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BE SEEN AND HEARD BEING CLEAN: A PATIENT-CENTERED APPROACH TO
HAND HYGIENE AT CONCORD HOSPITAL

By

Ashley Pinkham

B.S. Biology, Plymouth State University, 2010

CAPSTONE PROJECT

Submitted to the University of New Hampshire

in Partial Fulfillment of

the Requirements for the Degree of

Master of Science

in

Nursing

September 2015

This Capstone Project has been examined and approved.

Dr. Pamela DiNapoli, PhD, RN, CNL,

Associate Professor of Nursing

Date

DEDICATION

I would like to dedicate my forthcoming Master's degree and this Capstone Project to my mother and father. You have given me an unlimited amount of support throughout my entire life, and have helped me to mold a magnificent future. Thank you so much for your love, patience, and understanding, I could not have done this without you both. This work is also dedicated to my loving fiancé who has helped me overcome many obstacles, never once giving up on me. I am very grateful to have you in my life, and am lucky to call you my best friend.

ACKNOWLEDGEMENTS

I would first like to express my deepest appreciation for Lynda Caine, RN, MPH who gave me the opportunity to work alongside her during my clinical immersion experience. She is an inspiration, a thinker-wise beyond her years, an educator, and a breath of fresh air. This project could not have been possible without your idea for the message and whole-hearted support. Not only are you a colleague, but a dear friend.

Second, I would like to thank Dr. Pamela DiNapoli, PhD, RN, CNL, who provided continuous support throughout the DEMN program, and in completing this capstone experience.

I would also like to acknowledge Pamela Kallmerten, MSN, RN, CNL. Thank you for all that you have done for myself, and for our DEMN cohort. You have been an incredible leader, an exemplar of poise, and now colleague and friend.

In addition I would like to thank Karen Forrest, Erin Collins, Dr. Margret Crowley, Dr. Noble, Pam Paris, and Concord Hospital staff for their insight and support in helping make this quality improvement project a reality.

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ABSTRACT

Be Seen and Heard Being Clean: A Patient-Centered Approach to Hand Hygiene (HH) at Concord Hospital

By

Ashley Pinkham, BS, RN

University of New Hampshire, September 2015

Background: Regular hand washing is recognized as the most effective means to combat the spread of infectious illness; however hand washing behavior amongst health care workers (HCW's) is inconsistent. Furthermore, measurement of hand washing behavior is subject to bias.

Aim: This quality improvement project aimed to remove the Hawthorne effect and improve the behavior of HH at Concord Hospital.

Methods: A quasi-experimental, pre-posttest design was used to evaluate HH rates on a 32 bed med-surge unit at Concord Hospital. Baseline data was collected for 30 days by asking patients if they had seen or heard staff cleaning their hands. Using Lewin's change theory and the hospitals quality improvement model, data were presented to staff, motivating them to seek out new ways to improve HH on the unit. "Be SEEN and HEARD Being Clean," was implemented, followed by post intervention data collection.

Results: Sixty-five percent of patients reported seeing or hearing staff perform HH before the intervention, and 93% reported observations of HH after the intervention ($p < .001$). Staff reported being more aware of personal HH behavior after the intervention.

Conclusion and Implications for the CNL: To our knowledge, this is the first study to modify the behavior of HCW HH in an inpatient setting through incorporating a verbal message. Incorporating an auditory cue may lead to a memory formation and increased ability to recall events at a later date. This multimodal approach to HH; 1) engages the patient, while removing the burden placed on them to question HCW's behavior, and 2) increases staff awareness of personal HH behavior.

Key words: *Patient-centered, hand hygiene, patient-as-observer, behavior, quality improvement, Hawthorne effect*

Biography

Ashley Pinkham is a student in the Direct Entry Master's Nursing program at the University of New Hampshire. She received her Bachelors degree in Biology with a minor in Chemistry from Plymouth State University in 2010 and went onto pursue a career in research. She spent one year at the Wells National Estuarine Reserve in Wells, ME, investigating the various dynamics of estuarine environments. From there, she went onto become lead microbiologist for a private laboratory in southern New Hampshire, where she worked in collaboration with the National Science Foundation on the research and development of rapid, self-decontaminating textiles. She currently resides with her fiancé in the lakes region, and enjoys the outdoors, racing rally cars, and spending time at her family's camp in northern N.H. She is incredibly thankful for the continuous support from her family and friends, and looks forward to continuing onto the Post-Masters Family Nurse Practitioner Program at the University of New Hampshire in fall of 2015. Ashley is also a member of the National Honor Society of Nursing, Sigma Theta Tau International, Eta Iota Chapter of 2015.

Be Seen and Heard Being Clean: A Patient-Centered Approach to Hand Hygiene at Concord Hospital

It is commonly known that hand hygiene (HH) is the most important way to prevent the transmission of infection, and is a priority for all health-care workers (HCWs). The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have developed many programs, which hospitals and health-care facilities have adopted, to increase HCW HH compliance in efforts to reduce the number of hospital-acquired infections (HAI's). These initiatives in conjunction with advanced the development of alcohol-based hand-rubs/gels have reduced transmission of health care-associated pathogens and reduced infection rates globally (Landers, Abusalem, Coty, & Bingham, 2012). However, HAI's are still highly prevalent in health-care facilities worldwide, indicating that there is a discrepancy between actual practice and behavior.

In 1999, the Institute of Medicine (IOM) published the report *To Err is Human: Building a Safer Health System*, which shed light on preventable, unsafe practices and errors occurring in medicine, calling for drastic changes in healthcare. Later, in 2001, the IOM published *Crossing the Quality Chasm: A New Health System for the 21st Century*, which established six aims to improve these practices- with safety being the priority. One aim in this new model, patient-centered care (PCC), revolves around the patient and their families, ensures patient's values guide all clinical decisions, involves patients in their care, and works on improving patient outcomes. Using PCC, the Joint Commission, CDC, and WHO have launched campaigns urging patients to take a role in preventing

health care errors by becoming active, involved, and informed participants in the health care team (Landers, Abusalem, Coty, & Bingham, 2012). “Speak Up,” and “It’s OK to ask,” are examples of programs developed to instruct patients to ask HCWs to clean their hands before any treatments. While these campaigns have made progress involving patients, there is undue pressure placed on patients to question HCW’s practices, creating tension and potential mistrust in the patient-HCW relationship.

With many institutions pushing for both improved healthcare practices and patient-centeredness, HH practices and patient involvement remain suboptimal. Challenges exist worldwide for effective strategies to promote sustainable HH practices while also involving patients in their care. Barriers associated with successful HH interventions include HCW knowledge and attitude toward HH, perceived control over HH behavior, and awareness of being observed, as well as facility factors such as culture, and access to HH products (soap, sinks, hand-gels, paper towels) (Qidwai et al 2015). Likewise, barriers to instituting PCC include time constraints (i.e. increased patient-physician or nurse-patient consult/educational time), language and religious barriers, lack of team participation and understanding of PCC, patient’s willingness to participate, and organizational structure (Esmaeili, Cheraghi, & Salsali, 2014). Acknowledging these barriers, HCW’s and organizations world-wide must begin to improve their current behavioral practices and organizational culture to meet new expectations.

