

# The Implementation of Friendly Hand Hygiene Project in KAUH

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**Abstract**—Healthcare workers use their hands to treat, and provide care to those in need, but sometimes those hands cause serious infections. Healthcare associated infections (HAIs) are the fifth leading cause of death among hospitalized patients, which emphasizes the importance of effective preventative implementations. Evidence shows that hand hygiene is the best method to prevent HAIs. This project utilizes an action method by uses a multi-stage process starting from combining the literature review themes, then identifying the ideal recommendations, then to filter the most appropriate recommendations and implement into King Abdulaziz University Hospital (KAUH).

The literature review discusses on work overload, role modeling, internal motivation and culture that influence compliance rates for health care workers (HCWs) and identifies the ideal solutions and recommendations in order to increase the compliance rates, quality of care, patients' safety and the organization as a whole. These recommendations were utilized in implementing this project, which includes reminder programs by visiting all departments in KAUH, innovation of a code among HCWs, and carrying out an awareness campaign. Finally, a page was created on Facebook to ensure that continuous awareness is delivered and friendly reminders are spread constantly. In conclusion, using a friendly reminder project was found to be effective in helping to increase the hand hygiene compliance rate among HCWs.

**Keywords**—hand hygiene, healthcare associated infection, educational awareness, barriers, compliance rates.

## A. Abbreviations and Acronyms

Hi5: a covert code invented to use as a reminder between HCWs  
HH: hand hygiene  
KAUH: King Abdulaziz University Hospital  
HAIs : Healthcare Associated Infections  
HCWs: Health Care Workers  
MRSA: Methicillin-Resistant Staphylococcus Aureus  
VRE: Vancomycin-resistant Enterococcus

## Introduction

Hands are like a magic key that enlighten others' life with touch. HCWs care of patients by using their hands touch to examine, assess diagnose, and cure patients. Nevertheless the same hands can be a dangerous gateway and transmitter of infections, for that reason, study emphasized on the importance of clean hands to be promoted at home, schools and hospitals for healthy life (Mallory, 2009; Mathai et al., 2010).

In health care settings, HAIs can be transferred to patients while receiving care, treatments, or during invasive procedures or investigations in a hospital (RCN, 2005). In fact, National Audit Office stated that HAIs are affecting millions of patients around the world (2000). This is further emphasized in the statement by Centre for Disease Control and prevention (CDC), HAIs is the fifth leading cause of death among hospitalized patients. The CDC estimates that each year almost 2 or more million patients in America get an infection in hospitals, and about 90,000 of these patients may die as a result of hospital acquired infections (CDC, 2011), which is an alarm sign that require an immediate action.

Study has proven that hand hygiene is the best method to control infection; it helps prevent the transmission of nosocomial infections in the health care setting. Therefore, patient safety can be maintained (Pittet et al., 2000). The mission of a Hand Washing Liaison Group in UK (1997) is to " modify the behavior of HCWs to produce sustained improvement in compliance with agreed handwashing standards and so improvement the quality of patient care" (Pittet et al., 2000). The various uses of hand hygiene products are to improve compliance in terms of control spread of infection and achieve better patient's safety (Johnson et al, 2011).

## Project objectives:

The objective of this project is to identify the factors that influence H.H practice among HCWs in hospitals. Then, we offer suggestions to increase the compliance level. Therefore,

implementation is done by utilizing strong evidence in supporting the idea of establishing the benign reminder and public campaign in terms of increasing awareness in KAUH including patients and their relatives.

## Literature Review

### *a- Indications*

Numerous studies proved that pathogens of HAIs are temporary residence on our hands and can be removed through proper hand hygiene technique (Kampf & Kramer, 2004; WHO, 2009). Those microorganisms transmit either through direct skin contact or direct contact with the environment (Mathai et al., 2010). In health care settings, methicillin-resistant *Staphylococcus aureus* (MRSA), Vancomycin-resistant *Enterococcus* (VRE), *Acinetobacter* infection and *Clostridium difficile* are the most common pathogens causing HAIs, which affect the length of hospitalization, and also affects patients' morbidity and mortality (BOP, 2012; Daniels et al., 2008; Patel, 2003).

The capacity of hospital settings becoming threatened in response to providing care for patients is affected by HAIs. For instance, these associated infections affect the financial status of the organization in terms of affording effective antimicrobial therapies, advanced technologies and enough rooms for prolonged hospital stays (Mathai et al., 2010). HAIs causing the health-care organization billions of dollars every year and it also closely related with long-term impact on patients' quality of life (Navaneethan et al., 2012; Rodemann et al., 2007; Issa et al., 2007). Hence, performing effective hand hygiene becomes necessary to save lives. Hand hygiene can be performed by hand washing or by alcohol-based rub.

