



Impact of Kaizen/CQI On Improving Adherence to Hand Hygiene Protocol Among Staff and Students at Kabale Hospital Uganda

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Abstract

Background: Health care-associated infections (HAI) occur worldwide and affect both developed and developing countries, and in developed countries, between 5% and 10% of patients acquire one or more infections, resource- limited settings, rates of infection can exceed 20%. Simple measures like appropriate hand hygiene can limit nosocomial infections.

Method: In this prospective cross-sectional study, a survey was conducted in some clinical areas of the hospital using the standard WHO hand hygiene observation form (based on the 5 moments of hand hygiene) in the month of December 2018. Targeting all professional categories. The reports were analyzed using excel and the denominator is number of opportunities while numerator, the number of actions

Results: The results of the study showed 22% as an average compliance rate to hand hygiene protocol by staff and students.

Nurses who were assessed, opportunities were 14 with 0 action representing 0%. The student nurse's available opportunities were 11 with actions of 1 representing 09%. The medical students were assessed with opportunity of 02 and actions of 00 representing 0%. The medical officers (doctors) had 10 opportunities with actions of 01 representing 10%. The cadres of orthopedic had 06 opportunities with 00 actions leading to 0%. The midwives had 33 opportunities with 05 actions representing a percentage of 15%. Other cadres like counselors, data officer was with 01 opportunities with 00 action representing 0%. Other medical technicians e.g, lab technicians, dieticians had 03 opportunities with 02 action representing 66.7%.

Discussion: The above results show that ophthalmic staffs were better than others in adhering to hand hygiene practices whereas laboratory staff, dispensers and radiologist were performing averagely. while others are below standard in adhering to hand hygiene practices.

Conclusion: The reason for conducting the above assessment is from the background that one of the contributing factors to hospital acquired infections (HAIs) is as a result of poor hand hygiene practices by health workers leading to antimicrobial resistance.

Keywords: Hand Hygiene; Kaizen; Continuous Quality Improvement; Health Care Associated Infections; Patient Safety; PDSA Cycle

Abbreviation

WHO: World Health Organisation; ABHR: Alcohol Based Hand Rub; PDSA: Plan Do Study and Act; IDI: Infectious Disease Institute; JICA: Japan International Cooperation Agency; IPC: Infection Pre-

vention and Control; CQI: Continuous Quality Improvement; QIT: Quality Improvement Team; OPD: Out Patient Department; TOT: Trainer of Trainees

Introduction

Hand hygiene is the most effective method of preventing the transfer of micro-organisms between personnel and patients within the health care facility, the purpose is to reduce resident and transient microorganisms [1]. Failure to perform appropriate hand hygiene is considered to be the leading cause of nosocomial infections and the spread of multi-resistant microorganisms and has been recognized as a significant contributor to outbreaks [2]. Hand hygiene compliance by health worker is recognized as a key factor in preventing health care associated infections to patients.

It is estimated that at any one time, more than 1.4 million people worldwide are suffering from infections acquired in hospitals probably associated to poor compliance to hand hygiene protocol [3]. Thirty percent of patients in intensive care units are affected by hospital acquired infections which are associated with significant mortality and morbidity. Simple measures like appropriate hand hygiene can limit nosocomial infections [4].

According to, Lazzari, Allegranzi, Concia, Health care-associated infections (HAI) occur worldwide and affect both developed and developing countries, and in developed countries, between 5% and 10% of patients acquire one or more infections. To Make our hospitals safer: there is need for a global strategy for infection control in healthcare settings [5]. In resource-limited settings, rates of infection can exceed 20%, [6]. In Uganda, a survey conducted in 40 health facilities revealed, 21% hand hygiene compliance by health workers [7]. In Kabale regional referral hospital, an internal survey done in December 2018 revealed 22% hand hygiene compliance [8]. The purpose of the study was to improve adherence to hand hygiene protocol in order to achieve patient safety [9,10].

Method

In this prospective cross-sectional study, administrative clearance from the hospital management was secured for data collection, consent obtained from the participants then a survey was conducted in some clinical areas of the hospital using the standard WHO hand hygiene observation form [11] (based on the 5 moments of hand hygiene which are: 1. Before touching a patient, 2. after touching a patient, 3. after touching patient Surrounding, 4. After exposure to body fluids and 5. Before aseptic technic) in the month of December 2018. In this case the assessors do spot check and observe staff working or conducting procedures on the ward or clinic, if a doctor is found preparing to examine a patient, the assessors observe that as first opportunity (before touching patient), the assessor remains observing until the procedure is completed which becomes the second opportunity (after touching patient). The re-

ports were analyzed using excel by the quality improvement team and the denominator is number of opportunities while numerator, the number of actions, an average compliance rate of hand hygiene calculated and revealed 22% adherence to hand hygiene compliance by staff and students.