Global Problem

Discrepancies in hand hygiene behavior have major implications for overall health of the patient and the HCW. During the 19th century, a correlation was made

between HH and mortality rates. After observing increased mortality amongst patients in his maternity department while working in Vienna, Austria, Dr. Ignaz Semmelweis ordered his staff members to wash their hands before treating patients, drastically lowering the death rate as a result (Pittet, 2000). It is now known that patients' skin can be colonized by transient pathogens that are subsequently shed onto surfaces in the immediate patient surroundings, thus leading to environmental contamination (Pittet et al, 2006). As a consequence, HCWs contaminate their hands by touching the environment or patients' skin during routine care activities, sometimes even despite glove use. It has been shown that organisms are capable of surviving on HCWs' hands for at least several minutes following contamination, thus if hand hygiene practices are suboptimal, microbial colonization is more easily established and/or direct transmission to patients, or a fomite in direct contact with the patient may occur (Pittet et al, 2006). Failure to perform appropriate HH in the hospital environment can contribute to the acquisition of HAI's (Boyce, 1999). In a recent multistate point-prevalence survey conducted by Magill and colleagues in 2011, it was estimated that there were 648,000 patients with 721,800 HAI's in U.S. acute care hospitals. Of those 648,000 patients with an HAI, 75,000 of them died (Magill et al, 2014). Not only are patients at risk from suboptimal HH, but healthcare personnel are as well. In a study by Gorman and colleagues (2010) it was determined healthcare personnel performing direct hands-on care were more likely to use sickness absences than healthcare administrative staff. HCW's are susceptible to sickness because they are subject to, along with non- occupational risk factors, numerous occupational exposures and to the added stresses because of staff shortages and high workloads (Gorman et al, 2010). With increased workloads simple tasks such as hand

washing or using hand sanitizer are often missed, perpetuating the potential of disease transmission and illness to themselves, their families, or patients.

Not only are patients, HCW's, and their families affected by health related behaviors such as HH, but employers and hospitals also feel the impact. While employers understand that investing in human capital improves the company bottom line, they are only beginning to understand the impact health has on worker productivity. In 2003, Stewart and colleagues estimated that productivity losses related to personal and family health problems cost U.S. employers \$1,685 per employee per year, or \$225.8 billion annually. In 2012 the Centers for Medicare & Medicaid Services (CMS) began to implement the hospital value-based purchasing program established by the Affordable Care Act. This program uses a pay-for-performance approach and delivers penalties such as a reduction in payments to acute care hospitals with excess readmissions, or hospitals that have excess HAI's. In 2007 it was estimated that the annual direct medical costs of HAIs to U.S hospitals was \$35.7 to \$45 billion dollars (Scott. 2009). For hospitals, HCW absenteeism increases the workload burden on employees, is associated with loss in morale, and productivity, which can lead to reduced quality of care for patients. Reduced quality of care is not only reflected in potential HAI outcomes, but also in patient feedback scores. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a formal public reporting initiative that asks patients to rate their experiences regarding their inpatient stay directly. These scores are publically available and account for 35% of the value-based purchasing score, directly impacting hospital Medicare payments. Recognizing the vast impacts of poor HH practices and the importance of involving patients in their care, the global aim of this quality improvement

project was to improve cultural and behavioral practices of HCW HH, through incorporating the patient as a partner and driver in the delivery of safer, more effective care.

Local Problem

In 2008, the New Hampshire Healthcare Quality Assurance Commission with the Foundation for Healthy Communities sponsored a statewide campaign to improve HH practices among healthcare professionals in New Hampshire hospitals, with the aim of reducing the risk of HAI's (Kirkland, 2011). During the past seven years of the "High Five for a Healthy New Hampshire" campaign, each hospital developed strategies for HH improvement that fell into five general categories: 1) leadership and accountability; 2) measurement and feedback; 3) education and training; 4) availability and convenience of HH products; and 5) marketing and communication. At Concord Hospital, the site of this quality improvement project, observed HH compliance data is collected each month by trained auditors across different units and submitted to the infection prevention department to be aggregated, then forwarded to the NH Healthcare Quality Assurance Commission. Following the implementation of this campaign, hospitals throughout the state significantly increased their HH compliance rates, from approximately 82% in 2008 to 93% in 2014 ($P < 0.0001$) (Diefendorf, 2014). Additionally, publicly reported rates of selected HAI's in New Hampshire were lower than the national benchmark in most years between 2008 and 2014 (Diefendorf, 2014).

Recently members of the NH Healthcare Quality Assurance Commission and infection preventionists throughout the state have become concerned with the validity of the data being collected. Specifically, the Commission is concerned with the variance in

each hospital's surveillance and collection methods. Direct observation, in which human auditors monitor the HH compliance of healthcare workers (HCWs) as they carry out clinical tasks, is the most commonly used method of measurement, however this is subject to biases, including observer bias, selection bias and the Hawthorne effect (Sringly et al, 2014). If the resulting data are publicly reported, as is the case in this jurisdiction, the potential for bias may be even greater. Due to their concern, the Commission has formed a subcommittee to meet and discuss other ways to approach standardizing audit methods and data collection. During this deliberation time they are no longer requiring hospitals to report their data, but strongly suggest the continuance of tracking HH compliance rates, and delivering ongoing reminders to staff. At Concord Hospital, senior leadership has voted in favor of continuing HH observation tracking and reporting, as well as an investigation into the culture of HH at their facility. Additionally, leaders from Concord Hospital are looking to add a question involving HH to their inpatient Press Ganey survey within the next two years. As it stands currently, only Concord Hospital Medical Group (CHMG) outpatient practices have a question related to HH on their Press Ganey survey; this reads, 'Extent to which staff washed their hands before examining you.'

There is evidence that substantiates the Commission's concerns regarding validity of inter-observer surveillance and HH compliance rates at Concord Hospital. Locally, in the 32 bed medical surgical unit, when the auditor is present HH increases, leading to falsely high rates being reported to the state, suggestive of the Hawthorne effect.

Literature Review

The purpose of this literature review was to investigate prior behavioral modification strategies used to improve HH practices, in addition to investigating PCC techniques in relation to HCW behavior. Search methods began with the broad topic of “patient centered hand hygiene” and “hand hygiene behavior” on both Google Scholar and UNH Library Ebsco search engines. In using these search engines, keywords such as hand hygiene behavior, hospital acquired infection, patient-centered-care, compliance, patient perception, and health care worker perception resulted in *few* evidenced-based research articles. To access these articles databases such as the Cochrane Database of Systematic Reviews, and CINALH (Cumulative Index to Nursing & Allied Health Literature) Complete, were used in an effort to extract evidence based techniques to modify hand hygiene behavior while involving patients in their care. The search was then narrowed to include articles from 2005 to present day, as publications from previous years were not considered current. Full-text articles, peer-reviewed and evidence-based-practice, both inpatient and outpatient settings, patient attitudes and behavior, patient-centered hand hygiene, the role of the patient in hand hygiene, patient as auditor, along with HH behavior amongst HCWs were inclusion criteria during the search. Exclusion criteria included articles published before 2005 as well as articles that did not specifically target HH behavior. This search yielded five articles that met all inclusion criteria and were reviewed in this capstone project.

