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SWITCH: Al Wakra Hospital Journey to 90% Hand Hygiene Practice Compliance, 2011 – 2015

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ABSTRACT

Hand Hygiene is the cheapest and simplest way to prevent the spread of infection, however international compliance is below than 40% (WHO, 2009). In the experience of Al Wakra Hospital, the improvement in hand hygiene compliance highlighted not just interventions towards training and education but also behavioral motivation and physical allocations of hand hygiene appliances and equipment.

Through motivating the behavioral, emotional, physical and intellectual dimensions of the different healthcare worker professions, hand hygiene compliance has increased from 60.78% in 2011 to 94.14% by the end of December 2015. It took 25 months of continuous and collaborative work with different healthcare workers to reach the 90% hand hygiene target.

“Together, we have reached our goals and together we fight against infections! Because we always strive for excellence in everything we do – that is our vision here in Al Wakra Hospital.”

PROBLEM

Historically in the mid-1800s, the practice of hand hygiene was introduced as a form of prevention for hospital-acquired diseases. Ignaz Semmelweis observed an increase in maternal mortality rates attributed to puerperal fever, but it was noted that in two running clinics, the clinic ran by doctors and medical students had 16% mortality compared to the clinic ran by the midwives with 7% mortality rate. It was identified that this was because doctors and medical students often went directly to delivery after performing autopsies without any hand decontamination in between these activities. It was then that chlorinated lime solution was introduced which dramatically reduced the mortality rates to 3% in the medical clinics. More studies highlight the decrease of healthcare associated infections through hand hygiene.

Hand hygiene is the cheapest and most effective way to prevent hospital acquired infections. Numerous studies have established the transmission of pathogens by

hands such as Casewell & Phillips⁴ demonstrating that nurses could contaminate their hands with 100 – 1000 CFU of *Klebsiella* spp. during “clean” activities such as lifting patients, taking the patient’s pulse, blood pressure or oral temperature, touching the patient’s hands, shoulder or groin. MyBryde and colleagues²¹ intercepted healthcare workers (HCWs) after contact with colonized Methicillin Resistant *Staphylococcus aureus* (MRSA) patients after patient-care episodes to culture their gloved hands before hand-washing occurred: 17% of contacts with a patient, patient’s clothing or a patient’s bed resulted in transmission of MRSA from a patient to the HCW’s gloves. Additionally, in a study of Vancomycin Resistant Enterococci (VRE), 70% of HCWs contaminated their hands or gloves by touching the patient and the patient’s environment.¹³

Without proper hand hygiene, organisms can survive on contaminated or improperly decontaminated hands. Musa and colleagues²³ demonstrated in a laboratory study that *Acinetobacter calcoaceticus* survived at 60 minutes after an inoculum of 104 CFU/finger. Doring and colleagues⁷ showed that *Pseudomonas aeruginosa* and *Burkholderia cepacia* were transmissible by handshaking for up to 30 minutes when the organisms were suspended in saline and up to 180 minutes when they were suspended in sputum. In the absence of hand hygiene, bacterial contamination increases linearly over time, whether care is provided to adults or neonates.

However, implementation of hand hygiene is a challenge worldwide and WHO Guidelines 2009³⁴ emphasize that strategies should be multimodal to achieve any degree of success.

BACKGROUND

Al Wakra Hospital is one of the general tertiary hospitals newly opened under the



Al Wakra Hospital, Hamad Medical Corporation, Qatar

Hamad Medical Corporation (HMC), Qatar. It is a 300-bedded hospital with a wide-range of specialties and services with more than 2000 hospital staff. Upon commissioning, Infection Prevention and Control (IPC) was greatly involved and contributed to the design of the clinical and non-clinical units. The hospital started its soft opening in September 2011 with the General Outpatient Department catering for both adult and pediatric populations, and Pediatric Inpatient Department which opened a number of beds to support the opening of the Pediatric Emergency Department. Hospital staff came from different cultural and educational backgrounds; the majority of staff are new to the Middle East, especially to Qatar.

Hand Hygiene has been a significant priority. Hand hygiene education followed by competency validation was introduced for each new nursing staff member coming to join the hospital before they start actual patient duty. The goal is to establish infection control programs with application of infection control standards, highlight Hand Hygiene and ultimately prevent hospital outbreaks and healthcare associated infections.

