

SCHOOL OF HEALTH SCIENCES

LOW HAND HYGIENE COMPLIANCE IN SURGICAL WARD OF KIBOGORA DISTRICT HOSPITAL

A Capstone submitted in partial fulfillment of the requirements for Master of Hospital and
Healthcare Administration

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DECLARATION

I, NGARUKIYE Thacien, hereby declare that the dissertation has been written by me without any external unauthorized help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words or ideas, of the dissertation, however limited, which are quoted from or based on other sources, have been acknowledged as such without exception.

Signature: _____

Date: _____

DEDICATION

I dedicate this work to:

My wife UMWIZA Denyse.

My children MASENGESHO Brave, MUGISHA Thierry, IZERE CHANCE Gideon and
KWIZERA MPANO Christiana.

My colleagues, other best friends and relatives.

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ABSTRACT

Background

Hand hygiene is necessary in order to protect the patients and health care workers from the hospital acquired infections. Hospital acquired infection can affect 50% of hospital population. Hand hygiene by alcohol based gel, soap and water can prevent from hospital acquired infection. The alcohol based gel can be produced locally by following WHO product formulation (1). We conducted the interventional study on 392 opportunities requiring hand hygiene. Data collection tools were conceived to be adapted to WHO five moments of hand hygiene. The base line data were collected from 30 May to 20 June, 2016. The post intervention data started from the 1st to 25 March 2017. All data was analyzed through SPSS software for statistical tests before analysis procedure and determined the significance level.

Results

The overall hand hygiene compliance rate in surgical ward of Kibogora hospital improved from 26% to 55.8%. P- Value < 0.01. Nurses hand hygiene compliance rate improved significantly before touching a patient, before aseptic procedure, after body fluids exposure risk and after touching a patient. P-Value was < 0.001. The MD's hand hygiene before touching a patient improved significantly, before aseptic procedure and after touching a patient. P-Value was < 0.01.

Conclusion

By using the small bottles of alcohol based gel, soap, paper towels, availing hand hygiene reminders, hand hygiene guideline and supervise hand hygiene activities, hand hygiene compliance in surgical ward of Kibogora District Hospital increased from 26 to 55.8% by February to march 2017. P - Value < 0.01. Our intervention is recommended.

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LIST OF ACRONYMS AND ABBREVIATIONS

AO	Accreditation officer
DM	Data Manager
EHO	Environmental Health Officer
H₀	Null Hypothesis
H₁	Alternative Hypothesis
HMIS	Health Management Information System
ICU	Intensive Care Unit
ISW	In charge of Surgical ward
MDs	Medical Doctors
MEO	Monitoring and Evaluation Officer
MHA	Muster of Hospital and Healthcare Administration
MR	Main Researcher
PHN	Pharmacist
WHO	World Health Organization

DEFINITION OF KEY TERMS

Hand hygiene: Any action of hand cleaning

Hand cleaning: Action of performing hand hygiene for the purpose of physically or mechanically removing dirt, organic material or micro-organism.

Hand rubbing: Action of applying an alcohol-based hand rubs

Hand washing: Washing hands with plain or antimicrobial soap and water (2).

Hand hygiene compliance: Action of hand cleaning refers to WHO five moments of hand

Hospital acquired infection: It is infection acquired during hospital care or other health facility which are not present or incubating at admission. Infection occurring more than 48 hours after admission are usually considered acquired (3).

