2021

An Integrated Approach to Hand Hygiene

Tarsha Renee Stewart
Walden University

Abstract

An Integrated Approach to Hand Hygiene

by

Tarsha Renee Stewart

MSN, Walden University, 2014

BSN, Liberty University, 2010

Project Submitted in Fulfillment

of the Requirements for the degree of

Doctor of Nursing Practice

Walden University

May 2021

Abstract

Healthcare-associated infections (HCAIs) threaten the quality and safety of the services provided. HCAIs are infections that occur while a patient is receiving treatment for another condition in any type of healthcare. The Centers for Disease Control estimates that approximately one in every 20 inpatients will become infected with an HCAI during their hospital stay. Proper hand hygiene is the most significant intervention in preventing HCAIs. Despite hand hygiene's effectiveness, evidence suggests that only 50% of healthcare workers are compliant with proper hand hygiene techniques. The purpose of this project is to increase nurse's knowledge the via education. Kotter's eight-step change model was used to promote an environment/culture of safety via educated, conscientious healthcare workers committed to 100% hand hygiene compliance. An expert panel of six nurse educators used Lynn's Model for validity to evaluate the educational content and assessments for relevance and appropriateness for the intended audience, quality, accuracy, and consistency with the recommendations of the Centers for Disease Control and the World Health Organization. The power point and lesson plan were determined to be valuable teaching tools by the expert panel. Formative and summative appraisals were used to assess the effectiveness of the staff education project. Responses to the pre and post staff education test supported the gain of new knowledge. The experts also determined this education could be edited to educate other healthcare workers such as unlicensed personnel and the public to prevent the spread of pathogens. This staff education has potential to affect positive social change by reducing HCAIs through the empowerment of nurses to engage in safe hand hygiene practices.

An Integrated Approach to Hand Hygiene

by

Tarsha Renee Stewart

MSN, Walden University, 2014

BSN, Liberty University, 2010

Project Submitted in Fulfillment

of the Requirements for the degree of

Doctor of Nursing Practice

Walden University

May 2021

Dedication

I would like to dedicate my accomplishments to my granddaughter, Paris Renee Hall. Paris was diagnosed in February 2010 with acute myelogenous leukemia at the age of 18 months. On October 6, 2010, she won the battle with leukemia, became free of pain, suffering, hospitals, chemo, and nasty medicines she refused to take. Our baby girl gained her wings, strength, and joy as she descended from her Mommy's arms straight into Heaven. My heart, spirit, and soul are forever changed. Her short life taught me true unconditional love, strength, endurance, joy, and grace. She is and forever will be the wind beneath my wings.

.

Acknowledgments

I would like to extend the sincerest thank you to my family for their unconditional love and support. I would also like to extend my most gracious gratitude to my most dependable friends, Kaye Cochran, Shanecca Terry-Williams, Ramona McLearn, Veronica McIver Lynn McDonald. I would also like to think of my biggest fans my NaNa, Brenda Doss, and my hero, James Thorne. All these people have inspired me to be the best I can be. I would have never made it without any of them.

I would like to thank my chair, Dr. Robert Anders and my project committee for their guidance, encouragement, and patience.

Thank you, everyone!

Table of Contents

List of Tables

Section 1: Nature of the Project

Introduction

Healthcare-associated infections (HCAIs), formerly referred to as nosocomial infections, are infections acquired during hospitalization, which can occur in the blood, urinary tract, lungs, skin, and surgical sites (Virginia Department of Health, 2020). These infections are transmitted from one patient to the next via healthcare workers' hands during routine care, surgery, or complications related to medical devices such as ventilators or catheters or as the result of overuse of antibiotics (VDH, 2020).

Worldwide, HCAI is the most frequent adverse incident affecting patients' safety, increasing mortality, morbidity, length of stay, and treatment cost (Zhou et al., 2019). These preventable infections can be life-threatening and costly, associated with 99,000 deaths and a healthcare price tag of approximately 1.7 million dollars (VDH, 2020). Hand hygiene is the most fiscally responsible and concrete way to reduce the incidence of HCAIs; yet the noted effectiveness of HH compliance remains around 50% percent (Mumtaz Rahim et al., 2020).

Currently, hand hygiene has gained attention amid the outbreak of COVID-19, a respiratory illness caused by a novel coronavirus. The World Health Organization (WHO, 2020a) suggests this pandemic originated in Wuhan, China. The virus is now present in growing numbers in countries and territories globally, including the United States (Center for Disease Control and Prevention (CDC, 2020a). Death tolls are increasing exponentially daily; these numbers include the public and healthcare workers (CDC,2020a).

Experts say the virus can live on surfaces for a few hours or up to several days, meaning hand hygiene is essential. The CDC (2020a) recommends that individuals wash their hands often with soap and water for at least 20 seconds after being in public or after blowing their nose, coughing, or sneezing. With the emergence of the 2019 COVID 19 outbreak, hand hygiene and the prevention of the virus's spread are of utmost concern for healthcare workers, CEOs of health systems, and the public.

This DNP doctoral project aims to educate the emergency department (ED) registered nurses on the importance of hand hygiene compliance and accountability. Positive social change will result from increased awareness, which starts with the registered nurses who become the champions of hand hygiene and spread it through the department to all other disciplines. Hand hygiene should become as automatic as blinking, if it does the threat of spreading pathogens will reduce, patient safety will increase, and patients will have positive outcomes.

Problem Statement

Local Nursing Practice Problem

The flow in emergency rooms is different from inpatient units; they are volatile and overcrowded, which often causes a lack of compliance with HH guidelines (Matthew et al., 2015). The ED has environmental elements that may hinder proper hand hygiene compliance, including crowding, transitional care areas such as hallways, frequent interruptions, and closeness of patients, often only separated by a curtain (Fouad & Eltaher, 2020). ED staff see more patients per shift than their inpatient counterparts, which leads to the lower levels of hand hygiene compliance observed in the emergency

setting (Matthew et al., 2015). In EDs everywhere, space limitations cause patients to be in proximity on stretchers or in open areas, and limited space for sinks and alcohol-based hand rinse dispensers further contribute to non-compliance (Matthew et al., 2015)

With the current coronavirus pandemic, healthcare workers in emergency departments worldwide are the front-line as emergency rooms overflow with patients. During the coronavirus epidemic, reducing the virus's spread is crucial to the public and healthcare workers. National Institutes of Health (NIH, 2020) scientist states that the virus spread through the air and by touching contaminated objects. Experts noted the virus is detectable in aerosols for approximately 3 hours, 4 hours on copper, 24 hours on cardboard, and 2 to 3 days on plastic and stainless steel (NIH, 2020). The lifespan of this virus makes hand hygiene essential to reduce the spread of the virus.

The Local Relevance of the Need to Address the Problem

A systematic review of hand hygiene compliance in the ED was inconclusive, as hand hygiene rates ranged widely from 7.7% to 89.7% (Seo et al., 2019). The emergency room is often the entrance to the inpatient setting or discharges back into the community. If ED employees practice less than optimal hand hygiene and infect patients, they send the pathogens into the hospital and out into the community. Wearing gloves reduces the transmission rate of organisms but is no substitute for hand hygiene (Mumtaz Rahim et al., 2020). The ED patient's needs are ever-changing; a nurse may have to run from one person to the next in a short period (Matthew et al. 2015). Matthew et al., (2015) stated breaches occur due to changing patient assignments and care complexity due to acuity changes. Healthcare workers' lack of hand hygiene compliance places trusting health care

consumers at risk for harm daily. Improving hand hygiene can be related to improved patient outcomes (CDC, 2020). Despite the relative simplicity of hand hygiene protocols, hand hygiene compliance among healthcare providers varies with percentages as low as 40% (Novák et al., 2020).

Healthcare workers' lack of hand hygiene compliance places trusting health care consumers at risk for harm daily. Despite innovations in medicine and technology, HCAIs continue to threaten millions of health care consumers annually. Hand hygiene is a simple, effective way to prevent the spread of antibiotics resistant pathogens, which are becoming quite difficult or impossible to treat (CDC, 2020). On average, healthcare providers perform adequate hand hygiene less than 50% of the occasions they should, resulting in one in every 31 hospital patients becoming victim to at least one HCAI (CDC,2020). If the average inpatient unit compliance is 50%, it is safe to say it would be less in an emergency department. According to Matthew et al.'s (2015) study conducted that ED hand hygiene compliance was low related to increased time to physician assessment; and that this was associated with reduced compliance. This study also suggested an association between crowding and adherence.

Adequate hand hygiene performed correctly is the most significant intervention to prevent HAIs. Highlighting lapses in hand hygiene awareness may lead to greater understanding and accountability. As Booth (2016) noted, all healthcare workers should have a profound knowledge of the concept of infection control. As healthcare workers, safeguarding the welfare of patients, colleagues, and themselves is a crucial attribute of the healthcare workers' profession (Booth, 2016). Safety in healthcare demands attention

to detail, from routine tasks such as hand hygiene to more complex infection prevention measures (Booth, 2016).

Project Significance to the Field of Nursing

Creating an environment of safety inside the department and eventually throughout the facility is significant to nursing. Supported by the nurses' expanded knowledge of HCAIs, hand hygiene compliance, and accountability, the environment will result in better patient outcomes. The project can give front-line ED nurses the ability to create a safe environment of care and extend safety throughout the department to their peers, creating an atmosphere of safety through compliance and accountability.

Purpose

The Meaningful Gap-in-Practice

HCAIs affect hundreds of millions of people worldwide and are a serious threat to patient safety globally (WHO, 2020a). These infections expose patients to risks for severe complications and a significant financial burden on patients and healthcare systems throughout the world (WHO,2020a). This doctoral project addressed the failure of hand hygiene compliance among healthcare workers with education aimed at creating awareness and accountability. HCAIs are significant quality indicators; when they occur, serious complications can arise along with increases in mortality and morbidity (Demirel, 2019). Despite its simplicity and effectiveness, hand hygiene is the least compliant medical practice in preventing and controlling infections associated with health care (Demirel, 2019). Proper hand hygiene, the simple task of cleaning hands at the right

times and in the correct manner, can save lives and reduce these complications and costs (WHO, 2020a).

The guiding practice-focused questions for this doctoral project were:

PF.1: Will the expert evaluation of the staff development activity using the content validity index meet evaluation criteria?