Healthcare associated infections are defined by Duce *et al*⁸ as “an infection occurring in a patient during the process of care in a hospital or other health care facility which was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among health care providers of the facility”. HCAs can increase length of stay, financial cost and emotional and physical burden to the patient and his family.

In the United States of America, in a study done by R.D. Scott²⁸ applying two different Consumer Price Index (CPI) adjustments to account for the rate of inflation in hospital resource prices, the overall annual direct medical costs of HAI to U.S. hospitals ranges from \$28.4 to \$33.8 billion (after adjusting to 2007 dollars using the CPI for all urban consumers) and \$35.7 billion to \$45 billion (after adjusting to 2007 dollars using the CPI for inpatient hospital services). After adjusting for the range of effectiveness of possible infection control interventions, the benefits of prevention range from a low of \$5.7 to \$6.8 billion (20 percent of infections preventable, CPI for all urban consumers) to a high of \$25.0 to \$31.5 billion (70 percent of infections preventable, CPI for inpatient hospital services).

Normal human skin is colonized by bacteria, with total aerobic bacterial counts ranging from more than 1×10^6 colony forming units (CFU)/cm² on the scalp, 5×10^5 CFUs/cm² in the axilla, and 4×10^4 CFU/cm² on the abdomen to 1×10^4 CFU/cm² on the forearm. Total bacterial counts on the hands of HCWs have ranged from 3.9×10^4 to 4.6×10^6 CFU/cm².

The study of Allegrazi, B and Pittet, D.² showed a review of most relevant studies assessing the impact of hand hygiene promotion in healthcare associated infection from 1977 to 2008. In 1977 in an Adult Intensive

Care Unit (ICU) setting, a significant reduction ($P < 0.001$) was documented in percentage of patients colonized / infected by *Klebsiella* spp. after promotion of handwashing with Chlorhexidine hand cleanser.⁴ Recent studies in 2008 in a Neonatal ICU showed after alcohol-based handrub introduction, training and posters there was a significant reduction ($P = 0.009$) in healthcare associated infection incidence (4.1 vs. 1.2/1000 patient days).

However, regardless of the awareness and the promotion of hand hygiene, international compliance is still very low. A published study done in Kuwait observed hand hygiene compliance among nursing staff in secondary care hospitals in Kuwait was poor at an overall of 33.4%. However, upon review of the 454 nursing staff who participated in self-reporting of compliance, 409 (90%) indicated that they always washed their hands upon practicing patient care activities. High self-reported compliance may reflect a high level of awareness of hand hygiene however it may also reflect reporting bias.¹

The World Health Organization Guide promotes hand hygiene through a multimodal improvement strategy.³⁴ According to Stewardson, A and Pittet, D the anatomy of a successful multimodal hand hygiene campaign following the WHO approach includes (1) system change, (2) training and education, (3) evaluation and feedback, (4) reminders in the workplace and (5) institutional safety climate. In their discussion, the implementation of a hand hygiene promotion programme over two years resulted in an institutional culture change, a dramatic increase in hand hygiene compliance from 41% to 87%, and a reduction in healthcare associated infections from 4.8 to 3.3 per 1000 inpatient days.³¹

BASELINE MEASUREMENT

The main process measure in this project is hand hygiene compliance practices across all units and across all healthcare workers. The measurements include overall hand hygiene rates, comparison between different units, compliances per healthcare worker including physicians, nurses, allied health and auxiliary staff (nursing aid and housekeeping) and comparison between healthcare workers.

The numerator: number of successful hand hygiene actions performed, meaning hand hygiene for the prespecified set of indications observed (WHO 5 Moments). The denominator: number of hand hygiene opportunities observed, defined by the prespecified set of indications observed (WHO 5 Moments). Hand hygiene adherence metric: (successful hand hygiene actions) / (opportunities observed) $\times 100\%$. The mode of monitoring hand hygiene is by direct methods of which detection of hand hygiene compliance is by a validated observer which is considered by the WHO Guide³⁴ as the gold standard in hand hygiene

compliance monitoring. This is the only method available to detect all occurring hand hygiene opportunities and actions and to assess the number of times and appropriate timing when hand hygiene action would be required in the sequence of care.

The IPC team have trained and validated hand hygiene observers which were nominated by the head nurses with varied years of experience in the clinical unit. It was requested to have at least one to two staff nurses per unit, to secretly observe care activity directly and count the occurring hand hygiene actions which involves either hand washing or hand rubbing performed during the 5 Moments of Hand Hygiene opportunities. The Five Moments of Hand Hygiene defined by the WHO include: (1) before patient contact, (2) before aseptic task, (3) after blood and body fluid exposure, (4) after patient contact and (5) after contact with patient's surrounding.