CHAPTER ONE: INTRODUCTION

I.1. Background

Hand hygiene activity is recommended in health care facilities in order to comply with the policy, to offer the qualitative health care and to protect health care givers and the clients against the acquired infection. Every year, about 1,3 million people of world wide dies because of acquired infection. The prevalence of hospital acquired infections ranging from 6.7 to 28% in developing countries, while in developed counties in Europe has been estimate as 7.1%. The surgical site infection and urinary tract occupy 29.1% in developed countries. Developing counties the prevalence rate of bacterial infections found 10.1% (4). Respiratory tract infection, diarrhea, pneumonia, HIV, Hepatitis B,C, surgical site infection predominate in developing counties while Urinary tract infections only predominate in developed counties. Kibogora District Hospital is located in Nyamasheke District, Western Province in Rwanda. It has been created by Rwanda Free Methodist Church in 1940 as a health post and in 1960 become a Hospital. Kibogora Hospital offers preventive, curative and promotional services. It has 300 beds with a catchment area of 240,730 populations and serves 13 health centers of its catchment area, the nearby heath centers of Bushenge Provincial Hospital and entire the population from other Districts of Rwanda as well as Residents from neighboring countries such as Burundi and Republic Democratic of Congo.

The hospital provides Maternity, Internal medicine, Surgery and Pediatric. But, it have other departments such as, Administration, Antiretroviral, Dentistry, Gender based violence, Laboratory, Mental health, Occupational health, Ophthalmology, Out patients, Pharmacy, physiotherapy, Radiography and social affairs.

Kibogora Hospital has 11 medical Doctors, one Pharmacist, 28 Paramedical, 17 Midwives, 73 Nurses and 116 support staff. The surgical ward has two Medical Doctors, 13 Nurses and seven Cleaners. Two medical Doctors and 11 nurses were enrolled in the surgical ward. The surgical ward had ten rooms/ units of care. Sink was installed in three rooms only.

In 2015 the hospital treated 32,473 out patients, admitted 2,107 Major surgeries and 741 minor surgeries. The number of bed was 55, Average bed occupancy rate in surgery ward was 107% and the average length of stay was 9,7.

The top ten causes of morbidity included Respiratory infection 15%, bone and joint disorder 16.4%, Gastritis and duodenitis 13%, Gynecological problems 11%, Skin infection 9.4%, urinary tract infection 8.2%, physical Trauma 6.8%, Fractures 5.4%, ear infection 2.5%, Pneumonia 2%.

The top five mortality causes included Neonatal asphyxia 26.2%, congenital malformation 8.7%, severe malaria 7.5%, Neonatal infection 6.2% and Pneumonia 6.2%. Indeed, the data about top ten diseases and five top causes of mortality have been recorded from HMIS/ Kibogora District Hospital data manager office. The data about services and health care workers have been recorded from the Kibogora Hospital Human Resources Office.

1.2. Problem statement

There was low hand hygiene compliance in surgical ward of Kibogora District Hospital.

The baseline measurement conducted in the surgical ward of Kibogora District Hospital showed the overall hand hygiene compliance of 26%.

1.3. Objective of the study

To increase hand hygiene compliance in surgical ward of Kibogora District Hospital from 26% to 50% from January to March, 2017.

1.4. Hypothesis

H₀: Hand hygiene compliance in the surgical ward of Kibogora District Hospital will not be improved by the use of alcohol based gel and other essential hand hygiene items.

H₁: Hand hygiene compliance in the surgical ward of Kibogora District Hospital will be improved by the use of alcohol based gel and other essential hand hygiene items.

1.5. Justification of the project

Kibogora District hospital is in accreditation process and hand hygiene practice is one of the critical standards of accreditation. Currently there are some hand hygiene facilities and materials such as sinks, water, soaps, alcohol based gel but health workers use them rarely. Poor hand hygiene can contribute to hospital acquired infections. *Crostitium difficile* is responsible of hospital acquired diarrhea in developed countries. Hospital acquired infection associated to *Clostridium domicile* arise the length of stay in hospital from seven days to 28 days and high risk of mortality. As the length of stay is more than seven days the cost of hospitalization arise accordingly (2). Hand hygiene can reduce maternal and neonatal mortality; trachoma, parasites worms, pandemic influenza and other respiratory tract infections by 50% (3,4). The study on 65 health workers in intensive care Unit demonstrated hand hygiene compliance rate before touching patient were 20% than compliance rate were 40% after touching a patient (7). The commitment of the health

institution on availability of hands rub or alcohol based solution contributes to health workers sensitivity to adhere to hands hygiene practice as a priority for patient safety.