In a recent study completed by Srigley and colleagues (2014), electronic real-time location system (RTLS) software was used to determine whether the presence of human auditors on inpatient units was associated with an increase in HH events. Investigators

found that the rate of hand washing and hand gelling increased significantly when auditors were present compared to 1-5 minutes prior to the auditor's arrival ($P=0.009$) (Sringley et al, 2014). They also determined that HH event rates were approximately threefold higher in hallways within eyesight of an auditor compared with when no auditor was visible (Sringley et al, 2014). Regular hand washing is widely recognized as the most effective means to combat the spread of infectious illness; however hand washing behavior amongst HCW's has been inconsistent. Studies such as the one by Sringley and colleagues (2014) highlight the global concern regarding observed versus actual HH behavior.

Behavior is the internally coordinated response to external stimuli, and can either be innate or learned. Health related behavioral patterns and habits, such as hand washing, are typically learned at a young age, and are influenced by external stimuli. Visual stimuli such as soiled hands or the presence of a known observer generates a conscious response to perform HH (Allegranzi & Pittet, 2009). By removing the stimulus, the now elective behavior (hand hygiene after touching a patient or inanimate object), unless learned and repeated to where a habit has been acquired, will not be performed despite the unseen threats of pathogens that may be present in the environment.

Considering the engagement of the public in their healthcare practices and awareness and expectation that providers and staff clean their hands prior to contact, the WHO, The U.S Department of Veterans Affairs, The CDC, and the National Patient Safety Agency in the United Kingdom have fostered patient empowerment by encouraging patients to ask HCWs to wash their hands (Kim et al. 2015). Studies have shown that patients are willing to be engaged, however patients tend to feel

uncomfortable speaking up to healthcare providers due to the current vertical provider-patient relationship (Kim et al. 2015). Kim and colleagues (2015) found that less direct methods of patient participation are needed for patients to willingly accept their role in healthcare. Additionally, Kim and colleagues (2015) as well as previous researchers found discrepancies between patients' perceptions, their actions, and their willingness to ask, stating that patients feared repercussions related to their health if they questioned HCW's (especially physicians) HH practices. To engage patients in their health related to HH, Kim et al (2015) found that indirect methods of patient feedback, such as assessment cards, were favored over direct methods.

In an article, written by members of the Joint Commission in 2009, the work done by Johns Hopkins Outpatient Center, an ambulatory care facility located on the campus of the Johns Hopkins Hospital in Baltimore is described. Here patients were engaged as an observer in monitoring HH compliance. When patients arrived at check-in, they were asked if they would be willing to observe and record their provider's HH compliance (Bittle & LaMarche, 2009). On agreement, they received a pencil and a bright yellow card on which they recorded their observations. On the back of the observation card were instructions on what the patient was to observe. On completing his or her visit, the patient placed the completed observation card in a bright yellow drop box located in the waiting room. The contents of the drop boxes were collected and analyzed at the end of the observation period. The researchers found that HH compliance as measured by the patient-as-observer process averaged 88% (range, 74%–100%), and that qualitative feedback post-implementation did not indicate that the process would inhibit the patient-provider relationship (Bittle & LaMarche, 2009). A similar study was conducted by Le-

Abuyen and colleagues in 2014 at Women's College Hospital Family Practice Health Centre (FPHC), an academic ambulatory care hospital in Ontario, Canada. Verbal and written instructions asked patients to voluntarily participate in an anonymous survey where they were tasked to observe and record the compliance of their healthcare providers in performing HH before any physical contact (Le-Abuyen et al. 2014). Survey cards were distributed daily during morning clinic hours, and all FPHC patients, of varying demographic distribution, were eligible to participate if interested. Completed survey cards were collected, and aggregated data and patient feedback were forwarded to healthcare providers on a regular basis, as motivation to continually improve HH practices (Le-Abuyen et al. 2014). Similar to Johns Hopkins, Le-Abuyen and colleagues (2014) also found success in using the patient as observer approach to engage patients in their health and improve HH practices in their health center.

Even with the positive results of each study, and the removal of the inter-observer bias, both research groups still did not remove the Hawthorne effect. A bright yellow card was given to each participant in the Johns Hopkins study, and a multi-colored card was given to the participants in the study by Le-Abuyen et al, the healthcare providers knew they were being monitored, therefore HH practices were enhanced. Both research teams introduced a visual stimulus to trigger HH behavior. The researchers argue that the goal of the patient-as observer/patient engagement approach is to enhance HCW HH, and if this happens through the Hawthorne effect than they deem the yellow or multi-colored cards (visual stimulus) a success.

Specific Aim

The aim of this quality improvement project was to change current HH behavior by incorporating an auditory cue conveyed to patients by HCW's indicating they had cleaned their hands before delivering care, thus alleviating the pressure felt by patients to ask. Additionally, a patient-as-observer approach to track HH compliance rates by unit eliminating the Hawthorne effect was added

Methods

Setting

Concord Hospital is an acute-care, 237 bed facility in central New Hampshire with approximately 11,000 discharges a year. The microsystem is a 32 bed medical surgical unit, separated into two wings (North & South), each with 16 rooms. The North side rooms are private, and newly renovated with the majority of patient care items (stethoscope, blood pressure cuff, thermometer, and computer) contained within the room. The South side rooms are both private and double rooms, however typically are staffed as single rooms only, and do not contain the patient care items described above. Both North and South rooms contain a patient sink in each room, however most of them are not in direct site of the patient. Sinks (3 on the North and 4 on the South) are also located in the hallways outside of patient rooms. Purell hand sanitizer is located in the halls throughout both sides of the unit and also within each patient room. On this unit the patients are between the ages of 20 and 99, with an average age of 55 years old. The majority of patients are post-operative with other medical diagnoses including but not

limited to coronary artery disease, chronic-obstructive-pulmonary-disorder (COPD), and diabetes, with the average length of stay of approximately 4.9 days.

Professionals. The unit currently employs 39 registered nurses (RN) and 32 licensed nursing assistants (LNA). Shifts vary, however the majority of nurses work 12 hour shifts (days or nights), whereas the majority of LNA's work 8 hour shifts (days, evenings, nights). One nurse is assigned as resource person (RP) and is responsible for coordinating patient assignments and keeping updated on current situations. There is also a nurse manager (NM), and a nurse educator who work days only Monday through Friday. The floor has two (one for both N & S) designated facilities professionals who perform housekeeping duties daily. Other professionals who make rounds to the unit include but are not limited to; physicians (hospitalists and specialty practices), advanced registered nurse practitioners, one dedicated case manager, physical and occupational therapists, one dedicated pharmacist, nutritionists when needed, and one dedicated social worker.