Observers are trained according to the principles of "My Five Moments for Hand Hygiene" and they are validated in the use of the WHO Observation Form for data collection by being tested through the use of the WHO Training Film included in the WHO Implementation Toolkit. After which, a parallel observation jointly with the IPC team is performed to ensure that the observer is aware of the use of the tool, the process, the observation procedure and the computation. Annual training and validation of observers is done to ensure that data received by the IPC team are correct.

Though everyone is aware of the hand hygiene results through the monthly feedback, only the head nurses and the IPC team are aware of the names of the trained observers to prevent the Hawthorne Effect. This phenomenon happens when there is behavior change due to awareness of being observed. Srigley, JA *et al*³⁰ have made a study determining whether the presence of hand hygiene auditors was associated with an increase in hand hygiene events as measured by a real – time location system (RTLs). It was observed that hand hygiene event rates were approximately threefold higher in hallways within eyesight of an auditor compared with when no auditor was visible and the increase occurred after the auditor's arrival, consistent with the Hawthorne Effect.

As discussed by Gould, DJ *et al*¹¹ and Kohli, E *et al*,¹⁵ it is beneficial to minimize the Hawthorne effect, or behavior change based on the awareness of subjects that they are being observed. Dhar, S *et al*⁶ and Pan, SC *et al*,²⁴ describe the use of covert observers or "secret shoppers" in a number of healthcare institutions, which was adopted in Al Wakra Hospital. To sustain the covert nature of observations, hand hygiene auditors are changed if identified and additional staff are added after validation and training by the IPC team.

The trained observers were requested to forward to the IPC team at least 150 opportunities per unit per month. The frequency of observation is monthly and feedback is also forwarded monthly to the units and

presented during the unit meeting, divisional meeting and leadership meetings. The graph of compliances and comparison to other units are posted on the IPC boards which are available in each clinical unit.

Baseline data was collected from the first commissioned clinical units in 2011 which include: General Outpatients Department, Pediatric Inpatient (2 South) Department and Pediatric Emergency Department. The corporate hand hygiene target was to reach an overall compliance of 60% across all professions and clinical units by the end of December 2011. However, despite the orientation and validation of hand hygiene among staff, the annual average of the three pilot clinical units were: (1) General Outpatient Department 55.53%; (2) Pediatric Inpatient 57.08% and (3) Pediatric Emergency 49.82%. The compliance for Al Wakra Hospital overall was 55.37%. Average hand hygiene compliance across the units annually among professional categories were physicians at 41%, nurses at 59.61% and other healthcare workers (covering housekeeping, nursing aides and allied health) at 57.22%. With these baseline measurements, the IPC team worked in collaboration with the different clinical divisions and units with the aim of reaching 60% hand hygiene compliance across all healthcare workers by the end of December 2012.

During 2012, additional clinical units which were commissioned by the IPC team were included. During this period, the IPC team requested at least three (3) to five (5) trained covert observers per each clinical unit. Also an increased number of hand hygiene observations from 150 to at least 250 opportunities. This was to ensure that observers were available on each shift and days of the week, especially the weekends and holidays.

DESIGN

With the low hand hygiene compliance across the clinical units from September – December 2011, the IPC team together with the clinical units' administration and link nurses reviewed the strategies that could be explored to reach 60% hand hygiene compliance by the end of December 2012. After reviewing a number of best practices and experiences from other institutions within the corporation, the team decided to go with a multimodal strategy.

According to Trunnel, EP and White, GL³² the reason why education-based programs may not be successful in improving hand hygiene compliance is because they do not address the issue of medical staff's psychological preparedness to change, belief in their ability to change or the relevance of actually changing their behavior. Increasing awareness and belief in their ability to perform the behaviors can actually change hand hygiene and maintain behavior over time.

Using the Behavioral Change Model conceptualized by Heath, C. & Heath, D, the Switch for Change principle¹⁴ was incorporated into the strategies reviewed for the hand hygiene compliance improvement project. The

Switch for Change principle takes into consideration the psychological, emotional and physical dimensions of the program using a metaphor of trying to ride an elephant down a path.

First Dimension: Directing the Rider. What looks like resistance is often a lack of clarity. So provide crystal-clear direction.

