist in the evaluation of this presentation. Please circle the number beside each statement that best reflects the extent of your agreement.
1 = Strongly Disagree 2 = Disagree 3 = neutral 4 = Agree 5 = Strongly Disagree

Content

1. The content was interesting to me.....1 2 3 4 5
2. The content extended my knowledge of the topic.....1 2 3 4 5
3. The content was consistent with the objectives.....1 2 3 4 5
4. The content was related to my job.....1 2 3 4 5

Objectives were consistent with purpose/goals of activity.....1 2 3 4 5

Setting

1. The room was conducive to learning.....1 2 3 4 5
2. The learning environment stimulated idea exchange.....1 2 3 4 5

Facility was appropriate for the activity.....1 2 3 4 5

Faculty/Presenter Effectiveness

1. The presentation was clear and to the point.....1 2 3 4 5
2. The presenter demonstrated mastery of the topic.....1 2 3 4 5
3. The method used to present the material held my attention.....1 2 3 4 5
4. The presenter was responsive to participant concerns.....1 2 3 4 5

Instructional Methods

1. The instructional material was well organized.....1 2 3 4 5

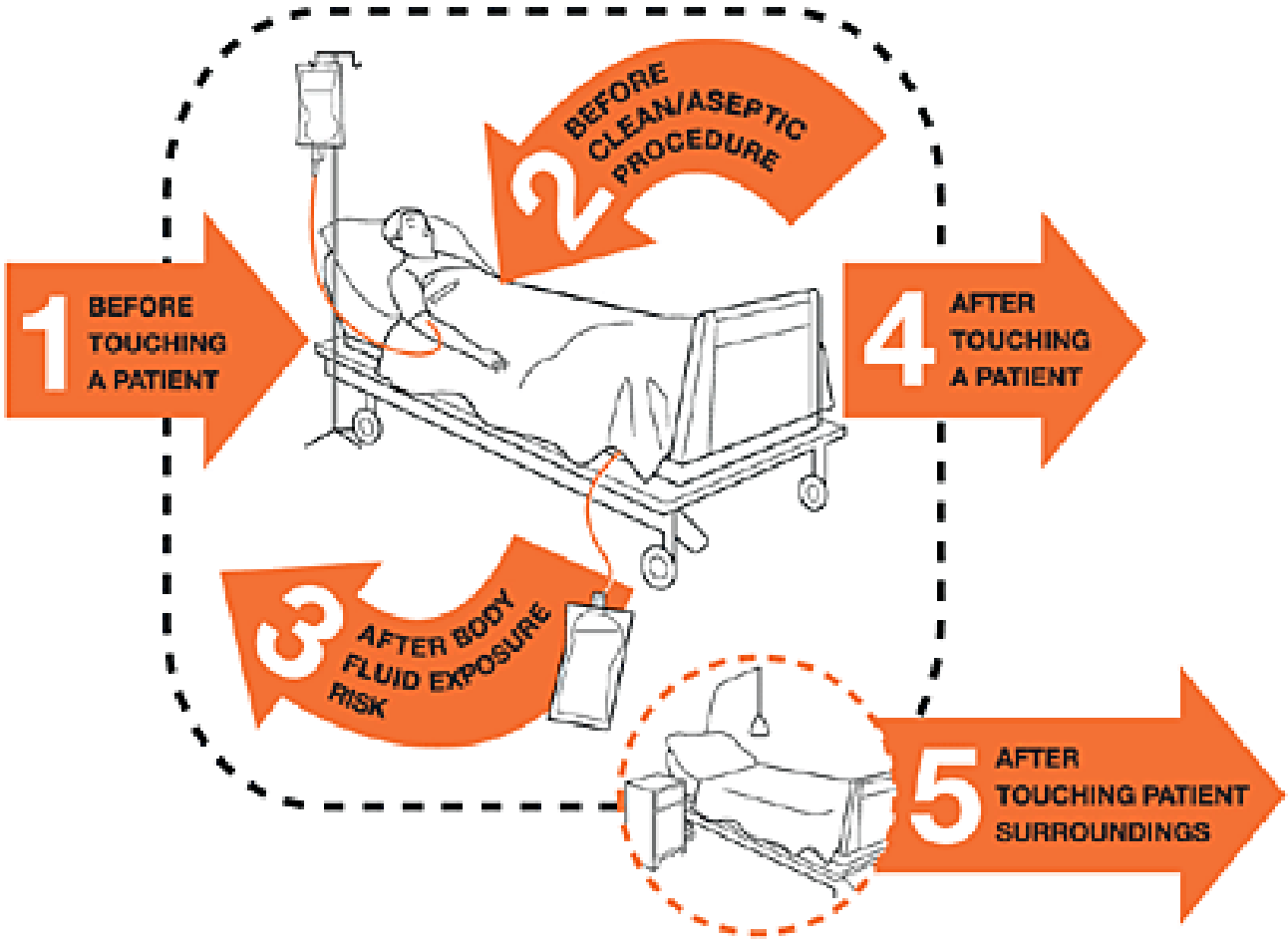
2. The instructional methods illustrated the concepts well.....1 2 3 4 5