Patterns and Processes. During a process and pattern observation it was noted that during an 8 hour shift, one RN entered multiple patient rooms 78 times. Likewise, during an 8 hour shift the LNA entered multiple patient rooms over 100 times. On one observation, the LNA washed her hands outside of the patient room, whereas the RN washed her hands inside the patient room while introducing herself to the patient. The majority of hand sanitizer use is on the way out of the patient room, while heading to the next patient assignment, however this behavior does not always occur. This pattern was observed with physicians, RN's, and LNA's. On days when HH auditors are present,

gelling or hand washing occurs before entering the patient room and before exiting the room, and occurs again before entering the next patient's room. Staff make sure to catch the eye of the auditor while they are performing HH through verbal acknowledgement or exaggerated washing/gelling behavior. Auditors check off that HH was performed on their HH auditing tool (Appendix 1A), collect 30 similar random observations, and send the form to the IC department.

Intended Improvement

To improve HH, the campaign slogan 'Be SEEN and HEARD being clean' (Appendix 2A) which reminded staff to not only clean their hands, but tell their patients they cleaned their hands before providing care was implemented. Unlike in the outpatient setting where sinks are located in examination rooms, hospital sinks may be placed outside of the room, resulting in hospitalized patients not seeing their care providers performing HH. As observed, care providers have washed their hands before entering the patients' room, however the patient was not aware. Through incorporating an auditory cue, the patient is not only informed of the act, but their brains auditory cortex is stimulated, potentially leading to a memory formation (Wheeler, Peterson & Buckner, 2000). In combination with the auditory cue, if the care provider actively washed, gelled, or dried their hands in the presence of the patient, both the visual and auditory cortex of the brain was stimulated, leading to increased ability to recall the event at a later date (Wheeler, Peterson & Buckner, 2000). In building both an auditory and visual memory for the patient, their ability to answer the inpatient HH question was facilitated. Once this behavior was established on the unit, the patient-as-observer approach was used to track HH compliance rates amongst staff.

Theoretical Framework

To accomplish this improvement Lewin's Model of Change Theory (Appendix 3A) was used. Recognizing that change is hard to sustain, and consistent with behavioral theories state that without a true behavior change behavioral practices will regress/revert back to old patterns since a true behavioral change never occurred. Kurt Lewin developed the force-field model of change which includes three stages; 1) unfreezing stage, 2) moving stage, and 3) refreezing stage (Lewin, 1947). Designed to keep the desired changes in place, each stage is engineered to gain a desired outcome. The unfreezing period focuses on developing problem awareness and decreasing forces that maintain the status quo, creating a controlled anxiety or chaos. The moving stage, or the working stage, is where the problem is clearly identified and goals, strategies, and plans are developed and implemented. Lastly, the refreezing stage is when the change, or new behavior, is incorporated into the work environment and processes, and is considered the new norm or culture.

Data Collection. Prior to implementation of the intervention data was collected from current patients on the unit asking them about staff HH. Inclusion criteria were patients on the unit for one day (allowing them to become familiar with the room & floor environment), and were alert and oriented times four (person, place, time, & situation) based on critical nursing judgement. These parameters permitted increased reliability in patient observation reports. Additionally, a staff survey was distributed to physicians, RN's, and LNA's in regards to current HH attitudes and behaviors (Appendix 4A). This data was used in the unfreezing stage of change to demonstrate why the existing way of internal auditing and current HH behavior could not continue. This data was presented to

leadership and staff on the unit which began the process of re-examining their HH practices. Through creating a controlled crisis, the status quo was challenged, motivating staff to seek out new ways to effectively improve HH compliance on the unit. Using this motivation a week of staff education on the new campaign was conducted. During the education, staff openly discussed situations when auditory cue's would be appropriate, understood the importance of using a patient-centered approach to HH, and were able to practice using different sayings through role-play. They then were encouraged to actively use these sayings on the unit while delivering care to their patients. It was stressed that sayings were not to be scripted, instead, they were to be naturally derived by staff (i.e- "I am sorry my hands are cold, I just washed my hands"). These personal, in the moment sayings are more sincere when being delivered to the patient. Coaching was provided through this period of change. Additionally, HH auditors acted as champions for the initiative. Staff worked to become comfortable with the new campaign for one month before post-intervention data collection was performed using the same approach as the pre-intervention collection. During the data collection period, billboards were placed in the hallway to remind staff of the message (Appendix 2B & 2C), and patient targeted posters were hung on the back of bathroom doors in each patient room (Appendix 2D). The message was also delivered to patrons watching the in-house bingo channel during commercial break throughout the month of May. To successfully re-freeze behavior, a round table discussion was conducted with staff on the unit to openly discuss the results. During the discussion the staff provided feedback on what worked, and what did not work, and provided input on ways to improve the initiative. This hands-on approach

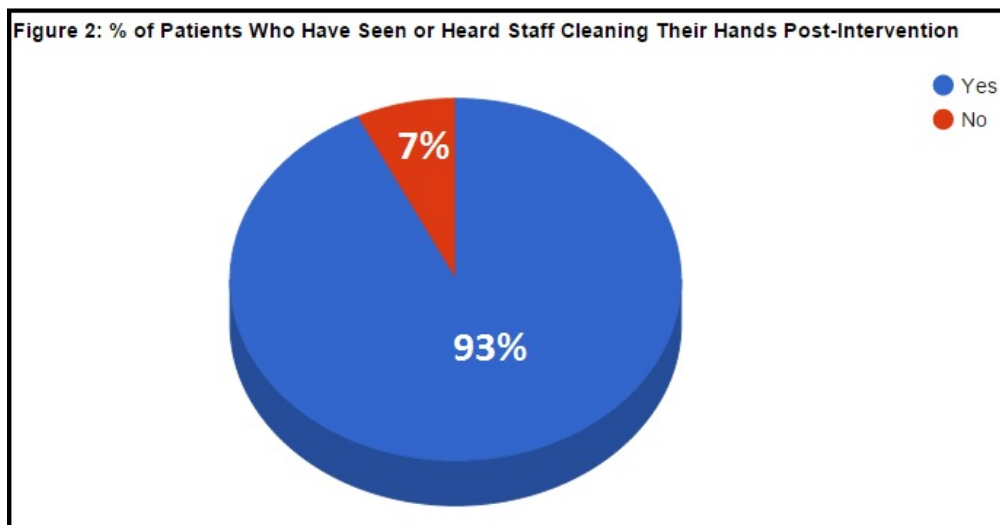
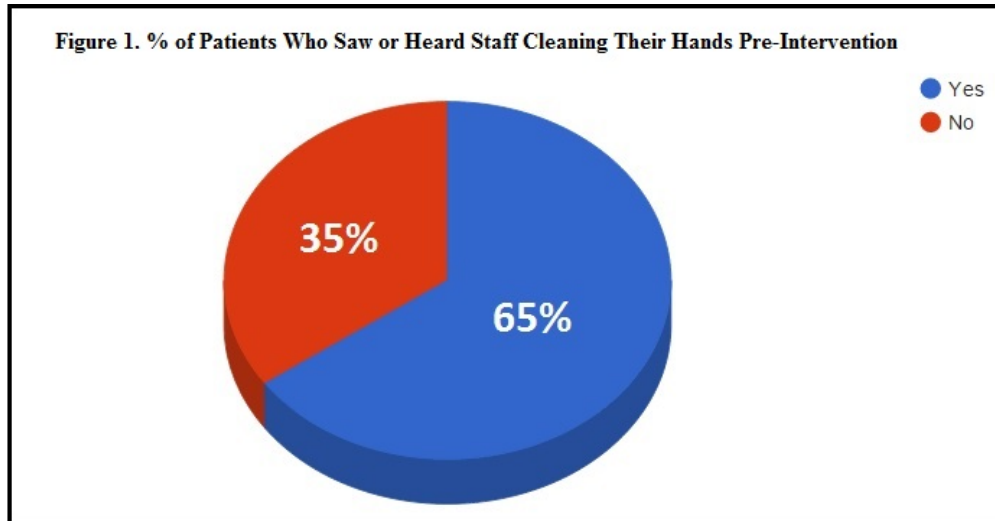
empowered staff to have a voice in the change process, helping to re-freeze the new behavior.