We informed the units that we were monitoring hand hygiene and of the target of 90% compliance. This is the mental and cognitive dimension of staff engagement driven by data, feedback, graphs and figures. Data and feedback have been made available in the IPC boards of each unit since 2011. Additionally they are being discussed in unit meetings and leadership meetings to ensure that everyone is aware of the hand hygiene compliance rates across the professions and clinical units. Additional, annual intense and repetitive training and validation of hand hygiene among hospital staff from different levels from physicians to housekeeping were done. Furthermore, hand hygiene compliance among physicians was included in their annual performance appraisals.

Second Dimension: Motivating the Elephant. Engage people's emotional side – get their Elephants on the path and cooperative.

Decreases are being tackled as needed and high compliance is celebrated. This is the emotional dimension of the strategy involving attitudes towards staff safety and patient safety, for hand hygiene it can include feelings about the possibility of bringing infections home. Monthly feedback is given to the staff including the importance of hand hygiene for not just the patients' health but staff health as well.

A certificate with cash prizes were given in July 2013 to the Top 3 Hand Hygiene performers of the hospital to encourage the different areas and as a form of positive reinforcement. To establish healthy competition between units and healthcare workers, standings are shared across all monitored units. Identified hand hygiene compliance among physicians are being forwarded to the department head for follow up. Emotional reinforcement of the purpose of hand hygiene were clearly communicated, "We are working to be stewards of healing", highlighting the advocacy of each healthcare worker to 'do the sick no harm'. Importance of a healthy healthcare worker and the risk to the family were also highlighted with messages such as: Do not bring the bugs home... outside of the scrubs, we are wives, husbands, parents, friends – Hand Hygiene protects your patients and most importantly your family.

Third Strategy: Shape the Path. What looks like a people problem is often a situation problem. We call the situation the "Path." When you shape the Path, you make change more likely, no matter what's happening with the Rider and Elephant.

This is the physical dimension, having all the appliances and item or equipment available to staff to ensure that it is easy to undertake hand hygiene when and where it should be done according to healthcare activity.

A joint review of hand washing sinks and hand rub allocations were undertaken by Engineering Department and IPC teams by the end of the first quarter of 2012. The goal of the review was to have the hand washing stations convenient for nurse stations and patient bed areas. The IPC team recommended that where a single room is used, a hands-free hand washing station should be provided within each room. Meanwhile, in a multiple bed room, every patient bed should be within 20 feet (6 meters) of a hands-free hand washing station. Hand washing stations should be no closer than 3 feet (0.9 meter) from a patient bed or clean supply storage. It is also highlighted that hand washing sinks should be large enough to control splashing and designed to avoid standing or retained water. As recommended by the American Institute of Architects (AIA) (...), the minimum dimensions for a hand washing sink are 24 inches wide × 16 inches front to back × 10 inches deep (61 cm × 41 cm × 25 cm) from the bottom of the sink to the top of its rim. With the purpose of acting as a continuous reminder and guide, a space for hand washing instructions shall be provided above all sinks. Walls adjacent to hand washing sinks shall be constructed of non-porous material. Space shall also be provided for soap and towel dispensers and for appropriate trash receptacles. Towel dispensers shall operate so that only the towel itself need be touched in the process of dispensing, and constructed in such a fashion.

In order to promote the sustainability of hand hygiene compliance, after a series of rounds and with the support of the hospital administration, we requested an additional 218 hand washing sinks, 48 changes to sensor operated taps, 43 sink replacements and 5 changes to elbow operated taps. In addition, hand rubs were relocated away from the sinks and made more accessible in each patient room. Alcohol hand rubs, chlorhexidine hand rubs and quarternary ammonium compound hand rubs were made available across the hospital in both wall mounted and mobile forms.

STRATEGY

PDSA 1: Education, validation and return validation of healthcare staff in pilot sites of General Outpatient Department, Pediatric Emergency Department and Pediatric Inpatient Department in 2011. However, these actions alone did not improve hand hygiene compliance to reach the 60% target.

PDSA 2: Continuous monitoring and feedback was done with information on overall rates, rates per professional category and comparison to other clinical units. At this time, the engagement of leadership of the hospital was ensured.

PDSA 3: In May 2012, the joint review with the Engineering Department and IPC Team related to hand washing sinks and accessories was undertaken with recommendations based on international guidelines on hand hygiene. With the executive support of the

hospital, all the recommendations were accepted and construction took place.