1.6. Organization of the dissertation

This dissertation is divided into six main chapters. Chapter one introduces the background of the hospital, a clear statement and magnitude of the problem. It states the objective and justifies the project.

Chapter two contains the literature review. Chapter three describes the design of the study. A root cause analysis and the selection of intervention is described. The indicators, the data analysis procedures and ethical consideration is also included in this chapter

The results of the study, what was accomplished or failed, what need to improve, challenges faced during the implementation and how should the challenge be addressed are presented in chapter four. A detailed discussion based on the results of the project is in chapter five. The conclusion and the recommendations are highlighted in chapter six.

CHAPTER TWO: LITERATURE REVIEW

Hand hygiene practice is defined as reducing or inhibiting the growth of microorganisms by the application of an antiseptic hand rub or by performing an antiseptic hand wash. Hand hygiene covers both:

- Hand washing using water and soap
- Cleaning hands with alcohol-based hand sanitizer (8).

The overall adherence at the university hospital of Geneva was 57% in 2015 (5) In 2009 the study was conducted in Hadassah hospital in Jerusalem on hand hygiene compliance by health workers in surgery ward. The adherence compliance raised up from 13% to 43% in three months of intervention of putting alcohol based hand sanitizer to the bed of each patient (6). Searches conducted in Geneva, Switzerland and in Mali confirmed 40% of the mean change of hand hygiene compliance rate by using the interventions including alcohol based hand sanitizer, hand hygiene reminders, education, administrative support and feedback. (11)

A randomized trial study done on 3317 patients in faith based rural hospital in Kenya in surgery in November 2007 has shown that there were no significant difference in regards of efficiency of hand washing and hand rubbing to prevent the Site Surgical Infection. For the procurement alcohol based hand rub were less expensive comparing to continuous plain water and soap. Staff preferred the 75% isopropanol alcohol because it is quicker to use and did not require towel to dry hands (12).

In the unit where there is no sink, the pocket bottles of hand sanitizers are ideal (WHO 2009). By respecting the WHO formulations, it is possible to produce the alcohol based hand sanitizer locally which contain the final formulations including, the ethanol 80% or isoprophyl alcohol 75%, glycerol 1.45% and peroxide 0.125% (3,4). Hand washing is

needed when hands is visibly soiled. Decontaminate hands with alcohol based gel is useful in emergency situation (5).

A three weeks cross sectional study on hand hygiene compliance rate among Nurses and MDs of Korle - Bu Teaching hospital in Ghana in 2009 has shown the overall compliance rate in surgical ward of 31,9%

On the other hand, hand rub can be better choice even where there is water as longer as the institution has the capacity to provide them to staff.

In Gitwe Hospital in Rwanda, The overall compliance to hand hygiene before the intervention was 34.1% and 68.9 after the intervention. This intervention was focused on availing alcohol based gel that every health workers should fill their small sized bottles before starting the work. Hand hygiene practice in the hospital using water and soap is an important measure to control hospital acquired infection (7).

Beside other factors of acquired infections such as age, nutrition state, health workers hands can be the source of pathogens. Training and education on five moments of hand hygiene is recommended in order to prevent against hospital related infections. Reminders about hand hygiene at the primary care units and near the sinks are important in order to remind the health workers when and how to hand wash or to hand rub. The five moments of hand hygiene that hospitals should use are:

- Before touching a patient
- Before clean or aseptic procedure
- After body fluid exposure risk
- After touching a patient
- After touching patients surroundings (8,9,10)

" According to a 2012 study, most patients at risk for health care associated infections agree that health care workers should be reminded to wash their hands, but little more than half would feel comfortable asking their physicians to wash" (Kelly. M. Pyrek, 2014. P. 10) (11).

In 2005 a quasi-experimental study was conducted among 314 health workers from Ireland Urban Teaching Hospital and founded less than 40% compliance with hands washing guidelines and difficult to change (12).