Data Analysis Plan and Validation. A pre-posttest comparative analysis was performed on patient observation rates before and after implementation. A two-sample t-test was used to generate statistical significance of the intervention. A critical value of $\alpha = 0.01$, or, < 0.01 was identified as the level of statistical significance. Inter rater reliability was assured by two other data collectors to validate observations made by the primary investigator.

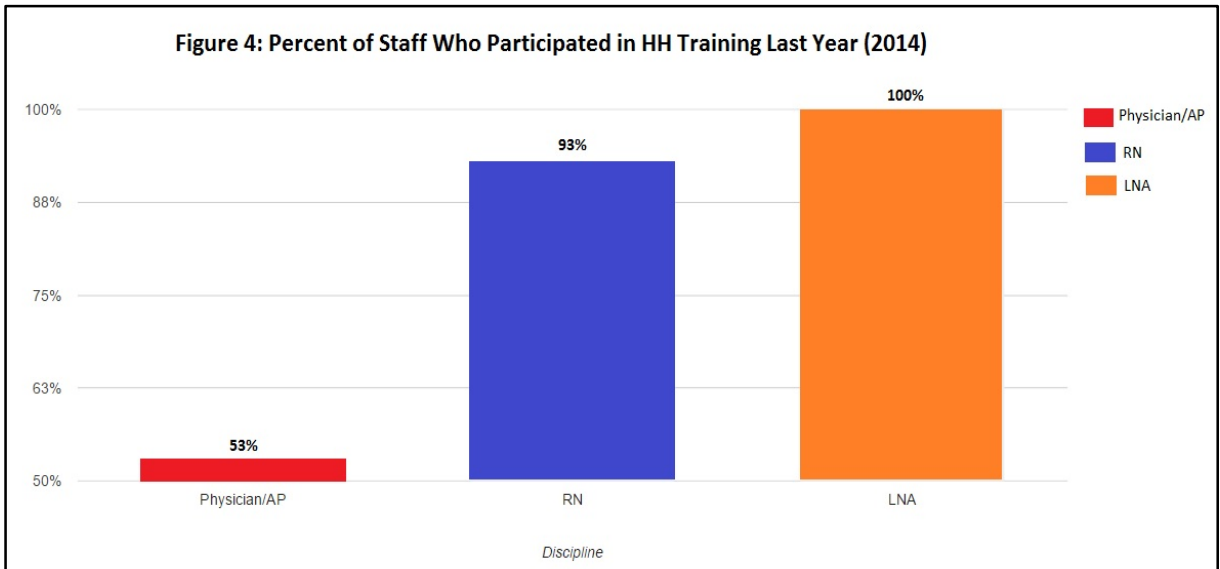
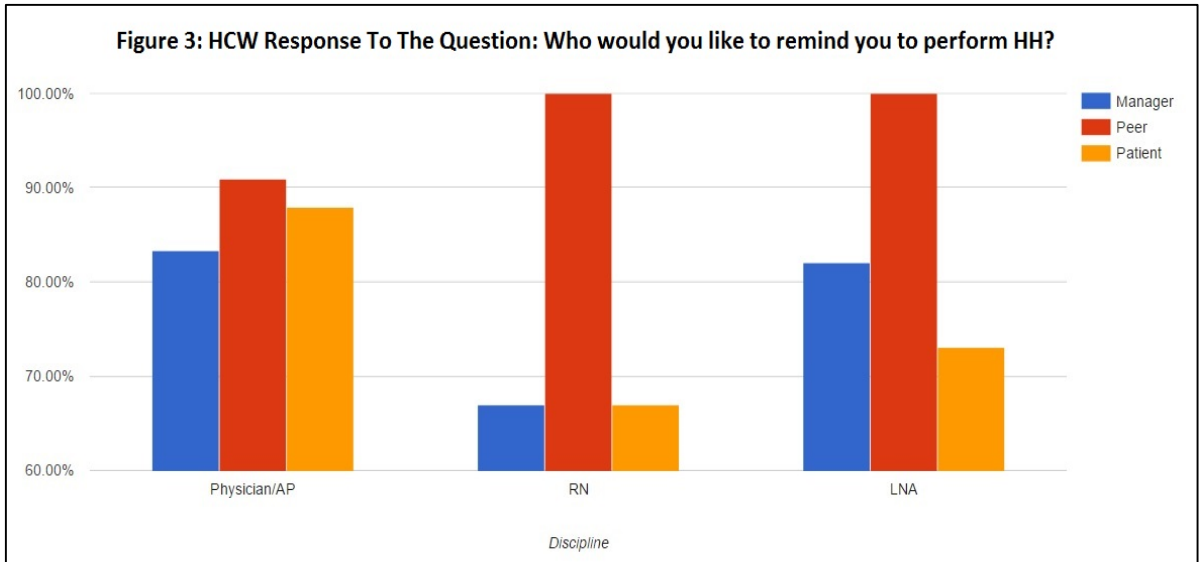
Results

Outcomes

A total of 161/166, and 153/166 patients were asked if they had seen or heard staff cleaning their hands during pre & posttest data collection, respectively (pretest data collection ran through the month of March and posttest data was collected during the month of May) . Figure 1 shows that sixty-five percent of patients reported seeing or hearing staff perform HH before the intervention, while 93% reported seeing or hearing staff perform HH after the intervention ($p < 0.001$) as seen in Figure 2.



Prior to the intervention and re-education, 23%, 38%, and 31% of physicians, RN's, and LNA's, responded to the HH survey, respectively. One hundred percent of RN & LNA respondents and 91% of physician respondents stated they would feel more comfortable with peers reminding them to wash their hands, as oppose to patients (Figure 3). Additionally, 100% of LNA respondents and 93% of RN respondents claimed to receive HH training within the last year, whereas only 53% of physicians responded they received training (Figure 4).