The WHO recommends that HCWs should wash their hands with antimicrobial soap every time the hands are visibly soiled and after using the rest room.

Nevertheless, alcohol-based hand rub can be used anytime when hands are not visibly soiled (WHO, 2009). In addition, hand hygiene should also be applied before and after wearing gloves to prevent contamination of the gloves boxes (CDC, 2011).

Sax et al. (2007) suggested that five-moment approach is recommended regarding hand hygiene when providing care to patients. Hand hygiene should be conducted before touching the patient and before any procedure, as well as after exposure to body fluid or blood, and after touching the patient. Finally, it is also important to perform H.H after touching the patients' environment (CDC, 2011; Sax et al., 2007; WHO, 2009).

All these indications demonstrate the importance of hand hygiene practice in order to provide high quality of care for patients' safety (Barrett & Randle, 2008). Despite the simplicity of H.H practice and availability of the hygiene equipments, adherence among HCWs is still considered low.

These indications lead scientists to examine all barriers that prevent the practice among HCWs (Pittet et al., 2000).

### *b- Barriers*

Pittet et al. (2004) stated that most HCWs are aware of the consequences of non-adherence to H.H on patients' health. This illustrates there are a presence of knowledge about the importance of hand hygiene compliance for patients' safety. In addition, accessibility and availability are considered barriers to H.H practices. However, there are other obstacles associated with the spread of microorganism from HCWs (Pittet et al., 2004) that have been confirmed by many studies.

Three studies of Barrett and Randle (2008), Pittet et al. (2004) and Hass and Larson (2008) articulate the barriers of H.H practice, particularly among HCWs. Firstly, there is lack of time due to work overload, especially in the morning when patients need a lot of care and frequent hand-washing, so staff are compressed by the time. Secondly, HCWs understand the necessity of hand-washing but only for daily activities such as recording temperature, H.H are less essential according to them (Barrett & Randle, 2008).

Also, most HCWs complain that H.H is affecting their skin conditions, such as; presence of eczema or dryness of the hands and these make them feel unwilling to practice H.H because it may worsen their skin trigger. Furthermore, knowledge deficit of following proper H.H technique can also affect the ideal compliance rate, and some of HCWs believe that gloves are another option to keep the hand clean without washing them, or even moving from patient to another without changing them (Barrett & Randle, 2008).

Another study by Pittet et al. (2004) demonstrates that the lack of performing H.H among HCWs could be due to either motivational factor such as HCWs do not believe in performing H.H unless they have been observed by someone else, as well as the presence of negative role models especially from their seniors.

Another barrier identified by Hass and Larson (2008) is cultural diversity and different backgrounds regarding hand-washing prior to or after each procedure; culture can affect the compliance rate based on diversity preference and implementations. Another barrier is the lack of accountability for those that are not practicing H.H in hospitals and enhancing the transmission of infections to patients, where HCWs believe that their malpractice is sanctioned in the absence of penalty.

### *c- Recommendations*

McGuckin et al. (2006) prove that these barriers can be managed by understanding the underlying reasons. For instance, if the reason is lack of accessibility or time for washing, the solution is to provide alcohol based rub to replace hand-washing. Also, regarding the affect of H.H on skin, the problem can be solved by include the HCWs in choosing the antimicrobial products based on their skin

tolerance and preferences. Using the standard protocol and guidelines for H.H throughout the entire hospital settings can solve the issue of cultural diversity. Finally to resolve the obstacle regarding insufficient accountability, a frequent review from infection control should be done and a report should be written on the employees that are not performing excellent practice of HH (McGuckin et al, 2006) .

On the other hand, Pittet et al. (2004) emphasized the importance of increasing the awareness of HCWs by providing education that reinforces good practice. Also, it is important to motivate HCWs by rewarding the ones noted to be practicing good HH and assigning them as role models.

Barrett and Randle (2008) stated that successful compliance can be achieved if there is a superior feedback system in hospitals. An additional method is by designing a campaign in clinical areas to increase the awareness of HCWs. HH practice also can be applied through training. It is essential to assess the practice before and after the implementations to monitor the HH practice among HCWs to measure the level of improvement (Mathai et al., 2010).