Hands hygiene barriers are related to lack of infrastructures, cultural and religious back grounds, lack of hand hygiene items and information on transmission of hospital acquired diseases. There are other factors contributing to poor adherence to hand hygiene such as:

- Lack of hand hygiene materials
- Lack of knowledge and guidelines
- Ignorance
- Bad habit
- Too busy or over crowding
- Prioritizing patient needs (13,14,15,16,17,18,19,20)

Improving Adherence to Hand Hygiene Practice in clinical settings depends on different conditions such as category of hospital employees as well as working condition. Using the alcohol based gel and hand washing with antiseptic soap is more efficacious to reduce pathogens than hand washing with no medicated soap (21). Hand san gel can serve as pocket hand sanitizer as it contains the proparanol 70% and glycerol which make it easy to be used for hand rubbing.

CHAPTER THREE: METHODOLOGY

3.1. Study design

We did pre and post interventional study design. The baseline data collection started from the 30th May until the 20th June, 2016 and the post intervention data collection started from the 1st March to 25 March 2017.

3.2. Data collection method

We collected the base line and outcome data by using the conceived data collection tools. The tools were conceived to be adapted to WHO five moments of hand hygiene. We included in our sample all opportunities and activities done by registered nurses and Medical Doctors during the respective period.

3.3. Sample size

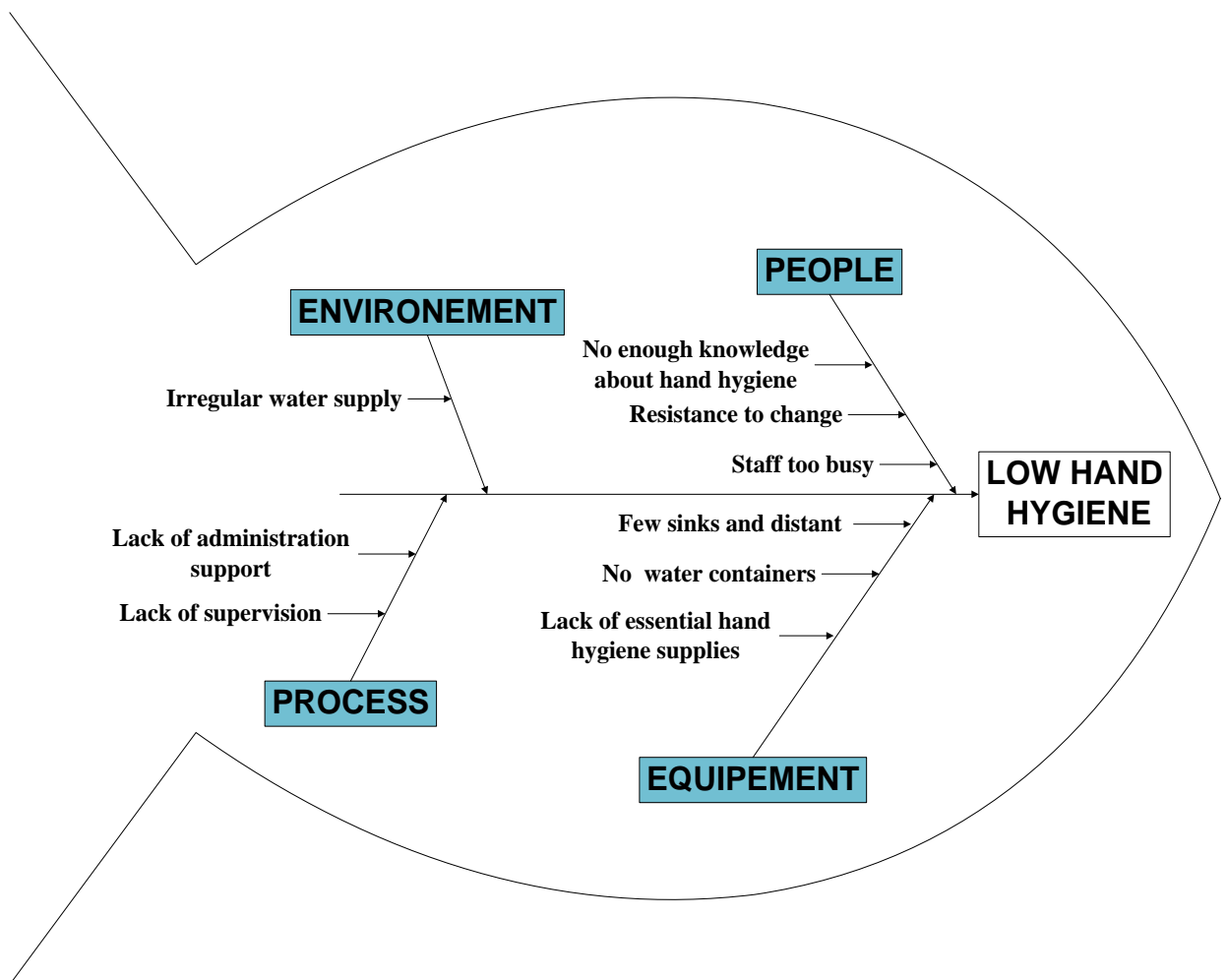
We did a pre and post interventional study on two different sample sizes of 392 opportunities compulsory designed during 21 days for the baseline and 25 days for the verification. We designed our sample size as a census because we would not want to lose any opportunity where hand hygiene was required.