PF.2: After receiving the education regarding hand hygiene, will the staff meet the learning objectives?

PF.3: Once trained, will the ED nurses have increased personal knowledge and commitment to hand hygiene compliance?

PF.4: Will education increase the knowledge, awareness, and commitment of ED registered nurses on HCAIs and the importance of proper hand hygiene compliance?

This project has the potential to teach registered nurses the importance of proper hand hygiene. This education will teach adequate hand hygiene to include when to perform hand hygiene, how to implement appropriate hand hygiene, and the importance of holding all peers in the environment accountable. This project promotes safety in all settings via hand hygiene compliance.

Nature of the Doctoral Project

Sources of Evidence

To conduct a scholarly search of articles, I utilized the CINAHL & MEDLINE Simultaneous Search, and the Cochrane Database of Systematic Reviews in the Nursing and Health database of the Walden University Library using the search phrases hand hygiene compliance and HCAIs. Other source of information was national organization

websites such as the (CDC,2020) and (WHO,2020a). A collaboration of these sources was used to provide comprehensive education in conjunction with existing hospital policies and hand hygiene procedures. The targeted population for this education was all ED registered nurses.

Approach Used for the Project

Evidence collected to meet this doctoral project's purpose will be an education comprising best practices for hand hygiene retrieved from scholarly sources. Staff education consists of common pathogens and appropriate hand hygiene to reduce the spread of those pathogens. To evaluate the teachings, pre- and post-education tests were given to the ED nurses educated. The pre- and post-test identified knowledge deficits related to the gap in practice.

Concise Statement

The purpose of education is to empower registered nurses to educate, advocate, and promote hand hygiene compliance. The doctoral project's goal, teaching the ED registered nurses, was anticipated to increase their knowledge with the potential to reduce/close the gap in practice. The increase in knowledge should improve hand hygiene throughout the ED reducing the risk of spreading HCAIs into the inpatient setting or the community via patients discharged from the emergency room.

Significance

Stakeholders

HCAIs are the most critical problems affecting the quality of health; they are carried from one patient to the next via healthcare personnel's hands, leading to the

development and spread of infections (Demirel, 2019). Outbreaks in healthcare are usually associated with inadequate compliance levels with hand hygiene (Demirel, 2019). Stakeholders include the ED registered nurses, all other ED staff, including leaders/managers, the CEO and other administration officials, and the ED patient. Once educated, nurses have the potential to change their practice. The ED can become a safe work environment where hand hygiene is spontaneous and 100% compliant. The 100% compliance will reduce the incidence of HCAIs in the ED, leading to increased payments through reimbursement from government agencies who monitor care quality and safety, such as Medicare/Medicaid. Complete compliance will lead to better patient outcomes, which will positively affect all stakeholders.

Potential Contributions to the Nursing Practice/Social Change

Educating nurses and empowering them to be champions of hand hygiene can lead to social change by making hand hygiene the rule rather than the exception. Increasing compliance with hand hygiene requires a long-term effort of quality control and essential tools for health care personnel to understand and promote the importance of hand hygiene (Demirel, 2019). The ED nurses can lead the way to improve complete compliance throughout the institution and community resulting in positive social change.

With the COVID 19 epidemic, the public sees nurses as front-line heroes; this is the perfect time for nurses to take charge and encourage them to stay home and practice other healthy habits and such as consistent hand hygiene to keep the public safe. At no time in the history of nursing have nurses been more outspoken.

Summary

While the evidence demonstrates hand hygiene is a cost-efficient, effective means to prevent the spread of infection, protect both the health care worker and the health care consumer, compliance averages 50%. Lack of hand hygiene is a significant health care issue; it is the most cost-effective and practical measure to reduce HCAI incidence (Mumtaz Rahim et al., 2020). Hand hygiene compliance remains critically low, placing patients at risk for increased morbidity and mortality related to HCAIs. Hand hygiene compliance is directly related to decreasing the incidence of HCAIs (Mumtaz Rahim et al., 2020).

This project should increase knowledge and awareness of the safety and importance of hand hygiene compliance. Non-compliance rates of approximately 50% translate into health care workers performing correct hygiene only one out of every two times when necessary. This non-compliance could result in the spread of microorganisms from patient to patient or healthcare worker. The full extent is that the health care worker can spread pathogens from one missed moment of safe practice throughout their shift to all those to whom they provide care, eventually possibly taking the same pathogens home to their families. This DNP project is a staff education targeted to the ED registered nurse to increase their knowledge and awareness. I developed this project using Kotter's eight-step change model for practical training and evaluation for adult learners to improve and sustain hand hygiene compliance knowledge and understanding.

Section 2: Background and Context

Introduction

Practice Problem

As EDs across the country struggle with high volumes of patients with high acuity, hand hygiene compliance is often less than optimal. EDs differ from inpatient units; the nurses see more patients than their inpatient counterparts. The patient conditions are unpredictable. The environment is extremely fast-paced and overcrowded, contributing to hand hygiene compliance guidelines breaches (Matthew et al., 2015). Factors such as crowding and large volumes, as evidenced by increased times for evaluation, create an environment where healthcare workers swiftly move from one patient to the next (Seo et al., 2019). Unlike their inpatient colleagues, ED staff see more patients per shift, and there are lower levels of hand hygiene compliance observed in the ED setting (Matthew et al., 2015). Focused on educating ED nurses on HCAIs, proper hand hygiene, and the importance of compliance, this project should increase compliance. This education teaches proper hand hygiene to include when to perform hand hygiene, how to implement appropriate hand hygiene, and the importance of holding all peers in the environment accountable. This project promotes safety and improved patient outcomes in all settings via hand hygiene compliance.

As early as 1847, medical professionals documented healthcare workers' role in poor hand hygiene as a mode of transmission of microorganisms within the healthcare environment and eventually to patients (Mahfouz et al., 2019). Hungarian physician and scientist Ingaz Semmelweis, known as a founder of the antiseptic procedure, promoted

hand hygiene to drastically reduce sepsis (Mahfouz et al., 2019). He started a handwashing program in Vienna Lying-in Hospital in 1847 to prevent microorganisms' spread (Mahfouz et al., 2019). Hand hygiene is the primary measure to reduce infections; hand hygiene is a simple action, but healthcare providers' lack of compliance is problematic worldwide (WHO, 2019b). In healthcare systems, it is crucial to provide sustained professional training programs to help embed efficient and effective hand hygiene compliance into all care delivery elements; new approaches must include accountability, motivation, and sanctions (Mahfouz et al., 2019).

Concepts, Models, and Theories

Rationale for Use

HCAIs continue to be unwanted complications for inpatients; healthcare facilities must effectively prevent and control HCAIs using collaborative approaches to encourage all healthcare workers to assume responsibilities and be involved (Su, 2016). Kotter's eight-step change model for implementing an all-inclusive system to prevention strategies and practicing expansion principles to increase healthcare workers' knowledge should lead to increased hand hygiene compliance and the development of a sustainable culture of safety (Su, 2016). Kotter's approach is to build HCWs' knowledge of HAIs and accountability, reducing the incidence of HCAIs and encouraging staff involvement (Su, 2016).

Synthesis of Kotter's Philosophy

Kotter, a leadership and change management guru-, and professor at Harvard Business School is a world-renowned change expert. Kotter introduced the eight-step

change process book in1995, the eight-step model to promote transformational change. Kotter warned skipping any steps will most likely result in problems (as cited in Thornton et al., 2019). Kotter's approach is a proven method to implement systemic change by providing a roadmap that highlights principles to achieve transformational change (Thornton et al.,.2019)

Kotter's model is based on applying practice development principles to attain patient-centered, evidence-based care to ensure a productive workplace culture in which to implement practice changes (Su, 2016). Kotter believed the key to a successful shift in behaviors is through emotions, which will enable a person to see, feel, and then change (Su, 2016). The first and most crucial step is recruiting and including all stakeholders via multiple methods such as emails, newsletters, project/unit meetings, project boards, and project folders (Su, 2016). A widespread campaign spread via company email, posters, and unit notification attends to the goal.

This education and campaign allow all interested parties to participate. Early collaboration among stakeholders allows then to plan for change via a shared vision, assign and clarify roles, assign tasks, and develop rules (Su, 2016). Team collaboration allows the team to establish leadership, encourage all involved in being active participants, and assess, implement, and evaluate the project. Leaders are encouraged to acknowledge and reward members for their participation and contributions by sharing project achievements and project growth in the hospital grand rounds, town hall meetings, and departmental newsletters (Su, 2016).

The first step in the change model is to create urgency for the need for change (Su 2016). Kotter suggested using the data from multidrug-resistant pathogen outbreaks, hand hygiene compliance audits, environmental swabs, HCAI reports, and research findings through meetings, information leaflets, and newsletters to reach critical stakeholders (Su, 2016). The is no greater urgency than the emergence of the Coronavirus pandemic to create widespread fear worldwide.

COVID 19 established the importance of this model. At no other time in my nursing history has hand washing and personal protective equipment been popular as now during this pandemic. As social media post healthcare workers who have died because of this virus, healthcare workers worry about their safety, and the safety of their family, and the public.

Health care reform has now placed monetary benefits on compliance and quality; stakeholders do not want to lose reimbursement related to HCAIs. When healthcare workers realize how costly HCAIs are and how their lives are affected, compliance gains notoriety. The second step is to build an enthusiastic, engaged team who make it their mission to implement change (Su, 2016). The team should focus on visualizing the project's goals and ideas to induce strong emotional responses to motivate staff to be involved in the project (Su, 2016). The emergence of the COVID 19 pandemic, the widespread panic associated with it, and the continuous news of deaths related to the pandemic have created an extreme emotional response from healthcare workers (Schwirtz, 2020). All team members should be working toward common goals, in this case, the plan to increase HCAI awareness/education, and improving hand hygiene

compliance across the department. As part of the registered nurses' education, they will educate other healthcare workers with a vision to decrease HCAIs and the cost associated with them.