From the six stigmas of hand hygiene interventions required by the Joint Commission on Accreditation of Health Care Organizations described the best practices for applying the intervention of HH is by adopting reminder programs by putting posters and sending reminder e-mails to HCWs, which assess and gradually change their HH practice (Eldridge et al., 2006).

On the other hand, a common promotion error according to Surgeoner, Chapman and Powell (2009) is a poor communication among HCWs. Therefore, social network and internet can be an excellent option for better interventions. Also, assigning someone has influential characteristics to affect others and advise them on best practices.

In addition, hospital administration also plays a crucial role in providing good influence on HCWs (Harris et al., 2011). These factors can make a difference in HH practice among HCWs and these methods can be helpful if implemented in KAUH.

**Methodology**

*1. Project design*

The project was designed as an action research. The project was initiated with reflecting on the existing situation in KAUH of HCWs practicing HH. This project also utilized the literature review focusing on the factors that affect the compliance of HH among HCWs.

*2- Analysing Phase:*

Therefore, by organizing all ideas, many barriers were recognized, which inspired the study to look for possible

suggestions to increase the awareness level of the importance of HH in KAUH. As a result, the project manager developed an operational plan for alternative methods to change and improve the current situation. The operational plan was put into action with making frequent and continuous observations for the progression of the change. The consistent reflection and preplanning is done by team to plan and improve the situation (**Figure 1**)

*Target population*

The project was focused on all HCWs including doctors, nurses, physiotherapist, technicians, and housekeeping team at various units and departments in KAUH. The project was also extended to the public which aiming on patients, patients' relatives and visitors. A convenient sampling method is used to disseminate the content of the project.

*Study setting*

The project is conducted in various settings at all units in KAUH. The project targeting the HCWs were delivered in Clinical units themselves, whilst for the campaign, it was organize in main entrance to reach the big number of the family and relatives of the patients plus the rest of the HCWs. Concurrently, auditorium was used for presentation to enlighten on the hand hygiene project by the team.



**Figure 1**

*3 - Planning Phase:*

By studying the main causes, some of the recommendations are utilized and some are innovated in order to make the dream real. The change has been applied under the theme of friendly reminder which focuses on remove any harm or offensive attitude when spreading the words. This is regarding obtains the maximum level of compliance among HCWs. This could be through:

- a- Visit the clinical units and hospital departments for HCWs
- b- Innovate a secret code to be use between HCWs
- c- Design a public campaign to increase public awareness
- d- Utilize social network for continuity of reminding

All these techniques have been reviewed frequently to make sure best interventions has been applied.

#### **Method of Implementation**

By studying the main causes and support from the literatures, a number of the recommendations were utilized and some new ideas are innovated in order to make the dream real. The change has been applied under the theme of friendly reminder which the focal point to remove any harm of offensive attitude among the HCWs when spreading the words not the germs. The implementations were done through a range of techniques, such as by conducting educational visits to the clinical units and hospital departments, innovates a secret code to be use between HCWs, designing a public campaign and by utilizing social network for continuity of reminder. All these techniques have been reviewed consistently to ensure the best interventions has been applied.

#### **Educational visits**

Firstly, the target was to target all categories of the HCWs from different departments. The visit started from support services unit physiotherapy unit, then followed by all other the units and wards in KAUH. The visits were accomplished within two months, which started on June 10, 2012 until August 6, 2012. During this period the feedback on the compliance of hand hygiene was tremendously good and improved.

Hand hygiene team includes a power point lecture, posters and demonstrations in less than an hour visit. The lecture's aim is to introduce the HCWs on the role of hand hygiene officer. The lecture started by defining the term of hand hygiene, followed by the explanation on the importance of hand hygiene especially in health field. The lecture emphasized regarding the mandatory times for hand hygiene practices, the effective steps and the important five moments when dealing with the patient. The presenter also highlighted the role of hand hygiene officer embrace as a role model and the casual reminder, who's responsible to spread the word not the germs. The presentation concluded by reminding everyone to wash their hands. The hand hygiene logo batch were distributed among the head nurses, deputies, clinical instructors, and one of staff chosen to be in charged for each shift.

Causal visits after the educational session were conducted to ensure the HCWs are assigned as hand hygiene officer, and playing the vital role to remind their colleagues. The team also confirmed the officers were wearing their batch at all time as a support to the project.