3.4. Root cause analysis

Making the root cause analysis followed the plan starting from the second to 3rd July, 2016. The creation of the tools for data collection started from the 3rd to 5th July, 2016. To identify the possible root cause, we followed two steps. Firstly, we consulted different literature review. The causes of low hand hygiene according to the literature includes the lack of hand hygiene items, lack of hand hygiene guidelines and reminders, staff too busy, few sinks and

distant. Secondly, we had a meeting with the surgical ward staff and organized the small group and brain storm the small groups. The Brain storming outlined the main causes of low hand hygiene in the surgical ward such as, irregular water flow, stock out of hand hygiene supplies, no enough knowledge about hand hygiene, lack of water containers, lack of essential hand hygiene supplies such as Alcohol based gel, antimicrobial soap and wiping Papers. The additional causes included the resistance to change and the lack of administrative support. Finally, we summarized the possible root cause by fish bone diagram.

Figure 1. Fish bone diagram



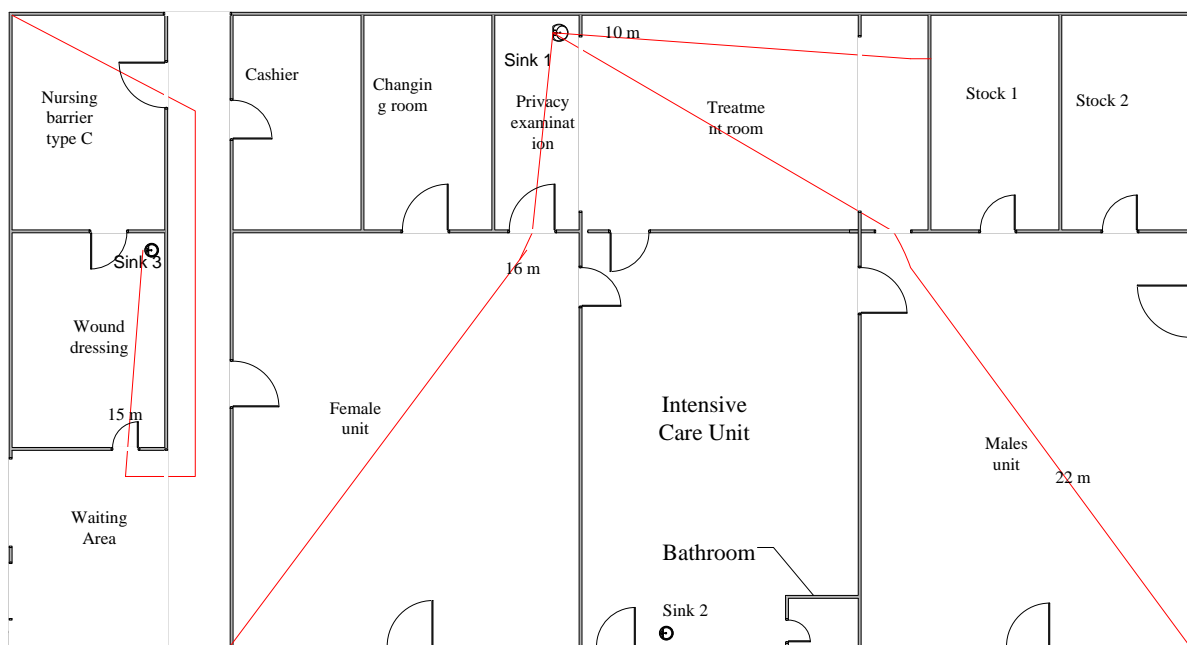
The data collection started the 30th May until the 20th June, 2016 data entry and analysis started from 28 July to 14 August, 2016. The Identification of the real cause followed the plan starting to 16th August, 2016 to 23rd August, 2016.