Eventually, the next step is to spread the word throughout the organization; communication for buy-in encourages everyone to take ownership (Su 2016). To inspire action; promote the team members to brainstorm on ideas to act and celebrate short-term wins to keep the momentum going (Su, 2016). Positive experiences allow the team to develop structures and situations that empowered them to resolve problems and clear hurdles while progressing towards the goal and ensuring sustainability (Su, 2016). The team members should use each victory to inspire progress by highlighting success in the hospital grand rounds, town hall meetings, staff meetings, and newsletter spotlighting practice changes related to reducing HCAIs (Su, 2016). During the evaluation, reinforce practices that positively affected lowering HCAIs, highlight what worked and what did not, and identify areas of improvement.

Relevance to Nursing Practice

Existing Scholarship

It is a known fact most HCAIs are likely spread by direct contact via the hands of healthcare workers and that hand hygiene is an effective intervention to reduce the risks of spreading pathogens (Gould et al., n.d.). Organizations such as the CDC and WHO have provided guidelines to promote hand hygiene, which appear to be the most comprehensive (Gould et al., n.d.). WHO supports the multimodal "Clean Care Is Safer Care" strategy in conjunction with the "Five Moments for Hand Hygiene."? Hand

hygiene performed before contact with a patient, before aseptic procedures, after risk or actual exposure to body fluid, after touching a patient, and maintaining compliance after handling patient items (Fouad & Eltaher, 2020). WHO strategies include increasing the availability of alcohol-based hand rubs, different types of education for staff, reminders (written and verbal), performance feedback, administrative support, and staff involvement (Gould et al., n.d.).

Successfully preventing and controlling HCAIs requires a collaborative approach requiring all healthcare staff to be involved and accountable (Su, 2016). HCAIs not only cause pain and suffering for patients but prolong their hospital stays and burdens healthcare systems with excessive costs (Su, 2016). Non-compliance with the five moments of hand hygiene' increases the likelihood of spreading infectious agents from healthcare workers' contaminated hands (Su, 2016).

Current State of Nursing Practice

At Columbia University Irving Medical Center in Manhattan, NY, hospital administrators ask surgeons to volunteer for the front lines due to half the intensive-care staff having become infected by the COVID-19 (Schwirtz, 2020). Currently, with the world is battling COVID 19, the public is afraid, nurses are worried, and all healthcare workers are fearful of contracting the virus (Schwirtz, 2020). The risk of contracting or carrying the virus should make all healthcare workers extremely cautious. Instead, hospitals are being overwhelmed with patients' volumes; healthcare workers are contracting the virus, and some are losing their lives (Schwirtz, 2020). Emergency rooms and intensive care units across the country contain medical professionals terrified of the

increasing numbers of their colleagues infected with the virus (Schwirtz, 2020). Even with the risk, healthcare workers continue to show up daily to face overflowing emergency rooms as officials state they cannot calculate infection rates (Schwirtz, 2020).

Factors such as vast and unpredictable patient volumes, growing patient acuity, crowding, insufficient staffing, and lack of time contribute to low hand hygiene compliance in the ED (Matthew et al., 2015). The ED environment has unique conditions that interfere with proper hand hygiene compliance, including crowding, use of makeshift care areas such as hallways, frequent interruptions to care delivery, and patients' proximity often separated only by a curtain (Fouad & Eltaher, 2020). Failure to comply with hand hygiene compliance recommendations in managing HCAIs in EDs results in a direct threat to patient health (Seo et al., 2019). The danger grows because most patients are admitted to hospitals through ED and may introduce pathogens into the inpatient setting (Seo et al., 2019).

Gould et al. (nd) stated the logical conclusion that most HCAIs spread via the hands of healthcare workers, and that the most effective way to prevent the spread of these infections is hand hygiene compliance. Of all the organizations with established hand hygiene guidelines, the WHO’s multimodal approach is the most comprehensive (Gould et al., nd). WHO recommendations include alcohol-based hand rub education, reminders, performance feedback, and management support (Gould et al., nd). Despite the simplicity of hand hygiene and its proven effectiveness as the primary measure necessary for reducing HCAI, healthcare workers' lack of compliance continues to be an everyday hazard (Gould et al., nd).

Strategies

In recent studies, a surgical ward attempted to implement a comprehensive HCAI prevention strategy by applying Kotter's eight-step change model and its current system's practice development principles (Su, 2016). The project motivated staff to be involved and engaged in assessing, implementing, and evaluating the project processes and taking ownership of the practice change (Su, 2016). It focused on ensuring a clean environment, improving hand hygiene compliance, increasing staff's knowledge base regarding HAIs, and enhancing active surveillance. The project achieved success in reducing and preventing HAIs and developing sustainable workplace culture (Su, 2016).).

Seo et al. (2019) noted to achieve successful hand hygiene compliance, multi-dimensional strategies must be implemented, such as education, campaigns, feedback, adequate supply of hand hygiene products, and cues (Seo et al., 2019). Existing literature noted barriers to hand hygiene in the ED included uncertainty about when to perform hand hygiene, use of gloves], stress, activities with a high risk of cross-transmission of pathogens, lack of positive examples by their superiors, bad habits, simple forgetfulness, and skin irritation and drying caused by the continuous use of products (Seo et al., 2019). These barriers are addressed by the education proposed in this project.

Gould et al. (nd) reviewed Twenty-six studies; 14 of these studies evaluated a multimodal intervention to increase hand hygiene compliance. HCAIs likely spread by staff's hands is eliminated with proper hand hygiene, which provides an effective way of reducing cross-infection risks and being desirable (Gould et al., ND). As in previous studies, this review determined that WHOs guidelines to promote hand hygiene in

healthcare settings are the most comprehensive package (Gould et al., ND). This multimodal package of interventions includes the recommended use of ABHR, education, reminders, performance feedback, and managerial support (Gould et al., ND). These interventions are crucial to any hand hygiene compliance initiative's success, and sustainability in any setting and implementation should be encouraged.

Advancing Nursing Practice

This DNP project aims to develop comprehensive education to increase hand hygiene knowledge among ED Nurses to reduce/close the gap in practice. Nurses take on the roles of caretakers, advocates, and educators. Continued education on hand hygiene increases each nurses' capability to provide the safest, highest quality care to those they serve. These nurses will be encouraged to create an environment of safety via 100% hand hygiene compliance. Hand hygiene should become as routine as blinking when an object comes into proximity to the eyes. This project will be implemented and maintained based on Kotter's eight steps to change model, which allows for continuous management of evidence-based practice (EBP) from implementation to preserving and sustaining the efforts. Increasing knowledge and awareness increases hand hygiene throughout the ED reducing the risk of spreading HAIs into the inpatient setting or the community via patients discharged from the emergency room. Increasing hand hygiene contributes to creating healthy work environments where patient safety is not at stake, and health care workers reduce the chance of taking pathogens home to their families.

These educated and empowered nurses will have the power to make a social change where there is no tolerance for hand hygiene compliance breaches. These nurses

have the potential to intervene and make a difference at the point where three elements come together: the patient, the healthcare worker, and care or treatment involving contact with the patient or his/her surroundings (WHO, 2020a). In this model, the nurse serves as the educators, the advocates, and the caretaker. The nurses use this education to teach peers and patients the importance of hand hygiene compliance.

Local Background and Context

Summary of the Local Evidence

Few studies have assessed the efficacy of hand hygiene interventions in ED, and fewer have used the WHO's "Five Moments for Hand Hygiene" in the ED, leading to little data regarding actual compliance (Fouad & Eltaher, 2020). Educating staff on the "Five Moments for Hand Hygiene" could lead to increased compliance. Current literature noted that the lack of knowledge about when to perform hand hygiene is one reason for the lack of hand hygiene compliance in the ED (Seo et al., 2019). Will educating ED nurses increase their knowledge, awareness, and compliance? Further contributions to the lack of hand hygiene compliance are rapid turnover rates, resulting in difficulty measuring HCAI rates in the ED (Fouad & Eltaher, 2020). The ED is an indispensable part of the current healthcare system, where environmental conditions interfere with proper hand hygiene compliance introducing pathogens into the inpatient setting (Fouad & Eltaher, 2020).

The ED environment is in a small rural area that serves the county and several other rural counties. The facility is part of a larger organization governed by a board of directors representing a community's cross-section. The mission to provide excellent care

for life and the vision to be the most trusted provider of innovative healthcare align with this project to provide safe care and prevent harm. Hand hygiene among healthcare workers remains low, and there is room for improvement.

Methicillin-resistant Staphylococcus aureus (MRSA) is one of several "superbugs," which are resistant to antibiotics and difficult to treat (O'Connor, 2018). In 2016, there were 177 cases of MRSA infection in Virginia health facilities (O'Connor, 2018). Clostridium difficile (C. diff) is another superbug that infects greater than 2,000 Virginians annually; in 2016, there were 2,312 C. diff infections (O'Connor, 2018).

Virginia hospitals take every possible precaution through policies to protect patients from infections (O'Connor, 2018). According to data from the state and the CDC, Virginia facilities are close to national averages in preventing infections (O'Connor, 2018). Joint Commission Federal inspectors continue to find infection-control lapses at hospitals around the state, noting that staff occasionally forget basic hand hygiene or properly marking equipment as clean or dirty (O'Connor, 2018). In 2017, a Virginia hospital inspection resulted in an "immediate jeopardy" finding; the most severe penalty inspectors can impose, related to improper hand hygiene behaviors, to a failure to identify the equipment as clean or dirty (O'Connor, 2018). An immediate jeopardy citation indicated the health and safety of at least one individual are at risk (O'Connor, 2018).

The state of Virginia has a Virginia Healthcare-Associated Infections (HAI) Advisory Group, a voluntary, statewide, multidisciplinary group whose mission is to improve health outcomes in all of Virginia's healthcare settings by preventing HAIs and

antibiotic resistance (VDH, 2020). This group unites the Commonwealth's HCAI stakeholders to align strategies, share information and resources, and create collaborations that promote statewide and individual institutional progress in preventing HCAIs and antimicrobial resistance (VDH, 2020). This group acts as leaders for HCAI and antibiotic resistance prevention in Virginia. It identifies specific HCAI prevention targets for Virginia and develops initiatives to meet target goals by translating evidence-based guidelines into practice in Virginia's healthcare facilities (VDH, 2020).

Operational Definitions

Acton plan-A detailed, meticulous plan to improve hand hygiene within a healthcare organization (WHO, 2020a).

Antiseptic hand rubbing- (hand-rubbing)-The action of applying an antiseptic hand rub to reduce or inhibit the growth of microorganisms without the need for an exogenous source of water and requiring no rinsing or drying with towels or other devices (WHO, 2019).