Qualitatively, during the round table discussion staff disclosed that they are more aware of HH practices, and find themselves using the message at high-touch times (physical assessment, vital signs, activities of daily living (ADL)). Staff also stated that they felt more engaged with patients in their care since the intervention. Increased frequency in changing/refilling Purell/soap dispensers was an unexpected result noted by environmental services staff (ES), and confirmed during round table discussion with staff

stating, “We have to ask ES to refill dispensers more often.” Usage data for the months of May and June 2015 were compared with that of 2014. More units of Purell were delivered to 6 N/S during May & June 2015, than in May & June 2014 (6 units, 2 units, respectively). HCAPS for the quarter had not been calculated at time of study, however this is data suggestive of PCC that should be reviewed.

Discussion

Significance of the Findings

The results of the post-intervention analysis indicate that a change in staff HH behavior occurred. The change was significant enough to be reflected via patient response to the question “Have you seen or heard staff cleaning their hands?” The auditory message, combined with increased staff awareness of overall HH behavior culminated in a cultural change on the unit. Equally significant was the success in auditing patients for their feedback and receiving almost 100% participation. Patients were enthused and receptive of the patient auditor being present on the unit stating, “It feels very re-assuring to see Concord Hospital employees protecting my safety,” and, “A weight has been lifted off of my shoulders when staff tell me they have washed their hands- I would hate to have to ask.” When speaking with the nurse manager she stated “this message was easily added to staff’s previous HH routines.” Additionally, during the round table debriefing, three significant findings were made by three different staff members. First, during a change of shift a patient picked up on the behavior/message not being relayed as it had during the previous shift, “The patient asked: why didn’t you tell me you washed your hands like the other staff have?” For the staff member this was eye-

opening because she did not know how intently patients were paying attention. The second finding was more of an enlightening moment for the staff member as she realized that she “knows when her hands are clean, but the patient does not”. The last, and one of the most significant discoveries was that both LNA’s and RN’s have noticed patients wanting to participate in their own personal HH more frequently than they did before. One member stating “I can’t remember a time when so many of our patients requested personal Purell hand gel at the bedside.” The culmination of these findings indicate not only a change in behavior, but an increased awareness in both staff and patient personal HH behavior.

Relation to Other Evidence

Similar to the two previous studies by Bittle & LaMarche (2009), and Le-Abuyen and colleagues (2014), there was an overall increased awareness of HH behavior amongst unit staff and patients. However, because staff did not know which patients were being audited, there was no trigger (stimulus) for them to increase HH behavior from one patient to the next. Moreover, the previous two studies did not direct their pilot projects towards changing staff behavior, they simply focused on using the patients as auditors for current behavioral practices. Concord Hospital is moving towards adding the question of inpatient HH performance to the HCAPS, therefore we had to pursue a multi-modal approach to the new HH program that would illicit a true change, while engaging patients in their care. Using the suggestions made by Kim et al (2015), we were able to use indirect methods to remove the fear patients experience having to speak up to healthcare providers, while still involving patients in their care. Like Bittle & LaMarche (2009), and

Le-Abuyen et al (2014), using the patient-as-observer approach in combination with a verbal cue, seemed to strengthen, not challenge, the patient-HCW relationship.

Limitations

Limitations to the study include a non-randomized sample population. The time a quality improvement project or pre-posttest study takes to complete in a hospital setting did not allow for the same group of patients to be audited. Given this information, the sample patients selected were matched on specified parameters in order to be included. Although there were multiple investigators to validate patient reporting, this method was not used to validate patient observation of HCW HH. Since patients are admitted for long durations of time, it would not be feasible or efficient to have an employee sit with the patient until they observed a HCW perform HH. This verification is easily performed in the outpatient setting, however the inpatient setting is not conducive to this effort. Additional limitations to the study include the scale & distribution of the effort. Intensive efforts were focused on HCW's who spent the majority of time with patients (RN's, LNA's), while only information on the new message was delivered to other professionals (physicians, nutrition services, PT/OT) who's primary work site is not on the unit. The intervention was considered a success so more intensive efforts will be now directed towards all staff as the message and behavior change begins to take effect throughout the hospital. Finally, the patient-as-observer approach cannot be used to the same extent in the ICU as it would be on a medical-surgical unit given the deleterious condition of patients. In units such as these, where patients are unable to provide feedback due to critical situations, auditors will be using the original auditing tool to monitor staff HH

(Appendix 1A). Staff will still be trained to use the message as many family members may be present, and patients may be aware of HCW actions even though they may not be able to speak.

Interpretations

Given the findings, using an auditory cue resonated with staff eliciting a behavior change, while also creating a memorable, PCC experience for the patient. A different approach to HH may have sparked a new awareness in staff and patients on the unit, adding to the significant finding. Having a well-developed quality management system (QMS) at Concord Hospital helped the design and implementation of the message. Using the “Say what you do, Do what you say, Prove it, Improve it” motto developed by QMS, staff and patient messaging was designed to help obtain the observed and desired outcome. Media around the new message was delivered in different ways targeting many different learning styles, which aided in understanding the reason for change and helping capture the desired outcome. It is possible that with an intervention such as this, there would be an increase in spending in relation to HH products. In addition, if a hospital does not have an established auditing program in place, time, effort, and finances would have to be spent in creating the program and training future auditors. However, with CMS increasing its demands daily while decreasing reimbursements, a program that could potentially reduce the risk of HAI’s, while being patient-centered is a win-win for the hospital, HCW, and patient.

Conclusions and Recommendations

Based on the literature review, this is the first study that attempted to modify the culture and behavior of HCW HH in an inpatient setting through incorporating a verbal message that HH was performed before delivery of care. Additionally, patients were engaged as observers of HH, ultimately removing the observation bias seen with internal auditors. By telling the patient that HH was performed the pressure to “ask” was removed from the patient, strengthening the HCW-patient relationship. While PCC is the future of healthcare, a program that partners with patients, instead of placing the burden on them to challenge HCW’s actions, is a more effective way to empower patients to take part in their healthcare. Using a verbal cue of HH behavior, patients inadvertently became more aware of not only HCW HH but their own HH behavior, ultimately asking for personal HH products. This subliminal messaging could be a significant step towards patient HH while in the hospital setting. This is critical as patients hands are vehicles of transmission, and are frequently found to be colonized with pathogenic bacteria.

This campaign will be expanded hospital wide by giving auditors formal training to audit using the new observation tool (Appendix 1B). Auditors will ask 30 patients a month for their feedback on staff HH. These audits will be submitted to the infection prevention department for compliance tracking, and will be forwarded to the state.

Future Recommendations

One recommendation to incorporate such a change into an organization would be to use multiple outlets for messaging and providing different forms of staff education since there are many different learning styles. Additionally, using a transformational leadership model to enact change allows the leader to create a vision, motivating and

empowering staff to take part in/and embrace the change. Through creating an open forum for discussion we were able to listen to all staff members' thoughts and ideas, while also relaying our vision, and empowering the staff to act-out our vision. Second, if auditing programs are not currently established, and funding is a barrier, leaders could contact state health departments for potential funding for training and program support. After the program is established, champions should be selected from all units. These champions are crucial during the refreezing stage of change since establishing a new change takes time and it is easy to slip back to the way things were done.