In march 2019, Introduction of quality improvement project, using KAIZEN approach [12-17] to improve compliance to hand hygiene protocol. Root cause analysis done using fish bone diagram, showed that there was inadequate hand hygiene equipment, knowledge gap by staff on hand hygiene protocol, no communications and reminders, no hand hygiene posters in place, no data to measure staff compliance to hand hygiene protocol, no departmental representatives to promote hand hygiene practice and no functional system put in place to monitor hand hygiene compliance.

With reference from WHO guide lines, The following interventions were put in place in June 2019 and the interventions were stepwise, Appointing and Training the departmental hand hygiene promoters, Installation of the ABHR Dispensers and hand washing facilities. A monthly continuous professional developments (CPDs) were conducted, monthly monitoring of hand hygiene compliance using the World Health Organization standard checklist and Monthly feedback to the various wards. Effectiveness of the interventions was checked. PDSA cycle was used to accelerate improvement. Based on the slow rate of behavior change, a target of 52% was set by quality improvement team [18].

Data from the survey as spot checks was anonymous to prevent identification of the participants. The data collection tools were kept securely and confidentiality ensured. The inclusion and exclusion criteria are the short procedures versus long procedures. For example, one cannot observe a doctor preparing to do total hysterectomy because it is a long procedure which takes more than 20 minutes. The standard session duration is 20 minutes only. "The session should not last more than 20 minute (\pm 10 minutes according to the observed activity)" [19].

This was quality improvement research and only required administrative clearance which was obtained from the hospital administration and verbal consent from the participants.

Results

The base line survey done December 2018 revealed staff compliance rate at 22% [8]. The interventions were put in place in June 2019 then assessments were done monthly from July 2019 to December 2020(results are shown in the figure 1.1 below) generally,

there has been improvement in hand hygiene compliance, from august 2018 to June 2020 after intervention by an average of 78% surpassing the set target of 52%. It was until covid put strain on supplies that's when the compliance rate started dropping. Now the hospital is at average of 71% from August 2019 to December 2020 with compliance to hand hygiene protocol. This is higher than the 46% reported by Tantum among health workers in rural hospitals in Liberia [20]. Monthly assessment results revealed fluctuation of compliance between 40 and 94%. Supply availability im-

proved hand hygiene compliance; The compliance is lowest when there are inadequate supplies for hand hygiene. In both settings there was inconsistency of supplies.

In the analysis of the data according to professional category, eye clinic performed in advance while laboratory, inpatient pharmacy and x-ray performed averagely and the rest of the units performed in- adequate. The same method was used to analyze and present data on monthly basis.

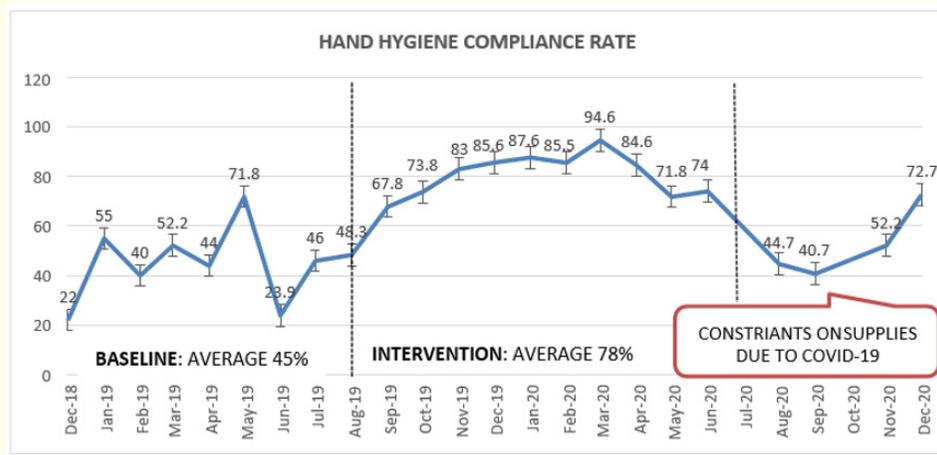


Figure 1: The trend of adherence to hand hygiene compliance protocol by staff and students.