Hand hygiene-A generic term for hand washing, cleansing, or rubbing (WHO, 2020). For this project, hand hygiene is the use of an alcohol-based gel, foam, or liquid used to cleanse hands and soap and water (Fouad & Eltaher, 2020).

Hand hygiene- The act of physically or mechanically removing dirt, organic material, or microorganisms from the hands (WHO, 2020a).

Hand washing- The action of washing hands with antibacterial soap and water (CDC, 2020).

Healthcare workers-Anyone employed in the healthcare setting who has direct or indirect contact with patients and their families (WHO, 2020a).

Healthcare acquired infections-Infections acquired during hospitalization in a patient that was not present or incubating before admission for treatment in a healthcare facility (Zhou et al., 2019).

Role of the Doctor of Nurse Practice Student

Professional Context

The DNP graduate's EBP knowledge can positively affect individual patient outcomes and enhance an entire population's health (Sherrod & Goda, 2016). My role was to organize and collaborate with stakeholders, including nursing leaders, management, and ED nurses, to create momentum for this project. I developed and proposed the educational program and served as a role model and mentor to other staff. My role also consisted of supporting ongoing education on hand hygiene compliance. Healthcare leaders educated through a DNP program gain the insight, skills, and knowledge to incorporate translational activities through research synthesis into robust evidence-based programs that enhance their clinical environments. The DNP-educated nurse's role focuses on quality, safety, and patient satisfaction; therefore, their skills must include customer-centered care and problem identification, change management, innovation, inspiration, and engagement (Sherrod & Goda, 2016). The American Association of Colleges of Nursing's Essentials of Doctoral Education for Advanced Nursing Practice defines the roadmap for healthcare transformation and as linked to desired leadership attributes (Sherrod & Goda, 2016). The DNP-prepared nurse leader

can enable the increased use and application of EBP by evaluating and generating strategies to enhance patient care, driving change through the implementation of evidence-based interventions (Sherrod & Goda, 2016). Recommendations for these nurses who receive doctoral-level preparation developed from the expansion of scientific knowledge required for safe nursing practice and promoting the quality of patient care delivery and outcomes (Sherrod & Goda, 2016).

During my career as Faculty and Director of Nursing, I have always maintained a PRN bedside role. Teaching is my passion, while serving is my purpose. Bedside nursing allows me to provide patients with expert, competent care with a smile. Bedside nursing also keeps my skills fresh and offers plenty of exemplars to add to any lesson plan. My role in this project is ED Clinical Nurse II and project leader.

Role in the Doctoral Project/Motivation

As an operating room (OR) and intensive care (ICU) nurse, my practice is meticulous, always double-checking every aspect, being cautious due to the invasive procedures performed in these areas. Hand hygiene is essential in the OR and ICU due to surgical site infections (SSIs), central line-associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), which are tracked and are a large part of quality improvement initiatives. These infections are tracked as motivation to prevent them; the goal is always zero infections. In EDs tracking, these infections are virtually impossible because they are in the department for hours instead of days.

I started this project in the operating room in a large teaching facility. My motivation was to watch surgical residents, anesthesia residents, and nursing students so

focused on performing the correct task promptly. They neglected to practice hand hygiene compliance and other infection control measures. As part of the OR safety committee, we did random surveys of hand hygiene in the pre-op area before the first cases when everyone was rushing to ensure all first cases were in the OR by 730am. Each member did random audits of the use of alcohol-based hand foam. The dispensers were in each room right inside the door, next to the sterile surgical markers. Unofficial observations suggest nurses are foaming in and out at about 90% of the time. On the other hand, surgeons, anesthesiologists, and their residents were foaming 20% of the time.

Pre-op nurses educated to teach all surgical patients that anyone coming into the pre-op room needed to foam in and out for the safest surgery possible. If any healthcare worker entered their room without foaming, the patients would invite that individual or remind them to foam in. On one occasion, I had just finished educating the patient when the surgeon walked in to mark the patient. He picked up the sterile marker and approached the patient; the patient spoke up and said, "my nurses said you have to foam your hands." The surgeon later stated, "that was like being punched in the throat. I'll never do that again." What surprised me is that he reached right by the hand foam to get the sterile marking pen.

As the clinical coordinator/unit educator, it was at that moment; I began to champion patient education. During my Practicum with the President of Nursing and the hospital was promoting The Joint Commission's "Speak Up" program encouraging patients and their families to take responsibility for preventing health care errors and

complications by being active, involved, and informed consumers of the health care team (Landers et al., 2012). The facility began to use the pamphlets to encourage patient and family participation and encourage the patient and family members to speak up for their safety.

During my Practicum experience in the Neonatal ICU, hand hygiene was such a highly regarded essential intervention; employees signed a hand hygiene contract. If anyone in that environment breached hand hygiene at any moment, at least two peers stopped them in their tracts. Due to the vulnerability of the patient population, these nurses were the hand hygiene compliance police. None of their babies were going to get a CAUTI or CLABSI. This experience, combined with my work experience, gave me hyperawareness of my hand hygiene compliance.

Fast forward four years later, I am a nurse in a hectic, high volume, high acuity, and unpredictable world of the ED. I find everything each researched article mentioned to be true. The patient volume consistently exceeds the space we have, we are interrupted often, and we go from patient to patient. ED nurses play by a different set of rules. The first time I saw a nurse tear the tip of her glove off with her teeth to start an IV, I almost fainted. Seo et al. (2019) concluded lack of time, evolving clinical conditions, overcrowding, heavy workloads, staff shortages, and the care environment's complexity are all barriers to hand hygiene compliance in the ED.

Summary

HCAIs are essential quality indicators that result in increased morbidity and mortality (Demirel, 2019). Preventive measures are recommended as the most effective

strategies to prevent HCAIs (Demirel, 2019). Despite the cost-effectiveness, simplicity, and success of Hand hygiene in reducing HCAIs, it is the least compliant medical practice in preventing and controlling infections associated with health care (Demirel, 2019). To reduce the incidence of HCAIs, healthcare workers must improve hand hygiene compliance (Demirel, 2019).

The utilization of EBP through evaluation and the generation of strategies to enhance patient care creates change to improve patient safety and outcomes (Sherrod & Goda, 2016). The use of EBP will create educational material to enhance nurses' knowledge and increase hand hygiene compliance decreasing the incidence of HAIs.

Section 3: Collection and Analysis of Evidence

Introduction

Problem

HCAIs are the most frequent adverse event compromising the safety of patients and increasing mortality, morbidity, length of stay (LOS), and cost of treatment worldwide (Zhou et al., 2019). HACIs threaten the quality of care and safety of the medical services provided to millions across the world. In the United States, one in every 20 inpatients will become infected with an HCAI during their hospital stay (CDC, 2019). Hand hygiene is proven the most effective method to reduce the spread of HCAIs in hospitals, yet hand hygiene compliance among health care workers averages 50% (Gould et al., nd.). The purpose of this project was to create successful, sustainable hand hygiene compliance among emergency room nurses. The project's success depends on staff motivation, accountability, commitment to compliance, and facing the consequences when there is a breach (see Mahfouz et al., 2019). Motivation, including evidence-based information and interventions, user-friendly approaches, and simple, logical, and applicable education, is appropriate for a wide range of settings (Mahfouz et al., 2019).

Practice-Focused Questions

Local Problem

EDs across the country treat large volumes of patients with high acuity; hand hygiene compliance is often less than optimal. ED personnel see more patients than their inpatient counterparts resulting in a highly fast-paced environment. The patient conditions are unpredictable, and departments are often overcrowded, resulting in missed

moments of hand hygiene and non-compliance (Matthew et al., 2015). In this project I aimed to educate ED nurses with the expectation they would achieve increased personal knowledge and commitment to hand hygiene compliance. A PowerPoint education with the latest evidence-based information informed nurses of the five moments of hand hygiene, pathogens, and the prevention of the spread of these infections. This education teaches proper hand hygiene to include when to perform hand hygiene, how to implement appropriate hand hygiene and the importance of holding all peers in the environment accountable. This project promotes safety and improved patient outcomes in all settings via hand hygiene compliance. Assessments of the participants were in the form of pre- and post-test. The ED was an appropriate setting to disseminate this education due to the many factors there with hand hygiene compliance. These factors include a fast-paced environment, crowding, transitional care areas such as hallways, frequent interruptions, and patients' closeness (Fouad & Eltaher, 2020). Infections are spread by different factors related to systems, the delivery of care, and human actions, all of which can be shaped by education, and political and economic checks, and balances (WHO, 2019). By educating ED nurses on HCAIs, proper hand hygiene, and the importance of compliance this project should increase compliance.

Sources of Evidence

Participants

As a profession centered on health promotion, the nursing practice is responsible for advancing health, safety, education, disease prevention, prevention of complications, and improved quality of life and the best patient outcomes (Sands &

Aunger, 2020). An expert panel was assembled, consisting of nursing directors, infection control experts, and professional development team members to ensure the project's integrity and validity. The experts used Lynn's model to assess the project. Validity is an essential element in selecting or applying an instrument; validity is the degree to which that instrument meets the intended objectives. The three types of validity are content, criterion-related, and construct (Lynn, 1986).

Because nurses at the bedside have the most frequent patient care encounters and interactions, they have more opportunities to practice hand hygiene (Sands & Aunger., 2020). Participants were emergency room registered nurses. Each shift had a project leader who served as a cheerleader to encourage participation. Participants were voluntary participants. Each participant took a pre-test before being educated and a post-test to gauge the effectiveness of the information provided. The goal was to reach a minimum of 80% of all bedside nurses in the ED.

Procedures

This project consisted of two steps, the evaluation of the education by experts to determine the education's validity and delivering the education and assessing its effectiveness by evaluating the pre-and post-test. Once the Walden University Review Board (IRB) approval was granted (approval # 12-09-20-0384284), I contacted the experts to discuss the project's goals. The education and staff development activity were evaluated by the six experts using Lynn's model. The experts chosen were nursing faculty and staff development coordinators, who are all experts in nursing education. Lynn's model is a four-point scale review to avoid neutral responses and to add the reliability of scoring (see

Appendix A for a copy of the assessment tool developed using the Lynn model). This process consists of multiple steps. Step one is to use Lynn's model to evaluate education. Lynn (1986) asserted that a minimum of five experts are needed to ensure adequate controls to rule out a chance agreement; however, all must agree. For this project, six experts were used. Selecting six experts allows one to disagree and still attain validation (Lynn,1986). For this project, all six experts validated the educational material. Before their evaluations, each expert was provided the educational content and evaluation tools via email and instructions about how to evaluate the material using an ordinal scale. The expert evaluations determined the content was valid.