PDSA 4: August 2012, Additional campaign posters and reminders were placed across the pilot areas then later spread to the other clinical divisions. WHO "My Five Moments of Hand Hygiene" leaflets and small ID-sized cards were handed to healthcare workers to remind them of hand hygiene.

PDSA 5: May 2013, hand hygiene was included as a performance appraisal indicator among physicians as mandated by the medical director. Feedback of identified hand hygiene compliance were forwarded quarterly to the managing senior consultants of each specialty division, starting with Pediatric and Surgical specialties.

PDSA 5: June 2013, the IPC Team requested documentation of the names of observed staff in the observation tool to be able to identify any trend of specific individuals who were not compliant to hand hygiene.

PDSA 6: June 2013, certificates and positive reinforcements were given to the Top 3 Hand Hygiene Performing units. Certificates of recognition were given annually thereafter.

PDSA 7: July 2014, IPC Poster Making competitions and IPC Abstract poster competitions were held to highlight successes in hand hygiene. A Hand Hygiene Week article was then published in the Al Wakra Hospital newsletter to further recognize the importance and successes of hand hygiene within the units.

PDSA 8: February 2014, Annual Hand Hygiene observation training given to all new and old hand hygiene observers.

PDSA 9: March 2014, Wall mounted Chlorhexidine Gluconate hand rubs were installed in operating theatres and procedure areas. In the same month, annual hand hygiene compliance among physicians was forwarded to the Managing Senior Consultants of different divisions.

PDSA 10: April 2014, Increased observation to 250 per month to cover all healthcare workers. with the observation of decreasing compliance among other healthcare workers (which includes allied health, nursing aides and housekeeping staff). During the annual hand hygiene observers' validation it was instructed that professional allied health (technologist, technician, pharmacist, etc.) should be separated from the auxiliary staff (nursing aides and housekeeping staff). It was identified from this separation of observations that auxiliary staff have better compliance than professional allied health care workers. A meeting with allied health departments were held and feedback given. Re-validation of competency on hand hygiene was done across allied health staff and compliance increased.

PDSA 11: August 2014 onwards, able to sustain the 90% hand hygiene compliance in majority of the units. Any specific professional category or clinical unit with less than target results were requested to review through gap analysis the possible reasons for non-compliance and with facilitation by the IPC staff, establish an action plan to correct the gaps.

PDSA 12: February 2015 onwards, UV light hand hygiene show was procured by the IPC team. Random and surprise validations were done across physicians (during morning reports), nurses (during monthly meetings) and department head of allied specialties (during monthly meetings) were made to highlight and emphasize the importance of hand hygiene. This served as on the spot competency validation across physicians and was forwarded to the Managing Senior Consultants of different clinical divisions to be part of the physician competency files. Compliance has been maintained at above 90% after these series of activities.

RESULTS

Our previous average compliance audit from September to December 2011 revealed compliance with hand hygiene measures of: overall compliance of 60.78%; physicians at 44.04%; nurses 68.23% and other healthcare workers (covering both allied and auxiliary staff) 43.94% respectively.

Interventions were made to improve the hand hygiene competencies and practices highlighting the Switch for Change concept covering the mental, emotional and physical aspects of hand hygiene.

In 2012, personal hand hygiene ratings were communicated to different hospital staff. Hand hygiene was added as part of physicians' performance appraisals.

The following year of 2013, compliance continuously improved with mobile hand rubs placed in procedure trolleys and across the clinical units. Cash prizes were given to the top three (3) areas with the highest hand hygiene compliance and plaque from the Corporate Infection Prevention and Control was awarded for the top clinical unit.

In the year 2014, compliance has further improved and we have reached the target of 90% compliance. The Infection Prevention and Control department has procured UV light hand hygiene show for validation and re-validation of staff across the units. This time, visual review of the practices of hand hygiene by use of UV light device and fluorescent cream are utilized. Staff had increased realization of the importance of hand hygiene in the prevention of infection and possible outbreaks.

In 2015, the highest compliance so far has been achieved with: overall compliance of 94.14%; physicians at 93.24%, nurses at 96.36%; other healthcare workers at 90.69% and auxiliary staff at 90.99%. Auxiliary compliance was observed against the allied healthcare workers to identify which group of staff needed further input. Meetings with different directors of auxiliary and allied health were held to feedback the importance of hand hygiene compliance when they are in the units catering to needs of patients either directly or indirectly. Furthermore, UV light competency for hand hygiene was done across auxiliary and allied health staff.