3.4.1. Few sinks and distant

We counted all sinks or other water container and all units of care then, presented on the map where water stations are located. We calculated the ratio sinks/water container to units of care. Also, we measured the distance from different considered units of care to the nearest sink and presented the distance to the map in meters.

The ratio sinks to units of care was 0.3. The mean distance from units where there is no installed sink to the nearest sink was 12 m.

Figure 2: Mapping of sinks location



3.4.2. Irregular water supply

We collected data by using the tally sheet of availability frequency of water in surgical ward during 28 days. The availability frequency of water of the faucet was 85.7%.

3.4.3. Lack of essential hand hygiene supplies

We did the observation of hand hygiene items available to the sink station, or at any elsewhere hand hygiene materials are deposited so that everybody can find them easily. We collected data during 28 days using the conceived tally sheet. The availability frequency of water was 50%. No alcohol based gel, antimicrobial soap, and paper towels were available.

Table 1 Availability of essential hand hygiene items

Variables	Pre	Post
Water of the classic faucets	n (28)	n (25)
Availability frequency of water from the classic faucets	24 (85.7%)	25 (100%)
Drying wipe or paper towel	n (28)	n (25)
Availability frequency of the paper towel	0 (0%)	11 (44%)
Alcohol based gel	n (28)	n (25)
Availability of gel alcohol	0 (100)	100 (100)
Antimicrobial soap	n (28)	n (25)
Availability frequency of antimicrobial soap	14 (50%)	25 (100%)

3.4.4. No enough knowledge

We evaluated this root cause by using the questionnaire. Only three health care workers have got a score of max more than 70%. Eight health care workers have got a score less than 70%.

Finally, we combined all information and determined the real causes of low hand hygiene in the surgical ward of Kibogora District Hospital.

Table 2 Combining all information

Possible root causes	Result	Decision	Reason
Few sinks and distant	The ratio sinks to the number of considered unities of care = 0.3	Accepted	Sink are suitable for hand washing
Irregular water flow	The availability frequency of water was 86%	Accepted	Water from faucets lacked 14%
Lack of water container	No any other water container was available	Accepted	Water lacked 14%
Lack of essential hand hygiene supplies	Non antiseptic soap were available, as well as paper towel and gel alcohol	Accepted	People should not clean hands without supplies
Lack of the knowledge about hand hygiene	More than a half of health care workers failed the test.	Accepted	Necessary to improve hand hygiene

3.5. The real cause

- No water container, few and distant sinks
- Lack of essential hand hygiene supplies, no enough knowledge about hand hygiene

4. Intervention

After the comparative analysis of alternatives based on impact, expense, feasibility, time and their respective scores, the final interventions included place the buckets of water with faucet at the units of care, avail essential hand hygiene supplies, train the team on hand hygiene, avail hand hygiene guidelines, hand hygiene reminders and supervise hand hygiene activities (See table below).