	UNIT/WARD	OPPORTUNITIES	ACTIONS.	Number of HCWs assessed	PERCENTAGE (%)	RAG STATUS
1	Eye clinic	05	05	01	100	GREEN
2	Laboratory	03	02	02	66.7	YELLOW
3	In patient pharmacy	07	04	02	57	AMBER
4	X-ray	04	02	01	50	AMBER
5	Psychiatry	10	04	02	40	RED
6	Private wing	03	01	02	33	RED
7	OPD	17	05	05	29	RED
8	MCH	21	05	06	23.8	RED
9	Paediatric ward	05	01	02	20	RED
10	Maternity	15	02	03	13	RED
11	Theatre	03	01	03	01	RED
12	Casualty	03	01	03	01	RED
13	OPD pharmacy	04	00	01	00	RED
14	TB ward	08	00	01	00	RED
15	Gynaecology ward	06	00	03	00	RED
16	Medical ward	03	00	01	00	RED
17	Orthopedic	06	00	01	00	RED
18	Surgical ward	07	00	02	00	RED
19	Art Clinic				00	RED
20	ENT clinic				00	RED
	Overall Compliance Rate				21.7%	

Key:

COLOUR	SCORE	SCALE	RAG STATUS
GREEN	85-100	ADVANCED	GREEN
YELLOW	70-84	INTERMEDIATE	YELLOW
AMBER	50-69	BASIC	AMBER
RED	BELOW 50	INADEQUATE	RED

Figure 2: Data for Adherence to Hand Hygiene Compliance Per Ward/Unit for December 2018.

Nurses who were assessed, opportunities were 14 with 0 action representing 0%. The student nurse’s available opportunities were 11 with actions of 1 representing 09%. The medical students were assessed with opportunity of 02 and actions of 00 representing 0%. The medical officers (doctors) had 10 opportunities with actions of 01 representing 10%. The cadres of orthopedic had 06

opportunities with 00 actions leading to 0%. The midwives had 33 opportunities with 05 actions representing a percentage of 15%. Other cadres like counselors, data officer was with 01 opportunities with 00 action representing 0%. Other medical technicians e.g., lab technicians, dieticians had 03 opportunities with 02 action representing 66.7%.

CODE	PROFESSIONAL CATEGORY	OPPORTUNITIES	ACTIONS.	Number of HCWs assessed	PERCENTAGE (%) compliance	RAG STATUS
4.1	Ophthalmic clinical officers	05	05	01	100	Green
4.1	Dispensers	4	3	01	75	Yellow
4.2	laboratory technicians	03	2	02	66.7	Yellow
4.2	Radiologists	04	02	01	50	Yellow
4.1	Pharmacists	3	1	01	33	Red
1.2	Midwives	33	5	12	15	Red
3.1	Medical officers	10	1	05	10	Red
1.3	Student nurses	11	1	02	9	Red
1.1	Nurses	14	0	10	0	Red
3.7	medical students	2	0	01	0	Red
4.3	Orthopedic officers	6	0	01	0	Red

Figure 3: Data presentation per professional category, December 2018.

Discussion

From our results, the spot checks on hand hygiene compliance increased from 22%, base line in December 2018 to 78% an average after interventions and was strengthened by, availability of supplies, use of hand hygiene promoters, monthly monitoring and evaluation and feedback, inclusion of the component of hand hygiene in the quarterly IPC facility assessments that targets availability of supplies.

In this study, the average hand hygiene compliance after intervention was at 78%. This is higher than the 46% reported by Tantum among health workers in rural hospitals in Liberia [8,20] and the 56% reported by H. Saito Mbale Uganda. [21] as a result of locally made hand rub and training.

The intervention in this study resulted to an increment of 56% as opposed to 6.4% reported by De Pauw., et al. (2019) following a hand hygiene campaign [22].

Installation of ABHR and hand washing facility improved compliance by 24.4%.

Appointment and training of the departmental hand hygiene promoters lead to improvement in hand hygiene compliance by 25.5% the training was conducted in August 2019.

The hospital introduced monthly CPDs in September 2019 on hand hygiene Which led to improvement by 5.2%.

Monthly monitoring and evaluation of adherence to hand hygiene compliance improved compliance rate by 20.8%. combination of all the interventions improved compliance by 33% over a period of one year. This was not sustained for long because of constraints on supplies due to covid-19 which become priority by then. The monitoring and evaluation and feedback were halted in a bid to follow covid-19 SOPs, where all meetings/gatherings were halted.

Conclusion

Use of multimodal interventions with KAIZEN approach which is scientific stepwise quality improvement approach [12-17], resulted in the improvement of hand hygiene compliance among health care workers and students. The Kaizen approach can help frontline workers to identify gaps at their work process, come up with possible solutions to the problem, jointly implement the interventions, evaluate the success of the interventions and standardize the interventions that are effective. This same approach helped to improve adherence to hand hygiene protocol by staff and students at Kabale Regional Referral Hospital. At Kabale hospital, an observation made, revealed that health workers adhere to hand hygiene protocol most when supplies are available.

Percentage adherence drops when supplies are inadequate. Another observation is that, inadequate feedback led to decline in adherence to hand hygiene protocol. Trainings/communications and reminders are also paramount in improving adherence to hand hygiene.

Adherence to hand hygiene compliance improved there was an improvement in patient safety as observed by reduction in surgical site infections from 26.1% in October 2019 to 0% in January 2020 [23].

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Conflict of Interest

No conflict of interest.

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