#### **Secret "Code Creation"**

Secret code of "Hi 5" was an innovation by Ms. Alla BaMohammed the manager of hand hygiene project. This

code was initiated for the HCWs in order to remind their colleagues while working in the clinical area without patients become aware of the reminder. This code was selected because of three related reasons. Firstly, Hi 5 is a common internationally known greeting way by using hands, and our concern here is cleaning hands. Secondly, there are five moments of hand hygiene emphasized by WHO (2009) while caring for the patients. Finally, this friendly inoffensive code will allow the HCWs to remind each others in any situations. Therefore the project team came to agreement that this code is really appropriate and the best code for these matters.

#### **Public Campaign**

Public campaign was carried out as one the methods used to increase awareness of hand hygiene among the public. A campaign was on 10th of October 2012, this was planned to be parallel to a global hand washing on 15 October which means the global is celebrating this event in the same time. The campaign program was divided into three sections by three teams. The first team started their activities with doing rounds to patients' room, second team work in the main entrance targeting the public, family and friends and finally the third group organize presentation on hand hygiene in auditorium.

##### **a. Round to patients' room**

The team was assigned to visit patients' room to ensure effective health promotion is delivered to all patients. The team represents by volunteer students from medical and health care faculties. They were trained to educate the patients and families and also to provide educational materials such as brochure and alcohol sanitizer. This activity started from 08:00- 10:00 am. Patients and family found to be benefited from the campaign.

##### **b. In Main entrance**

The main entrance of the hospital was decorated and arranged with many booths to attract the target group the patients and their relatives. Some interested companies on hand hygiene participated in the campaign. These companies distributed samples and brochures regarding the importance of hand hygiene in prevention of infectious diseases. In addition, corners for different local KAUH departments were organized; corners for nursing education, infection control, patient relation, nutrition department, and patient education. Each unit was responsible to cover main points in relation to hand hygiene from their prospective. There another team remained at main entrance to conduct the teaching for the visitors. These team were also represented by nursing and medical students, nursing and medical interns and some of KAUH staff. This activity was conducted from 10:00am until 12:00 noon. The responses from the public were very impressive.

##### **c. In auditorium**

The session in auditorium consists of lecture presentations and celebration ceremony. The presentation was started with introducing the importance of hand hygiene from previous literatures. Then it was followed by lecture on the process of hand hygiene implementation. The finding on hand hygiene observational survey was also shared to the HCWs and the Hospital administration. In the ceremony, appreciation letters to those who supported the hand hygiene was delivered.

Recognition awards were given to the three best departments that apply the effective reminder system during the hand hygiene project.

The campaign was covered by Saudi media and facebook page was created for continuous reminder. Initiating a friendly reminder program and a public campaign are great idea in order to increase the level of awareness among KAUH staff, patients and their visitors.

The team has written further recommendations to KAUH administration to continue the friendly reminder by using the code , and the assigning hand hygiene officer in the unit, to organize campaign on annual basis and to monitor and making a casual rounds to all units without exception.

### Conclusion

Overall, HAIs are serious problem that affect patients' morbidity and mortality and affect their length of hospitalization. As a consequence, it will affect patients' family as well and the whole society if it's not stopped. Performing appropriate hand hygiene among HCWs become must in specific times using specific substances in specific amounts to protect patients' lives and improve the outcomes.

In conclusion, applying our friendly reminder program of hand hygiene and utilizing Hi 5 our secret code can extremely help in modifying the behavior of HCWs. Therefore, it will help in the increase of the compliance rate. It also enhances the collaboration with effective communication between all hospital departments. Finally, it shows that how the effective program can make a positive change not only in KAUH hospital but also in the whole community

### Ethical considerations

This project has been approved by KAUH administration and the ethical consent has been obtained from ethical committee of the hospital.

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### REFERENCES

1. Barrett R., Randle J. (2008). Hand hygiene practices: nursing students perceptions. *Journal of Clinical Nursing*. (17); 1851-1857.
2. BOP, Federal Bureau of Prisons. (2012). Management of Methicillin-Resistant Staphylococcus aureus (MRSA) Infections. *Clinical Practice Guidelines*. <http://www.bop.gov/news/PDFs/mrsa.pdf>. (accessed 2012 May 20).
3. Centers for Disease Control and Prevention. Overview of health from: [www.cdc.gov/ncidod/dhqp/ar\\_mrsa.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa.html) (accessed 2012 May 1)
4. Eldridge, E., Woods, S. et al. (2006). Using the Six Sigma Process to Implement the Centers for Disease Control and Prevention Guideline for Hand Hygiene in 4 Intensive Care Units. *Journal of General Internal Medicine*. 21(35); 42.
5. Federal Bureau of Prisons. (2012). Management of Methicillin-Resistant-Staphylococcus aureus (MRSA) Infections. *Clinical Practice Guidelines*. <http://www.bop.gov/news/PDFs/mrsa.pdf>. (accessed 2012 May 20).