Table 3 Decision Matrix

Strategic alternatives	Evaluation criteria				
	Impact	Expense	Feasibility	Time	Total
Install at list one sinks in the considered units of care	3	2	3	3	11
Place the buckets of water with faucet at the units of care	2	4	5	5	16
Supplying the foam hand rubs	4	1	1	2	8
Avail essential hand hygiene supplies, train the team on hand hygiene and supervise hand hygiene activity	5	5	4	4	18

4.1. Process activities

The process activities included install the bucket of water with faucet, avail the essential hand hygiene supplies, organize the trainings on hand hygiene avail hand hygiene guidelines, hand hygiene reminders and supervision of hand hygiene activities.

4.1.1. Install the bucket of water with faucet

This process included activities such as acquire the requisition foam, requirement of the bucket, faucet and glue, contact the concerned team, confection of buckets of water, fill the water in the buckets and place the buckets of water with faucet in each unit of care.

4.1.2. Avail the essential hand hygiene supplies

This process included activities such as acquire the requisition book, request the alcohol based gel items, the antimicrobial soap and the wiping papers, prepare and distribute the small sized bottles with alcohol based gel to the health workers, place the antimicrobial soap and the paper towels near the sources of water.

4.1.3. Organize the training

This process included activities such as, preparer the training materials, identify the participants, invite the participants, book training room, preparer breakfast and lunch and start the training.

4.1.4. Avail hand hygiene guidelines and reminders

This process included activities such as create the team, define the activities to be done, elaboration of the hand hygiene guidelines, search ideas from literatures, communicate the date to meet for developing the guidelines, writing the guidelines, send the guidelines to the accreditation committee, modify the guidelines according to the committee inputs, send the guidelines to the direction of the hospital for the signature, avail hand hygiene guidelines to the surgical ward, multiply the copies of hand hygiene reminders from the guidelines, and hanging hand hygiene reminders in the surgical ward.

4.1.5. Supervision of hand hygiene practice

This process included activities such as invite the team, communicate the date to meet, developing the supervision tools, conducting the supervision, communicate the feedback to the team for the improvement.

4.1.6. Evaluation

This process included activities such as collecting data on process and outcome indicators, Compilation of the data, analyzing the data, communicate the results to the concerned team.

5. Measures

Our measures included the process indicators and the outcome indicators

The process indicators included the number of bucket of water with faucets out of the number of considered units of care. The availability frequency of water, The rate of trained health care workers, Existence of essential hand hygiene items in different units of care, existence of hand hygiene guidelines and hand hygiene reminders and supportive supervision of hand hygiene activity. The outcome indicator included the rate compliant to hand hygiene after the intervention. (See table N^o 4 and 5).

Table 4: Process indicators

Indicators	Definition	Responsible	Where	When
Existence of buckets of water as other sources of water	The buckets of water was provided to overcome the problem of irregular water flow	Environmental health officer	Bathroom and each considered unit of care	First week of February, 2017
Availability frequency of water supply	There are the Buckets of water in the considered units of care	Accreditation Officer	Surgical ward	First week of February, 2017
Availability frequency of essential hand hygiene supplies in the surgical ward	The necessary hand hygiene items are always available in all considered units of care	Accreditation Officer	Surgical ward	First week of February, 2017
The rate of trained health care workers and the Existence of hand hygiene guidelines and reminders	Trainings, hand hygiene guidelines and reminders were provided in order to ensure the sustainability of hand hygiene project	Main researcher	Surgical ward	Second week of February, 2017
Existence of supervision	The daily supervision was provided to support the theoretical training during the practical training.	In charge of the surgical ward	Surgical ward	Third and fourth week

Table 5: The outcome indicators

Indicator	Definition	Responsible	How	When
% of activities of hand hygiene	Number of opportunities with hand hygiene out of the total number of observed opportunities	Accreditation officer	Observation	March, 2017

6. Data analysis procedure

For data analysis, we firstly collected data by using different data collection tools. The information was transferred to MS excel for compilation. The data were then imported from MS excel and transferred to SPSS version 20 for statistical tests, and then summarized the information after data analysis.