The most calculated quantification of content validity is the content validity index by using a four-point ordinal rating scale with non-relevant information or material as a 1 and the most relevant material as 4. For this project, a scale was provided to the experts a scale where 1 = not applicable, 2 = unable to assess relevance without item revision, 3 = relevant but requires additional information alterations, and 4= most relevant. Five experts rated the education a score of 4, and one expert rated it a 3 resulting in a score of 1.00. The CVI is the proportion of items that received a rating of 3 or 4 by the experts (Lynn, 1986). For example, when eight experts are used, and five of the eight experts rates the category with a 3 or 4, the CVI results in a score of 0.83 using Lynn's model, as shown in Table1(Lynn, 1986). The minimum score for a valid assessment of the education included in this project was 0.83 (see Table 1).

Table 1

Lynn's Model

Number of experts	Number of experts endorsing education content validity								
	2	3	4	5	6	7	8	9	10
2	1.00								
3	0.67	1.00							
4	0.50	0.75	1.00						
5	0.40	0.60	0.80	1.00					
6	0.33	0.50	0.67	0.83	1.00				
7	0.29	0.43	0.57	0.71	0.86	1.00			
8	0.25	0.38	0.50	0.63	0.75	0.88	1.00		
9	0.22	0.33	0.44	0.56	0.67	0.78	0.89	1.00	
10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Validity= > 0.83									

"Determination and Quantification of Content Validity," by M. Lynn, 1986, Nursing Research, 35(6), p-384

The six expert responses were used to analyze the education using Lynn's (1986) model. A CVI of 0.83 was the minimum acceptable for each component of education. For this project, the CVI was 1.00. Any information that did not meet the criteria was revised and then analyzed until it met the requirements. The experts performed an overall evaluation of educational material with comments and suggestions.

Once the content was determined to be valid, I proceeded to the next portion of the project. I presented the PowerPoint presentation to three small groups of RNs due to COVID restrictions for social gatherings. Learning objectives were to increase healthcare workers' knowledge of hand hygiene, common pathogens, the novel corona virus and to promote staff awareness of the importance of hand hygiene compliance.

To gauge existing knowledge, a pre-test was given to all participants before the PowerPoint Education. After the PowerPoint presentations, the participants were asked to complete the post-test to determine if the objectives were met. see all educational material in Appendix F.

Descriptive statistics and summative evaluation were used to analyze the responses of the pre and post-test statistically. The evaluations described the review of the formative and summative evaluation data from the staff development tools. The statistics quantified the central tendency and variability obtained from the evaluation tool completed by the staff education tool participants.

Protections

While designing this DNP project, specific attention to detail ensured the ethical protection of each participant. Before beginning any work with participants, I obtained IRB approval to protect all participants. The healthcare organization's approval was necessary before any participation from its employees. Participation in the evaluation process, staff education program, and completing pre- and post-test questionnaires were voluntary, with the ability to withdraw from the project at any time. The participants did not receive any incentives for their participation in the project. All information collected

was anonymous. The name of the organization or participants were not mentioned or associated with any data collected.

Analysis and Synthesis

Once the IRB approval was granted, the educational materials for staff education were evaluated using Lynn's and CVI models. The CVI using the four-point delineated information allows each expert to rate each area, identify areas that have been omitted and suggest additional information where indicated (Lynn,1984). Validity is an essential element in selecting or applying an instrument; validity is the degree to which that instrument meets the intended objectives; the three types of validity are content, criterion-related, and construct (Lynn, 1986). For this project, content validity was assessed and determined to be valid with a CVI of 1.00. The items evaluated and rated were an overview of the education, the relevance of the objectives, the equipment/materials used, and PowerPoint slides. Necessary revisions to the education were assessed with the CV score (see Rutherford-Hemming, 2015). The CV scores were computed by the number of experts who agreed the provided educational content appropriately addresses the learning objectives (Rutherford-Hemming, 2015). The evidence supporting this project and answering the practice questions were completed pre and post-test and surveys assessing the provided education. The evaluation of the education's effectiveness was determined using Lynn's CV model.

After evaluating all educational materials, data acquired from the experts was used to produce the CVI. Each section of the education and the overall lesson plan were assessed using Lynn's model (1986). Comments and suggestions from the experts guided

improvement and changes. Pre and post-tests were established using the lesson plan's objectives; this information determined if the educational goals were met. Descriptive statistics were used to quantify this information. Statistical analysis of the questionnaire's pre-and post-test response provided feedback from the staff about education, which will be used for future gaps in practice. A summative evaluation was analyzed for the success of the education intervention.

Summary

Hand hygiene is a complex intervention with countless motivators and barriers (Sands & Aunger,2020). Compliance with hand hygiene practices in healthcare has been systematically reviewed, yet there are gaps in the literature regarding the successful psychological promotion of hand hygiene compliance (Sands & Aunger,2020). I intended the evidence gathered in the project to close the gap in practice and provide successful tools and interventions to promote compliance, accountability, and sustainability using Kotter's eight-step model. The project participants were educated and assessed to close the gap in practice, a lack of hand hygiene compliance, resulting in the spread of microorganisms. Evidence-based articles and the CDC and WHO websites supported and identified the gaps in practice, HCAI's, and their effect on mortality and morbidity. These websites produced guidelines to outline hand hygiene best practices using the five moments for hand hygiene and how to wash hands or use alcohol-based rubs properly. Staff education consisted of information on common pathogens and appropriate hand hygiene to reduce the spread of those pathogens. An expert panel evaluated this education using Lynn's model to determine the instruction's effectiveness to meet the objectives. To

assess the teachings, pre- and post- test were given to the ED nurses. The pre and post-test identified knowledge deficits related to the gap in practice. To develop the required education information from WHO, including the five moments of hygiene, were integrated into the education tool. HCAIs are significant quality indicators; when they occur, serious complications can arise along with increases in mortality and morbidity (Demirel, 2019). Despite its simplicity and effectiveness, hand hygiene is the least compliant medical practice in preventing and controlling infections associated with health care (Demirel, 2019). Proper hand hygiene, the simple task of cleaning hands at the right times and in the correct manner, can save lives and reduce these complications and costs (WHO, 2020a).

Section 4: Findings and Recommendations

Introduction

HCAIs are unintended healthcare complications that can lead to severe morbidity and mortality and decrease quality of care, and poor safety ratings for institutions (Demirel, 2019). The best defense against these infections is proper hand hygiene, which is also the most straightforward and cheapest method. Yet, it is the least compliant medical practice to prevent and control infections associated with healthcare (Demirel, 2019). This project produced a validated staff educational program that can be used in any health care setting to provided education regarding the history and significance of proper hand hygiene. This project focused on educating registered nurses to become the champions and advocates for hand hygiene, holding their peers accountable for complete hand hygiene compliance.

Findings and Implications

This project had two parts, the expert evaluation of the education and the actual learning evaluation via pre- and post-test to assess new knowledge. For the education evaluation, six expert, nurse educators evaluated the PowerPoint, four were professional staff development coordinators, and the other two were nursing faculty. Each expert agreed to voluntarily participate in the evaluation of the education in this project. Each expert was contacted to discuss the project's objectives and explain their role in the project. The content and tools to complete the evaluation were emailed to each expert. After explaining their voluntary role in the project and the tools, each expert independently reviewed and scored the educational content.

PowerPoint Education Evaluation

A Likert-type scale (Table 1) was used for the evaluation survey to assess Lynn's Model's education. The questions were:

Was the PowerPoint education appropriate for the audience?

Were the objects successfully addressed?

Was the information provided clear, concise, and accurate?

How relevant was the information in the development of personal knowledge of the participants?

How relevant was the information for addressing the gap in practice?

Was the length of the education appropriate?

The expert team reviewed and evaluated the staff development project using the four-point Likert scale. When all the evaluations were received, reviewed, and calculated, the content was validated with a score greater than 0.83 using Lynn's model (1986) as shown in Table 1. These results indicated the expert panel felt confident the educational content provided was sufficient to meet the established learning objectives.

The implications resulting from this project includes providing an endorsed education capable of educating emergency room nurses on the importance of and best practice for hand hygiene. The expert team endorsed the content validity of this project's educational component and concluded it was adequate to educate nurses on the importance of hand hygiene compliance. This education was deemed relevant, and it follows all WHO(2020b) and CDC (2020) recommendations to enhance hand hygiene compliance in the targeted group, ED nurses. The WHO and CDC recommendations are

geared towards increasing knowledge and compliance and are considered best practices.

See table 2 below.

Table 2

Likert Scale Evaluation of the Hand Hygiene PowerPoint

PowerPoint Presentation	Relevancy: Lowest/highest component CVI	*WHO recommendations: Lowest/highest component CV*	CDC recommendations Lowest/highest component CVI	Comments-free text
The PowerPoint education was appropriate for the audience.	*0.93/1.00*	*1.00/1.00*	1.00/1.00	It may not be simple enough for some RNs, can be simplified to suit unlicensed personnel
The PowerPoint successfully addressed the objectives.	*1.00/1.00*	*1.00/1.00*	1.00/1.00	
The information provided was clear, concise, and accurate information.	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	
The PowerPoint successfully addressed the objectives.	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	
The PowerPoint was appropriate in length.	*0.93/1.00*	*1.00/1.00*	*1.00/1.00*	Slides too long/ contain too much content
To orient the ED nurses on the importance of hand hygiene. How relevant is the objective for the staff development activity.	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	

To orient the ED nurses on proper hand hygiene. How relevant is the objective for the staff development activity.	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	Good idea incorporating Covid 19
The relevancy of the educational intervention to promote participant's knowledge, skills, and attitudes.	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	
The overall relevancy of this project to address the gap in the practice of a lack of appropriate, consistent hand hygiene compliance in health care settings	*1.00/1.00*	*1.00/1.00*	*1.00/1.00*	

Note-(n = 6)

Staff Education

The education in this project consists of a PowerPoint presentation, a pre-test, and a post-test. Twenty-two Nurses participated by taking the pre-test (n = 22). The presentation was delivered in four sessions due to attendance limitations related to COVID restrictions. Before the PowerPoint presentation, a pre-test was given to assess existing knowledge (see Appendix D for pre- and post-test analysis). The pre-test (see Appendix E) consisted of questions related to the learning objectives, the proposed gap in practice knowledge, and the history of hand hygiene (Questions 1-13), along with

questions about pathogens (Questions 14-17) and the novel corona virus (Questions 18-20). All the pre-tests were placed anonymously in a bin labeled pre-test once completed, only identified by a number from 1 to 22 to match the corresponding post-test to assess gained knowledge.