Role of the CNL

As demonstrated by this project, the Clinical Nurse Leader (CNL) is an integral part of initiating and completing a multimodal change project in a healthcare setting. As a master's prepared nurse with a background in leadership and change theory, along with advanced understanding of healthcare, behavioral practice, and evidence-based practice (EBP), the CNL is able to understand all of the moving parts to a project such as this, recognizing why, where, and how change needs to take place. The CNL is focused on improving patient safety and outcomes, while incorporating patients in their care. By using a patient-centered approach to facilitating staff behavioral change, the CNL has the opportunity to implement IOM and CMS initiatives, leading to greater reimbursements, hospital accreditation, increased patient satisfaction, and improved patient outcomes.

References

- Allegranzi, B., & Pittet, D. (2009). Role of hand hygiene in healthcare-associated infection prevention. *Journal of Hospital Infection*; 73, 305-315.
- Boyce, J. (1999). It is Time for Action: Improving Hand Hygiene in Hospitals. *Annals of Internal Medicine*; 130 (2): 153- 155.
- Bittle, M., & LaMarche, S. (2009). Engaging the patient as observer to promote hand hygiene compliance in ambulatory care. *Joint Commission Journal on Quality & Patient Safety*, 35(10), 519-525.
- Crossing the quality chasm: a new health system for the 21st century*. (2001). Washington, D.C.: National Academy Press, c2001.
- Diefendorf, A. (2014). Annual Report of the New Hampshire Health Care Quality Assurance Commission. Foundation for Healthy Communities. Retrieved from: <http://www.healthynh.com/>.
- Esmaeili, M., Cheraghi, M. A., & Salsali, M. (2014). Barriers to Patient-Centered Care: A Thematic Analysis Study. *International Journal Of Nursing Knowledge*, 25(1), 2-8.
- Gorman, E., Yu, S., & Alamgir, H. (2010). When healthcare workers get sick: exploring sickness absenteeism in British Columbia, Canada. *Work*, 35(2), 117-123.
- Haas JP, Larson EL. Measurement of compliance with hand hygiene. *Journal of Hospital Infection*; 66:6–14.

- Kim, M., Nam, E. Y., Na, S. H., Shin, M., Lee, H. S., Kim, N., & ... Kim, H. B. (2015). Major article: Discrepancy in perceptions regarding patient participation in hand hygiene between patients and health care workers. *AJIC: American Journal of Infection Control*, 43510-515.
- Kirkland, K. (2011). A Qualitative Analysis of Facilitators and Barriers to Hand Hygiene Improvement at New Hampshire Hospitals during a Statewide Hand Hygiene Campaign. Foundation for Healthy Communities. Retrieved from: <http://www.healthynh.com/>.
- Kohn, L. T., Corrigan, J., & Donaldson, M. S. (2000). *To err is human: building a safer health system*. Washington, D.C.: National Academy Press, c2000
- Le-Abuyen, S., Ng, J., Kim, S., De La Franier, A., Khan, B., Mosley, J., & Gardam, M. (2014). Patient-as-observer approach: an alternative method for hand hygiene auditing in an ambulatory care setting. *American Journal of Infection Control*, 42(4), 439-442.
- Lewin, K. (1947). Group and social change. In T. Newcomb and E. Hartely (Eds.), *Readings in social psychology*. New York: Holt, Rinehart & Winston.
- Magill, S., et al. (2014). Multistate Point-Prevalence Survey of Health Care–Associated Infections. *N Engl J Med* 2014; 370:1198-208.
- Pittet, D. (2000). Effectiveness of a Hospital Wide Programme to Improve Compliance with Hand Hygiene. *The Lancet*, 356 (9238): 1307-1312.

- Pittet D, Allegranzi B, Sax H, et al. (2006). Evidence-based model for hand transmission during patient care and the role of improved practices. *Lancet Infect Dis*; 6:641-652.
- Qidwai, W., Nanji, K., Khoja, T. M., Rawaf, S., Al Kurashi, N. Y., Alnasir, F., & ... Al-Ali, A. (2015). Barriers, Challenges and Way Forward for Implementation of Person Centered Care Model of Patient and Physician Consultation: A Survey of Patients' Perspective from Eastern Mediterranean Countries. *Middle East Journal Of Family Medicine*, 13(3), 4-11.
- Scott, D. (2009). The Direct Medical costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. The Centers for Disease Control and Prevention. Retrieved from:
http://www.cdc.gov/HAI/pdfs/hai/Scott_CostPaper.pdf.
- Stewart, W., Ricci J., Chee, E., & Morganstein, D. (2003). Lost productive work time costs from health conditions in the United States: results from the American productivity audit. *J Occup Environ Med*; 45(12):1234-1246.
- Thanee, E., Anucha, A., Winitra, N., Thana, K., & Mundy, L. M. (2013). Hand Hygiene Behavior: Translating Behavioral Research into Infection Control Practice. *Infection Control & Hospital Epidemiology*, 34(11), 1137-1145.
- Wheeler, M. E., Petersen, S. E., & Buckner, R. L. (2000). Memory's Echo: Vivid Remembering Reactivates Sensory-Specific Cortex. *Proceedings of the National Academy of Sciences of the United States of America*, (20). 11125.

Appendix 1B: New Auditing Tool



	Ask Patient: "Did you see staff cleaning their hands before caring for you?"		Staff Member HH Observed?		COMMENTS
	YES	NO	YES	NO	
+					
1					
2					
3					

Appendix 2A: Be SEEN & HEARD Being Clean Staff Awareness

Concord Hospital is taking the pledge of:

Being SEEN and HEARD being CLEAN!

SAY WHAT YOU DO
Tell your patients you are cleaning your hands before caring for them.