Figure 9 shows compliance changing over time. During the measurement period, infectious outbreaks

were prevented reaching 1613 days without infectious outbreak. At the beginning of 2013, Surgical Site Infections were observed in certain monitored general surgical procedures. Part of the initial feedback and brainstorming activity to reduce these infections were to highlight and improve the practice of hand hygiene to include handwashing and handrubbing. It was then observed that as Hand Hygiene compliance increased, Surgical Site Infection rates have also decreased across Appendectomy, Cholecystectomy and Hernia Repair Surgeries (see Figures 18 – 20).

A detailed breakdown of results can be found in supplementary file Appendix B.

LESSONS AND LIMITATIONS

As this hand hygiene program is continuous and involves everyone within the scope of clinical and non-clinical practices, there are a number of valuable lessons learned. It has been proven that Hand Hygiene is the single, most effective method to prevent and control the spread of infections. However, training and education alone cannot improve and sustain improvement in hand hygiene compliance. A multimodal approach should be used to reach a 90% hand hygiene compliance and in striving to maintain hand hygiene compliance.

Behavioral changes are needed to strengthen hand hygiene practices and the method of engaging and encouraging healthcare workers will be a tipping point to these behavioral changes.

It is important to constantly maintain motivation and shape the path to hand hygiene compliance. The “Switch Change Concept” which is applied in this project, can be applied to different projects, which need behavioral changes to ensure that all dimensions are covered including physical, emotional and psychological faculties of humanity.

Rewards and recognition were very important and had a positive impact on other clinical units with lesser performance. Units who were recognized have continuously ensured that all staff rotating and newly joined are trained for hand hygiene with the goal of maintaining competency and compliance. To those with lesser rates, the challenge of becoming recognized after higher compliance was a motivation for behavioral change.

To further improve on sustainability, provision of lotion for use in the workplace and encouragement to use such is to be explored to prevent staff from having contact dermatitis and hindering the staff from performing hand hygiene. This has been identified as a barrier to hand hygiene compliance by multiple authors: Larson E *et al.*¹⁸ Chamorey E *et al.*⁵ Dulong, M *et al.*⁹ Boyce, JM *et al.*³ and Williams C *et al.*³³

Additionally, we have identified the next step as encouraging patients to ask their healthcare staff if they have washed their hands. Currently workplace reminder posters are being placed on walls and patient doors. The IPC team are planning to give away badges to hospital

staff with the message “Ask me if I have washed my hands?” to encourage patients to ask and to challenge the staff to practice proper hand hygiene.

CONCLUSION

According to the Hand Hygiene Australia Audit Period 1 (March 2016), the national average compliance is 84% from 906 public and private hospitals across the nation.¹² An American Multicenter collaboration using product/volume usage measurement and feedback, hand hygiene compliance occurred at or below 50% for both ICUs and non-ICUs. In a WHO Case Study in Almana General Hospital, Khobar, Dammam, Saudi Arabia after allocation of hand hygiene facilities and rubs; the hand hygiene compliance for the 2nd quarter of 2010 revealed an increase in hand hygiene compliance to 78% among doctors, 91% among nursing staff. Housekeeping staff showed the highest compliance with 96%.²⁷ The compliance of AL Wakra Hospital, Qatar is almost comparable with Almana General Hospital with an overall compliance of 94.14%; 93.24% for physicians; 96.36% among nurses, 90.69% among other healthcare workers and 90.99% among auxiliary staff by the end of 2015.

After all the changes in the system and the multifaceted approach to hand hygiene, currently all interventions made are shared within the corporation to the rest of the other hospitals in our group to adopt and improve hand hygiene.

The changes through the five years worth of data and all the interventions made shows the improvement of compliance as the healthcare workers are more involved and as real-time feedback is given to them. There is no single bullet on how to improve compliance, it includes a number of measures driven by technical and numerical data, directed by emotional conscience towards patient safety, staff safety and family safety and physical availability of items within easy access to ensure that it is not difficult to follow hand hygiene. The job has not finished, the goal is not finished, this is just a beginning for the next journey which is to reach 100% hand hygiene compliance among all staff and for them to develop the habit of hand hygiene regardless if there are observers or not.

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Declaration of interests Nothing to declare.

Ethical approval Based on the Hamad Medical Corporation policies and procedures, this project is under quality improvement and does not need ethical approval.

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