Twenty-two participants took part and completed the pre-test (N = 22). The pre-test findings (see Appendix D) showed knowledge regarding the definition, history, and mechanics of hand hygiene (Questions 1-13) and identified a mean between 7.81 and a mode of 8 for all questions, indicating staff was somewhat knowledgeable of basic hand hygiene and its history. Knowledge regarding pathogens and the spread of pathogens (Questions 14-17) with a mean of 2.09 and a mode of 2. The area of least knowledge was questions regarding the novel corona virus (Questions 17-20) with a mean of 1.45 and a mode of 1 of demonstrating little knowledge.

The post-test data showed the education met the lesson objectives. All Questions 1-13 had a post-test mean of 11.95 and mode of 11, indicating that staff was knowledgeable about the educational program intervention content. Questions 14-17 had a mean of 3.86, and a mode of 4 had the indicating an increase in knowledge regarding common pathogens. Knowledge regarding the corona virus increased as well; the mean was 2.95 with a mean of 3.0, showing the group was deeply knowledgeable regarding the corona virus. All pre- and post-test question results are displayed in Appendix D. The staff education intervention indicated an improvement in staff knowledge regarding the gap in clinical practice and the use of hand hygiene to combat healthcare-acquired infection.

Recommendations

The expert panel found the PowerPoint education met all learning objectives. One evaluator felt the information could be simplified so any health care employee could follow and understand all terms. The experts felt the information should be disseminated department and facility-wide to supplement hand hygiene competencies. The panel also suggested the slides be uniform, using the same pattern and minimizing each slide's information. The suggestions were incorporated into the revised PowerPoint before delivering the education.

The nurses also provided valuable feedback. The nurses agreed that the ED faces challenges other departments do not, such as a lack of sinks for handwashing. This rushed and crowded environment is uncontrolled and ever-changing. They suggested that instead of hand sanitizer in each bay, it should be more available in the crowded hallways. Installing more sinks in the hallways would be helpful as well. There are two sinks in the department, one in the nurse's station and one outside the nurse's station, which are two feet apart.

During the current pandemic, the nursing staff felt this education could be taught as patient education to reduce the spread of pathogens in healthcare, public spaces, and private homes. This same information could be tailored for and taught to school-age children to minimize the spread of pathogens, including the corona virus.

Contribution of the Doctoral Project Team

The American Association of Colleges of Nursing's Essentials of Doctoral Education for Advanced Nursing Practice outlines healthcare transformation standards

related to doctorate-prepared nurses (Sherrod & Goda, 2016). The DNP-prepared nurse leader uses EBP by evaluating and generating strategies to enhance patient care by improving patient safety and quality by identifying gaps in practice (Sherrod & Goda, 2016).

I led this project directed by the expert panel's expertise to enhance the safety of healthcare and optimize patient outcomes. The project team consisted of experts who evaluated the education, and the nurses who participated in the project.

Roles of the Project Team

This project's experts and participants were willing voluntary participants with their own busy lives, jobs, and time constraints. The expert's roles were to evaluate and provide feedback via open communication to provide guidance and determine if the educational objectives were met. The nurses participated by anonymously taking the pretest, listening to the PowerPoint education, and taking the post-test.

This education can be extended to all healthcare workers. Hand hygiene is the responsibility of all healthcare workers.

Strengths and Limitations of the Project

This project's strength was that it could be presented to any group of healthcare workers throughout the institution. This means this project would educate not only nurses but doctors, nurse aides, housekeeping associates, and dietary associates. This project is a comprehensive program that can educate health care workers across the spectrum.

Limitations were that due to COVID restriction, the number of participants was limited for each educational session to allow for social distancing. Another limitation was

that despite numerous programs and interventions already in place; hand hygiene compliance continues to be less than optimal.

Section 5: Dissemination Plan

Dissemination

This project's results were presented to the practicum site's executive leadership team at the monthly directors' meeting. Professional development felt this information could be integrated with its annual hand hygiene education and new employee orientation. There will also be further discussion of disseminating the project at other healthcare facilities via conferences and poster presentations.

Analysis of Self

Through the development of this project, my personal growth and development have advanced. The role of the project manager has allowed me to identify gaps in practice readily. I have learned to compose and communicate information to contribute to identifying and addressing practice gaps. I have been known to be a leader and a problem solver. My scholar's role is an ongoing process; I continue to seek new knowledge as a lifelong learner. This project experience has allowed me to collaborate with peers, leaders, and other disciplines to create a safe working environment.

Challenges to this project were work/school/ home life balance. I planned not to take a leadership (director) role until my DNP was completed. In the last 5 years, I have held two different direct of nursing positions, which have significantly delayed my project's completion. The project has always been a priority; however, the job duties are sometimes never-ending. A typical day as director of nursing leaves me exhausted and with little energy or motivation after an entire day of managerial problem solving. The insight gained was to manage my time wisely and prioritize according to my goals.

Summary

This DNP project was designed to develop an all-inclusive, comprehensive education to increase hand hygiene across the board. It was designed and maintained based on Kotter's eight steps to change model, allowing for continuous management of EBP from implementation to preserving and sustaining the efforts. Hand hygiene plays a significant role in protecting those entrusted to healthcare workers' care. As one of the most trusted professions nurses should lead the way to educate and advocate for 100% hand hygiene compliance holding their peers accountable. Cleaning hands at the appropriate times should be as routine as blinking.

References

Booth, K. A. (2016). Preventing Healthcare-Associated Infections (HAIs). *Journal of Continuing Education Topics & Issues, 18(1), 18-23.*

Chang, M.-C., Chen, Y.-C., Gau, B.-S., & Tzeng, Y.-F. (2014). Translation and validation of an instrument for measuring the suitability of health educational materials in Taiwan: Suitability assessment of materials. *Journal of Nursing Research ,22(1), 61–68.*

Centers for Disease Control and Prevention. (2019a). Healthcare-associated Infections. https://www.cdc.gov/hai/data/portal/index.html

Centers for Disease Control and Prevention. (2019b). 2018 National and State Healthcare-Associated Infections Progress Report. https://www.cdc.gov/hai/pdfs/progress-report/2018-Progress-Report-Executive-Summary-H.pdf

Centers for Disease Control and Prevention. (2020). Hand hygiene in healthcare settings. https://www.cdc.gov/handhygiene/providers/guideline.html

Demirel, A. (2019). Improvement of hand hygiene compliance in a private hospital using the Plan-Do-Check-Act (PDCA) method. Pakistan *Journal of Medical Sciences, 35(3), 721–725.*

Fouad, M., & Eltaher, S. (2020). Hand hygiene initiative: comparative study of pre- and postintervention outcomes. *Eastern Mediterranean Health Journal = La Revue de Santé de La Mediterranee Orientale = Al-Majallah Al-Sihhiyah Li-Sharq Al-Mutawassit, 26(2), 198–205*.

Gould, D. J., Moralejo, D., Drey, N., Chudleigh, J. H., Taljaard, M., & Gould, D. J. (n.d.). *Interventions to improve hand hygiene compliance in patient care*.

Lynn, M.R. (1986). Determination and quantification of content validity. *Nursing research, 35(6),382-385*

Mahfouz A.A, Al-Zaydani I.A., Abdelaziz A.O., El-Gamal M. N., & Assiri, A.M. (2019). Changes in hand hygiene compliance after a multimodal intervention among health-care workers from intensive care units in Southwestern Saudi Arabia. *Journal of Epidemiology and Global Health, 4(4).*

Matthew P., M., Eileen, C., Naureen, S., Elaine, L., & Roland, M. (2015). Hand hygiene compliance in an emergency department: *The effect of crowding. Academic Emergency Medicine, 22(10), 1218–1221.*

Mumtaz Rahim, V., Kaur, K., Yadav, S., Srinivas, V., Devrani, S., Singh, H., & Chakravarty, A. (2020). An observational study to assess hand hygiene compliance rate among health care workers at a tertiary care hospital. *Medical Journal of Dr. D.Y. Patil University, 13(1), 66–70.*

National Institutes of Health. (2020, March 17). New coronavirus stable for hours on surfaces. (2020). https://www.nih.gov/news-events/news-releases/new-coronavirus-stable-hours-surfaces

Nightingale, F. (1992). *Notes on nursing: What it is, and what it is not (1st ed).* Lippincott Williams & Wilkins.

Novák, M., Breznický, J., Kompaníková, J., Malinovská, N., & Hudečková, H. (2020). Impact of hand hygiene knowledge on the hand hygiene compliance. *Medicinski*

Glasnik, 17(1), 194–199.