3. The handout materials given are likely to be used as a future reference.....1 2 3 4 5

The teaching strategies were appropriate for the activity.....1 2 3 4 5

Comments:

Appendix C 5 Moments



WHO my 5 Moments retrieved fromhttps://www.who.int/gpsc/5may/background/5moments/en/

Apendix D Seven Steps Techniques

Figure 3 Seven Steps technique to Hand Hygiene

Appendix E WHO Observation Tool

WHO Observation Form

Prof.cat			Prof.cat			Prof.cat			Prof.cat		
Code			Code			Code			Code		
N°			N°			N°			N°		
Opp.	**Indication**	**HH Action**	**Opp.**	**Indication**	**HH Action**	**Opp.**	**Indication**	**HH Action**	**Opp.**	**Indication**	**HH Action**
1	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**1**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**1**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**1**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
2	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**2**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**2**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**2**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
3	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**3**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**3**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**3**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
4	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**4**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**4**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**4**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
5	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**5**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**5**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**5**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
6	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**6**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**6**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**6**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
7	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**7**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**7**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**7**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves
8	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**8**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**8**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves	**8**	☐ bef-pat. ☐ bef-asept. ☐ aft-b.f. ☐ aft-pat. ☐ aft.p.surr.	☐ HR ☐ HW ○ missed ○ gloves

* To be completed by the data manager.
** **Optional**, to be used if appropriate, according to the local needs and regulations.

General Recommendations
(refer to the Hand Hygiene Technical Reference Manual)

1. In the context of open and direct observations, the observer introduces him/herself to the health-care worker and to the patient when appropriate, explains his/her task and proposes immediate informal feedback.
2. The health-care worker, belonging to one of the main four following professional categories (see below), is observed during the delivery of health-care activities to patients.
3. Detected and observed data should be recorded with a pencil in order to be immediately corrected if needed.
4. The top of the form (header) is completed before starting data collection (expected end time and session duration).
5. The session should last no more than 20 minutes (± 10 minutes according to the observed activity); the end time and the session duration are to be completed at the end of the observation session.
6. The observer may observe up to three health-care workers simultaneously, if the density of hand hygiene opportunities permits.
7. Each column of the grid to record hand hygiene practices is intended to be dedicated to a specific professional category. Therefore, numerous health-care workers may be sequentially included during one session in the column dedicated to their category. Alternatively, each column may be dedicated to a single health-care worker only of whom the professional category should be indicated.
8. As soon as you detect an indication for hand hygiene, count an opportunity in the appropriate column and cross the square corresponding to the indication(s) you detected. Then complete all the Indications that apply, and the related hand hygiene actions observed or missed.

Each opportunity refers to one line in each column; each line is index (WHO Observation Form)