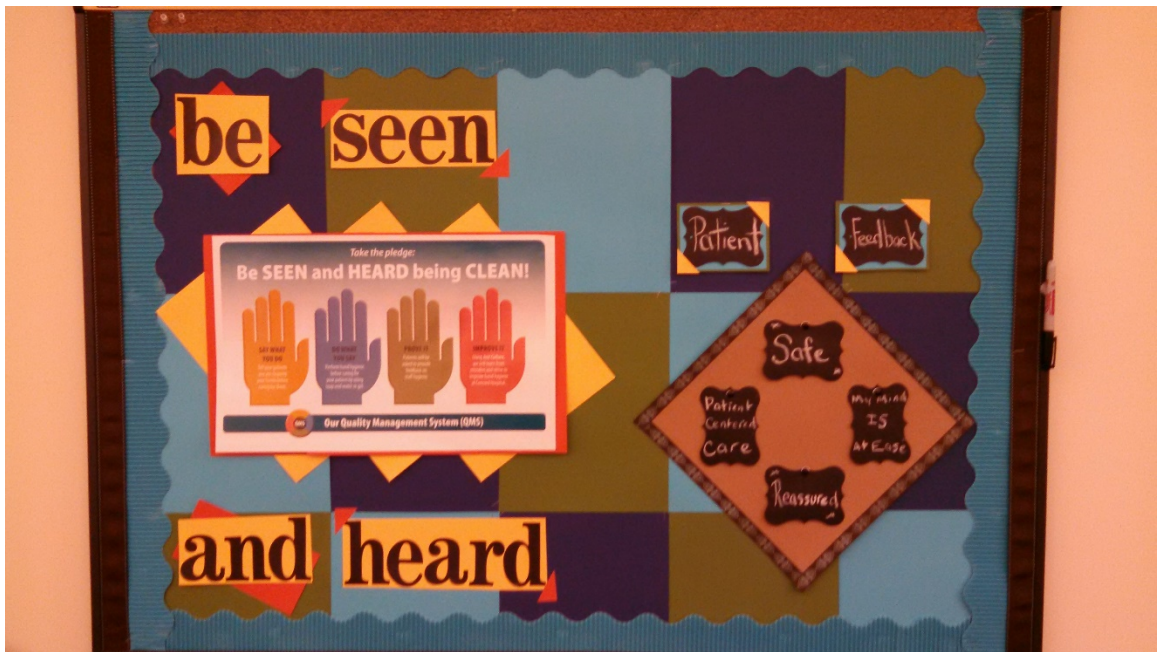
DO WHAT YOU SAY
Perform hand hygiene before caring for your patient by using soap and water or gel.

PROVE IT
Patients will be asked to provide feedback on staff hygiene.

IMPROVE IT
We will continuously strive to improve quality and seek ways to best serve our patients.

QMS **Our Quality Management System (QMS)**

Appendix 2B & 2C: Hallway Billboards

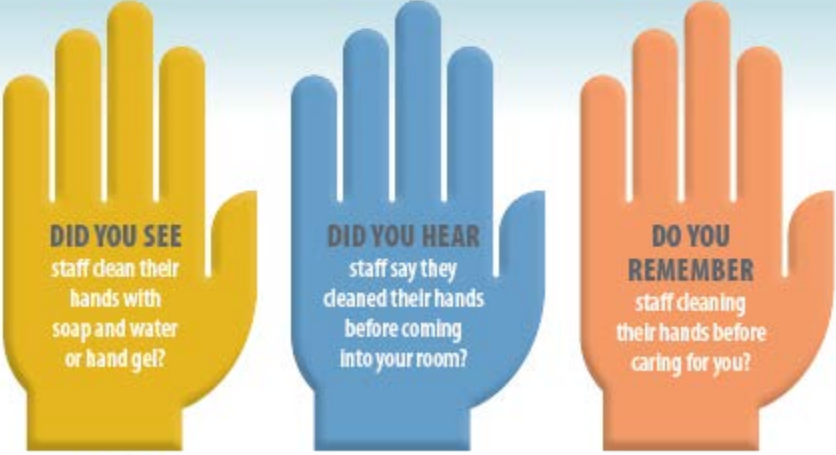


Appendix 2D: Patient Awareness Message

Concord Hospital is taking the pledge of

being SEEN and HEARD being CLEAN!

*We are asking patients to help us achieve
our goal by providing the following feedback:*



DID YOU SEE
staff clean their
hands with
soap and water
or hand gel?

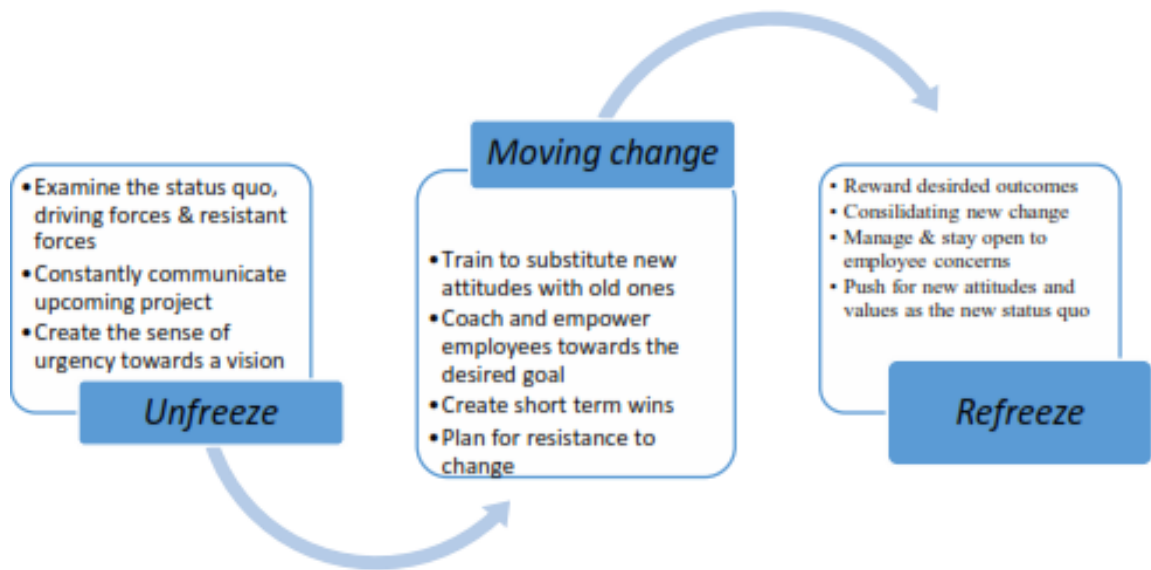
DID YOU HEAR
staff say they
cleaned their hands
before coming
into your room?

**DO YOU
REMEMBER**
staff cleaning
their hands before
caring for you?



Our Quality Management System (QMS) at work.

Appendix 3A: Lewins Model of Change Theory



Appendix 4A: Pre-Intervention Staff HH Survey

Profession (*Please Select*): Physician Advance Provider RN LNA

1. Did you receive training in hand hygiene in the last year (Necessities, video, other)?

Yes No

2. How often do you wash your hands/use alcohol-based hand-rub when **entering** the patient’s room before providing care?

Every time Most of the time Sometimes Rarely Never

3. How often do you wash your hands/use alcohol-based hand-rub when **exiting** the patient's room?

Every time Most of the time Sometimes Rarely Never

4. How often do you find yourself talking with your patient while washing your hands?

Every time Most of the time Sometimes Rarely Never

5. On average, in what percentage of situations requiring hand hygiene have you observed colleagues actually perform hand hygiene, either by hand-rubbing or hand-washing (between 0 and 100%)?

100% 99-90% 89-80% 79-70% 69-60% 59-50% <50%

6. Who would you be comfortable with reminding you to perform hand hygiene? (*Select all that apply*)

Manager Peer Patient

7. How often do you remind patients and guests to wash their hands?

Every time Most of the time Sometimes Rarely Never

8. Are there any barriers that prevent you from performing hand hygiene?

No Yes - (*If yes please specify*)_____