O'Connor, K. (July 2018). Virginia's health care-acquired infection rates mirror national averages, but is that good enough? *Virginia Mercury.* https://www.virginiamercury.com/2018/07/18/virginias-health-care-acquired-infection-rates-mirror-national-averages-but-is-that-good-enough/

Rutherford-Hemming, T. (2015). Determining content validity and reporting a content validity index for simulation scenarios. *Nursing Education Perspectives (National League for Nursing*), 36(6), 389–393

Sands, M., & Aunger, R. (2020). Determinants of hand hygiene compliance among nurses in US hospitals: A formative research study. *PLoS ONE, 15(4), 1–29.*

Schwirtz, M. (n.d.) Nurses die, doctors fall sick and panic rises on virus front lines. *The New York Times.* https://www.nytimes.com/2020/03/30/nyregion/ny-coronavirus-doctors-sick.html

Seo, H.-J., Sohng, K.-Y., Chang, S. O., Chaung, S. K., Won, J. S., & Choi, M.-J. (2019). Interventions to improve hand hygiene compliance in emergency departments: a systematic review. *Journal of Hospital Infection, 102(4), 394–406*

Sherrod, B., & Goda, T. (2016). DNP-prepared leaders guide healthcare system change. *Nursing Management, 47(9), 13–16.*

Su, G. (2016). A collaborative approach to reduce healthcare-associated infections. *British Journal of Nursing, 25(11), 582–586.*

Thornton, B., Usinger, J., & Sanchez, J. (2019). Leading Effective Building Level Change. *Education, 139(3), 131–138.*

Virginia Department of Health. (2020). Healthcare-associated infections. http://www.vdh.virginia.gov/haiar/hai/

World Health Organization. (2020a) Hand Hygiene: Why, How & When? https://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf

World Health Organization. (2020b). Rolling updates on coronavirus disease (COVID-19). https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen http://www.vdh.virginia.gov/haiar/hai/

Yusoff, M.S.B. (2019). ABC of content validation and content validity index calculation. *Education in Medicine Journal, 11(2), 49–54.*

Zhou, Q., Fan, L., Lai, X., Tan, L., & Zhang, X. (2019). Estimating extra length of stay and risk factors of mortality attributable to healthcare-associated infection at a Chinese university hospital: a multi-state model. *BMC Infectious Diseases, 19(1), 975.*

Appendix A: Lesson Plan

STAFF DEVELOPMENT PROJECT

AN INTEGRATED APPROACH TO HAND HYGIENE COMPLIANCE

GOAL: TO INCREASE KNOWLEDGE AND AWARENESS OF HAND HYGIENE COMPLIANCE IN THE EMERGENCY DEPARTMENT

OBJECTIVES	METHOD	TIME FRAME	OUTCOME
TO EDUCATE EMERGENCY DEPARTMENT REGISTERED NURSES ON THE IMPORTANCE OF HAND HYGIENE COMPLIANCE AND ACCOUNTABILITY	IDENTIFYING THE GAP IN PRACTICE INSTRUCTIONAL POWERPOINT VIA SURVEY MONKEY SUMMATIVE EVALUATIONVIA PRE AND POST-TEST VIA SURVEY MONKEY	4 WEEKS	TO BE DETERMINED
TO CREATE SOCIAL CHANGE MAKING HAND HYGIENE COMPLIANCE ESSENTIAL THROUGH INCREASED AWARENESS	EVALUATION METHOD: DESCRIPTIVE STATISTICS		

REDUCE THE THREAT OF SPREADING PATHOGENS			
TO INCREASE PATIENT SAFETY AND IMPROVE PATIENT OUTCOMES			

Appendix B: Lesson Plan Evaluation

	Expert 1				Expert 2				Expert 3				Expert 4				Expert 5				Expert 6			
HISTORY OF HAND HYGIENE	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PROPER HAND HYGIENE PRACTICES	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PATIENT SAFETY	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TRANSMISSION OF PATHOGENS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TYPES OF PATHOGENS	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

not relevant, 2 = unable to assess relevance without item revision, 3 = relevant but requires additional information alterations, and 4 = most relevant.
Please provide any additional comments below.

Appendix C. PowerPoint Evaluation

POWERPOINT EVALUATION																								
	Expert 1				Expert 2				Expert 3				Expert 4				Expert 5				Expert 6			
The power point education was appropriate for the audience	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
The PowerPoint successfully addressed the objectives.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
The information provided was clear, concise, and accurate information.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
The PowerPoint was appropriate in length.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
To orient the ED nurses on the importance of hand hygiene. How relevant is the objective for the staff development activity	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

To orient the ED nurses on proper hand hygiene. How relevant is the objective for the staff development activity	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
The relevancy of the educational intervention to promote participant's knowledge, skills, and attitudes.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
The overall relevancy of this project to address the gap in the practice of the lack of appropriate, consistent hand hygiene compliance in health care settings	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

1- = not relevant, 2 = unable to assess relevance without item revision, 3 = relevant but requires additional information alterations, and 4 = most relevant.
Please attach any additional comments

Please provide any comments or recommendations below.

Appendix D: Pre and Post Test Analysis

Registered Nurse Participant	To increase RN knowledge of the history of hand hygiene and the importance of hand hygiene compliance.		To increase RN knowledge of pathogens and the spread of pathogens in healthcare.		To increase RN knowledge of the origin, spread and prevention of the Novel Corona Virus	
	Pre	Post	Pre	Post	Pre	Post
1	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
2	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able
3	Somewhat knowledgeable	Knowledge-able	Knowledge-able	Knowledge-able	Somewhat knowledgeable	Knowledge-able
4	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able
5	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
6	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able
7	Somewhat knowledgeable	Knowledge-able	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able
8	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
9	Little knowledge	Knowledge-able	Little knowledge	Somewhat knowledgeable	Little knowledge	Knowledge-able
10	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Somewhat knowledgeable
11	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able
12	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
13	Somewhat knowledgeable	Knowledge-able	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able
14	Knowledge-able	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Knowledge-able	Knowledge-able
15	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able
16	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able
17	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
18	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
19	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able
20	Little knowledge	Knowledge-able	Little knowledge	Somewhat knowledgeable	Little knowledge	Knowledge-able
21	Somewhat knowledgeable	Knowledge-able	Little knowledge	Knowledge-able	Little knowledge	Knowledge-able
22	Little knowledge	Knowledge-able	Somewhat knowledgeable	Knowledge-able	Somewhat knowledgeable	Knowledge-able

Appendix E: Pre-test With Answers

1. Who is known as "the father of hand hygiene"?
   A. Oliver Wendell Holmes
   B. Ignaz Semmelweis
   C. Neither of the above
2. Adequate Hand hygiene performed correctly is the most important intervention to prevent HAIs.
   A. True
   B. False
3. Hand hygiene compliance is the responsibility of _____.
   A. Nurses
   B. Physicians
   C. Only healthcare workers who provide direct patient care
   D. All healthcare workers
4. It is acceptable to use antimicrobial foam when hands are visibly soiled.
   A. True
   B. False
5. What percentage of health care workers comply with proper hand hygiene practices?
   A. 100%
   B. 75%
   C. 50%
   D. 25%

6-13. Select the appropriate intervention:

A. Wash with soap and water
B. B. Use antimicrobial foam

B Before putting on and after removing gloves
A After touching blood, body fluids, secretions, excretions, or contaminated objects
A After restroom visits, eating, combing hair, handling money or any type of equipment or supplies, and any other time the hands may be contaminated.
B Upon entering or leaving each patient's room.
A Hands are visibly contaminated or soiled with blood or other body fluids.
A Before eating, applying cosmetics, or manipulating contact lenses.
A Upon leaving a room after caring for a patient with C. diff.
B Between patient contacts; between different procedures on the same patient.

14. What are the most common hospital acquired infections (HAIs)?
   A.) Central line-associated bloodstream infections (CLABSI) and pneumonia
   B.) Pneumonia and surgical site infections (SSIs)
   C.) Catheter-associated urinary tract infections (CAUTIs) and surgical site infections (SSIs)
   D.) Pneumonia and Clostridium difficile (C-Diff)

15. MRSA infections can occur in the bloodstream, lungs, heart, bones, or joints.
    A.) True
    B.) False

16. C diff is transmitted via the fecal/oral route.
    A. True
    B. False

17. Which of the below statements is not true regarding C-diff?
    A. Alcohol based hand rubs successfully prevents the spread of C-diff.
    B. The CDC recommends handwashing with soap and water after caring for a patient with C. diff
    C. It can be transmitted by the fecal oral route (touching a surface or patient contaminated with feces and then touching the mouth or mucous membranes).
    D. A solution of 1:10 bleach is required to kill C.diff spores

18. Experts say the Corona virus can live on surfaces for a few hours or up to several days, meaning HH is essential. The CDC (2020) recommends that individuals wash their hands often with soap and water for a minimum of ___ seconds.
    A. 60
    B. 20
    C. 15
    D. 30

19. The World Health Organization states evidence demonstrates the COVID-19 virus is mainly transmitted between people through respiratory via airborne particles (droplets).
    A. True
    B. False

20. Current WHO recommendations emphasize the importance of rational and appropriate use what PPE when in contact with Covid patients?
    A. Gloves
    B. N-95 mask
    C. Gown
    D. Only B
    E. All the above

Appendix F: Power Point Education

HAND HYGIENE BASICS101

OBJECTIVES

- To create a culture where hand hygiene is spontaneous and automatic
- To increase healthcare workers' knowledge of hand hygiene
- To increase healthcare workers knowledge of pathogens
- To educate health care workers on the Novel Corona Virus
- To promote staff participation and ownership of the hand hygiene initiative

HISTORY OF HAND HYGIEN

1822-a French pharmacist demonstrated solutions containing chlorides eliminated foul odors associated with corpses could be used as disinfectants

1825- this pharmacist stated healthcare workers caring for patients with contagious diseases would benefit from using liquid chloride solution.

1846-Ignaz Semmelweis noted a higher mortality rate in newborns where physician were going straight from the autopsy suite to the obstetrics ward without using an antiseptic wash.

1947-Ignaz Semmelweis insisted healthcare workers clean their hands with a chlorine solution between each patient in; as a result maternal mortality rate dropped dramatically.

This was the first evidence proving the intervention by Semmelweis using an antiseptic agent between patient may reduce healthcare–associated transmission of contagious diseases

HANDS ARE THE MOST COMMO
OF TRANSMISSION OF PATHOG

Did you know?
Clean hands are the **most** important factor in preventing the spread of pathogens and antibiotic resistance in healthcare settings.

Annually the CDC estimates approximately 2 million patients in the United States get an infection in hospitals, and about 90,000 of these patients die due to the infection.

A single gram of human feces, the weight of a paper clip, can contain one trillion microorganisms (CDC, 2020).

Healthcare workers included, people frequently touch their eyes, nose, and mouth without even realizing it. Microorganisms can enter the body through the eyes, nose and mouth via the hands.