6. Haas, J. and Larson, E. (2008). Compliance with hand hygiene. *American Journal of Nursing*. 108(8); 40-44.
7. Harris, D., Hanson, C. Christy, C. and Adams, T. et al. (2011). Strict Hand Hygiene And Other Practices Shortened Stays And Cut Costs And Mortality In A Pediatric Intensive Care Unit. *Health Affairs*. 30 (9). 1751-1761.
8. Issa M, Vijayapal A, Graham MB, Beaulieu DB, Otterson MF, Lundeen S, et al.(2007). Impact of Clostridium difficile on inflammatory bowel disease. *Clin Gastroenterol Hepatol*. 5. 345–351.
9. Johnson, M., Kaehler, B., Siska, M., Lecy, B. and O'Neil, M.(2011). Patient safety: Healing touch: Tips for successful hand hygiene. *Nursing*. 41 (11), 18-20.
10. Kampf, G. (2004). The six golden rules to improve compliance in hand hygiene. *Journal of hospital infection*. 56(2). 373-375.
11. Kampf G, and Kramer A. (2004). Epidemiologic background of hand hygiene and evaluation of the most important agents for scrubs and rubs. *Clin Microbiol Rev*.17. 863-93
12. Mallory M. (2009). Surgical hand scrub. Blueprint for surgical hand scrub manual. EdTC. (3); 320-361.
13. Mathai E., Allegranzi B., Kilpatrick C., Pittet D. (2010). Prevention and control of health care-associated infections through improved hand hygiene. *Indian Journal of Medical Microbiology*. 28(2); 100-106.
14. McGuckin, M. (2006). The effect of random voice hand hygiene messages delivered by medical, nursing, and infection control staff on hand hygiene compliance in intensive care. *Am J infection control*.34(10). 673-678
15. National Audit office (2000) *the management and control of hospital acquired infection in acute NHS Trusts in England*. The stationary office, London
16. Navaneethan, U., Mukewar, S., Venkatesh, P., Lopez, R., and Shen, B. (2012). Clostridium difficile infection is associated with worse long term outcome in patients with ulcerative colitis. *Journal of Crohn's and Colitis* . 6. 330–336
17. Patel, R. (2003). Clinical impact of vancomycin-resistant enterococci. *Journal of Antimicrobial Chemotherapy*. 51. iii13–iii21
18. Pittet, D., Hugonnet, S., Harbarth, S. eal (2000). Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *The Lancet*. (356); 1307-1312.
19. Pittet, D., Simon, A., Hugonnet, S., Pessoa-Silva, C, Sauvan, V. and Perneger, T. (2004). Hand hygiene among physicians: performance, beliefs, and perceptions. *Annals of internal medicine*. 141. 1-8
20. Rodemann F., Dubberke R., Reske A., Seo H., Stone D. (2007). Incidence of Clostridium difficile infection in inflammatory bowel disease. *Clin Gastroenterol Hepatol*. (5); 339–344.
21. Royal College of Nursing (2005). Methicillin Resistant Staphylococcus aureus (MRSA). *Guidance for Nursing Staff*. RCN, London.
22. Sax H., Allegranzi S., Uçkay I., Larson E., Pittet D. (2007). My five moments for hand hygiene: a user-centred design approach to understand, train, monitor and report hand Hygiene. *J Hosp Infect*. (67); 9-21.
23. Surgeoner B., Chapman B., Powell D. (2009). University Students' Hand Hygiene. Practice During a Gastrointestinal Outbreak in Residence: What They Say They Do and What They Actually Do. *Journal of Environmental Health*. 72(2); 24-28.
24. Titus, L., Daniels, D., Deppen, S., et al. (2008). Mortality Rates Associated With Multidrug-Resistant Acinetobacter baumannii Infection in Surgical Intensive Care. *Units. Infection control & hospital epidemiology*. 29(11). 1080-1083.
25. World Health Organization. (2009). *Hand Hygiene technical reference manual*. WHO Guidelines on Hand Hygiene in Health Care. Geneva. Accessed on 2012 May 1 from [http://whqlibdoc.who.int/publications/2009/9789241597906\\_eng](http://whqlibdoc.who.int/publications/2009/9789241597906_eng)



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