BARRIERS TO HAND HYGIENE

- Handwashing agents cause irritation and dryness
- Sinks are inconveniently located/lack of sinks
- Lack of soap and paper towels
- Too busy/insufficient time
- Understaffing/overcrowding
- Patient needs take priority
- CDC(2020)

WHEN TO WASH

1. At the beginning of the workday.
2. When they are visibly contaminated or soiled with blood or other body fluids.
3. Before eating, applying cosmetics, or manipulating contact lenses
4. After restroom visits, eating, combing hair, handling money or any type of equipment or supplies, and any other time the hands may be contaminated.
5. After touching blood, body fluids, secretions, excretions, or contaminated objects
6. After contact with wound dressings (bandages)

FIVE MOMENTS OF HAND HYGIE

1. Before patient contact

2.Before aseptic task

3.After possible expouse to body fluids

4.After patient contact

5.After contact with patient surrounding

https://www.who.int/gpsc/tools/5momentsHandHygiene_A3-2.pdf?ua=1

HOW TO WASH

1.Remove all jewelry

2. Turn on the water, adjust the temperature to warm

3. wet hands liberally with the fingertips pointing downward

4. Apply soap and lather all surfaces

5. Rinse each hand, allowing water to run from your wrist toward your fingertips, pointing your fingers downward

01	02	03	04	05
Before putting on and after removing gloves	Between patient contacts; between different procedures on the same patient.	After contact with the patient's skin	After contact with inanimate objects near a patient	Upon entering or leaving each patient's room

WHEN TO FOAM

Rubs:

Require less time

Are more effective for standard handwashing than soap

Are more accessible than sinks

Reduce bacterial counts on hands

Improve skin condition

HOSPITAL ACQUIRED INFECTION

Healthcare-associated infections (HCAIs) also known as healthcare-acquired infections and formally known as nosocomial infections are infections that arise while receiving medical treatment of a condition in a hospital or in any other type of healthcare facility (Booth, 2016).

The most common HAIs are pneumonia and surgical-site infection; the most prevalent pathogen is Clostridium difficile (C diff) (Rohde et al., 2016).

Adequate Hand hygiene performed correctly is the most important intervention to prevent HAIs; hand hygiene includes both handwashing and the use of alcohol-based hand rubs (Booth, 2016).

Despite the effectiveness of hand hygiene (HH) to reduce the spread of HAIs only 50% of healthcare workers comply with proper hand hygiene techniques (McGuckin & Govednik, 2014).

CLOSTRIDIUM DIFFICILE INFECTIO

Also known as C diff which is a bacteria that causes diarrhea.

A solution of 1:10 bleach or an EPA-approved disinfectant with sporicidal (able to kill spores) properties is recommended.

Alcohol does not kill C. diff; therefore, the CDC recommends handwashing with soap and water after caring for a patient with C. diff.

Symptoms of C. diff include watery diarrhea, fever, loss of appetite, nausea, and abdominal pain.

It is transmitted by the fecal oral route (touching a surface or patient contaminated with feces and then touching the mouth or mucous membranes).

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

(MRSA) is an infection caused by a specific type of staph bacteria.

These bacteria have become resistant to most of the antibiotics used to treat the infection.

MRSA infections are difficult to treat and can have devastating consequences.

Skin infections, the most common type of infection caused by MRSA, can begin as small bumps or pimples and quickly develop into a large abscess.

MRSA infections can occur in the bloodstream, lungs, heart, bones, or joints.

THE NOVEL CORONA VIRUS

Hand Hygiene awareness was heightened with the outbreak of the COVID 19, a respiratory illness caused by a novel coronavirus. The World Health Organization (2020) describes the outbreak as a pandemic that originated in Wuhan, China. The virus is now present in growing numbers in countries and territories throughout the world, including the United States (Center for Disease Control and Prevention (CDC), 2020).

Experts say the virus can live on surfaces for a few hours or up to several days, meaning HH is essential. The CDC (2020) recommends that individuals wash their hands often with soap and water for at least 20 seconds after being in public, or after blowing your nose, coughing, or sneezing. With the emergence of the 2019 covid 19 outbreak , HH and the prevention of the spread of the virus is of utmost concern for healthcare workers, CEOs of health systems, and the public.

THE NOVEL CORONA VIRUS CO

- The novel coronavirus is a pandemic that originated in Wuhan, China. The virus is now present in growing numbers in countries and territories throughout the world, including the United States (Center for Disease Control and Prevention (CDC, 2020).
- Death tolls are increasing exponentially daily; these numbers include the public and healthcare workers as well (CDC,2020).
- The CDC (2020) recommends that individuals wash their hands often with soap and water for at least 20 seconds after being in public, or after blowing your nose, coughing, or sneezing.

PREVENTING HAI

The prevention of HAIs requires an integrated approach which encompasses all healthcare staff as well as patients and their family members; all participants must assume responsibilities and be willing, involved participants (Guizhen, 2016).

Spruce (2014) states that hand hygiene compliance is the responsibility all team members in the prevention of the spread of infection; they suggests not only are team members accountable for their own actions but for the actions of those around them (Spruce, 2014). Team members must speak up when they witness a breech in hand hygiene, sterile technique or any other departmental policies which directly affect patient safety (Spruce, 2014).

CULTURE CHANGES THAT STICK

- **To create a culture where hand hygiene is spontaneous and automatic direct performance monitoring should be paired with peer/healthcare worker engagement**
  - The prevention of HAIs requires an integrated approach which encompasses all healthcare staff as well as patients and their family members; all participants must assume responsibilities and be willing, involved participants (Guizhen, 2016).
    - Staff re-education, demonstration of proper hand hygiene technique (blue light demo for soap and water or surface coverage demo for alcohol based foam
- **To promote staff participation and ownership of the hand hygiene initiative**
  - Spruce (2014) states that hand hygiene compliance is the responsibility all team members in the prevention of the spread of infection; they suggests not only are team members accountable for their own actions but for the actions of those around them (Spruce, 2014). Team members must speak up when they witness a breech in hand hygiene, sterile technique or any other departmental policies which directly affect patient safety (Spruce, 2014).
    - Peer audits
    - Compliance recognition (positive reinforcement)
    - Hand hygiene technology (Ecolab hand hygiene badge) can be used to sustain the culture change through real time reminders and quality assurance data

REFERENCES

Booth, K. A. (2016). Preventing Healthcare -Associated Infections (HAIs). Journal Of Continuing Education Topics & Issues, 18(1), 18 -23 6p.

The Centers for Disease Control and Prevention. (2020). Hand Hygiene in Healthcare Settings. Retrieved from: https://www.cdc.gov/handhygiene/providers/guideline.html

The Centers for Disease Control and Prevention. (2019). Healthcare - associated Infections. https://www.cdc.gov/hai/data/portal/index.html

Guizhen, S. (2016). A collaborative approach to reduce healthcare - associated infections. British Journal Of Nursing, 25(11), 582 -586 5p.

REFERENCES CONTINUED

Spruce, L. (2014). Back to Basics: Preventing Surgical Site Infections. AORN Journal,

World Health Organization. (2020). Rolling updates on coronavirus disease (COVID- 19).Retrieved from: https://www.who.int/emergencies/diseases/novedoronavirus-2019/events-as-they-happen http://www.vdh.virginia.gov/haiar/hai/

World Health Organization. (2020) Hand Hygiene: Why, How & When? Retrieved from: https://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf

Appendix G: Posttest with Answers

1. Who is known as "the father of hand hygiene"?
   A. Oliver Wendell Holmes
   B. Ignaz Semmelweis
   C. Neither of the above

2. Adequate Hand hygiene performed correctly is the most important intervention to prevent HAIs.
   A. True
   B. False

3. Hand hygiene compliance is the responsibility of _____.
   A. Nurses
   B. Physicians
   C. Only healthcare workers who provide direct patient care
   D. All healthcare workers

4. It is acceptable to use antimicrobial foam when hands are visibly soiled.
   A. True
   B. False

5. What percentage of health care workers comply with proper hand hygiene practices?
   A. 100%
   B. 75%
   C. 50%
   D. 25%

6-13. Select the appropriate intervention:
   C. Wash with soap and water
   D. B. Use antimicrobial foam

B Before putting on and after removing gloves
A After touching blood, body fluids, secretions, excretions, or contaminated objects
A After restroom visits, eating, combing hair, handling money or any type of equipment or supplies, and any other time the hands may be contaminated.
B Upon entering or leaving each patient's room.
A Hands are visibly contaminated or soiled with blood or other body fluids.
A Before eating, applying cosmetics, or manipulating contact lenses.
A Upon leaving a room after caring for a patient with C. diff.
B Between patient contacts; between different procedures on the same patient.

14. What are the most common hospital acquired infections (HAIs)?

A.) Central line-associated bloodstream infections (CLABSI) and pneumonia
B.) Pneumonia and surgical site infections (SSIs)
C.) Catheter-associated urinary tract infections (CAUTIs) and surgical site infections (SSIs)
D.) Pneumonia and Clostridium difficile (C-Diff)

15. MRSA infections can occur in the bloodstream, lungs, heart, bones, or joints.

C.) True
D.) False

16. C diff is transmitted via the fecal/oral route.

A. True
B. False

17. Which of the below statements is not true regarding C-diff?

A. Alcohol based hand rubs successfully prevents the spread of C-diff.
B. The CDC recommends handwashing with soap and water after caring for a patient with C. diff
C. It can be transmitted by the fecal oral route (touching a surface or patient contaminated with feces and then touching the mouth or mucous membranes).
D. A solution of 1:10 bleach is required to kill C.diff spores

18**.** Experts say the Corona virus can live on surfaces for a few hours or up to several days, meaning HH is essential. The CDC (2020) recommends that individuals wash their hands often with soap and water for a minimum of ___ seconds.

A. 60
B. 20
C. 15
D. 30

19. The World Health Organization states evidence demonstrates the COVID-19 virus is mainly transmitted between people through respiratory via airborne particles (droplets).

C. True
D. False

20. Current WHO recommendations emphasize the importance of rational and appropriate use what PPE when in contact with Covid patients?

F. Gloves
G. N-95 mask
H. Gown
I. Only B
J. All the above

Appendix H: Hand Hygiene Pamphlet

Protect the safety of those entrusted to you care.

Hold your peers accountable to 100% hand hygiene compliance.

If they do not, speak up and ask them to do so.

Clean hands save lives….

Clean Hands
Hand Sanitizer Blvd.
Everywhere in America

All healthcare workers

Clean Hands Save Lives

An Integrated Approach to Hand Hygiene Compliance-Pledge your Commitment Today!