7. Ethical considerations

The project was approved by Kibogora Hospital senior management team and did not affect the normal work, the patient and health care workers. In addition, the ethics and quality improvement committee were consulted before data collection and implementation. Indeed, participants addressed a verbal consent before answering the pre and post test questions during training sessions.

CHAPTER FOUR: RESULTS

During the implementation, we placed the buckets of water in surgical ward of Kibogora District Hospital. Each considered unit of care / room had one bucket of water with faucet.

Concerning the availability frequency of water supply, the water of the faucet/sink was available at 88% and the water of bucket with faucet was available at 100%. In general, the availability frequency of water was 100%

The essential hand hygiene supplies included the antimicrobial soap, the alcohol based gel and the paper towel. The antimicrobial soap was available at 88%. The alcohol based gel was always available (100%). The paper towel was available at the frequency of 44%

Concerning the existence of hand hygiene guidelines and reminders, we availed hand hygiene guidelines and reminders in order to improve the knowledge of health care workers on hand hygiene and the sustainability of the project. We also trained the health care workers in order to improving the knowledge about hand hygiene; Eleven health care workers have got the theoretical and practical training on hand hygiene. As it is shown by the pre test results, eight health care workers have got more than 70%. Three others have got less than 70%

For the existence of hand hygiene guidelines hand hygiene reminders, they were hanged everywhere in the surgical and finally, supervision was provided in order to incite the health care workers to adhere to hand hygiene practice. The feedback was immediately given to each health worker.

Nurses hand hygiene compliance rate improved from 37.1% to 53.5%. The association was statistically different. $P\text{-Value} < 0.01$. The MD's hand hygiene compliance before touching a patient improved significantly from 46.6% to 51.4 % after the intervention. Nurses hand

hygiene compliance rate improved before aseptic procedure from 18.3 % to 58.9% after the intervention. P-Value was 0.02. There was no significant association. MD's hand hygiene before aseptic procedure improved significantly from 18.3 % to 58.9 % after the intervention. P-Value was < 0.01. Nurses hand hygiene compliance rate improved after body fluids exposure risk from 63.6% to 95% after the intervention. P-Value was 0.6. MD's hand hygiene after body fluids exposure risk improved from 60 % to 94.1% after the intervention. P-Value was 0.4. Nurses hand hygiene compliance rate improved significantly after touching a patient from 11.1% to 55%. P-Value was < 0.01. By our intervention, MD's hand hygiene after touching a patient improved significantly from 5% to 35 %. P-Value was 0.1. Nurses hand hygiene compliance rate improved after touching patient surroundings from 19.4 % to 62.5%. p. value < 0.01. The association was statistically no significant. MD's hand hygiene improved after touching patient surroundings from 8.3% to 25%.

The overall hand hygiene compliance rate improved from 26% to 55.8%. P-value < 0.01.

Table 6: Summary of results

Variables	Pre	Post	P-Value
Nurse's hand hygiene before touching a patient	n (78)	n (56)	-
The rate compliant with nurse hand hygiene before touching a patient	29 (37.1%)	30 (53.5%)	0.006
MD's hand hygiene before touching a patient	n (30)	n (70)	-
MD's hand hygiene compliance rate before touching a patient	14 (46.6%)	36 (51.4 %)	-
Nurse's hand hygiene before aseptic procedure	n (49)	n (56)	-
The rate compliant with nurse hand hygiene before aseptic procedure	9 (18.3%)	33 (58.9%)	0.02

MD's hand hygiene before aseptic procedure	n (14)	n (36)	-
MD's hand hygiene compliance rate before aseptic procedure	3 (21.4%)	21 (58.3%)	< 0.001
Nurse's hand hygiene after body fluids exposure risk	n (33)	n (20)	-
The rate compliant with nurse hand hygiene after body fluids exposure risk	21(63.6%)	19 (95%)	0.06
MD's hand hygiene after body fluids exposure risk	n (10)	n (17)	-
MD's hand hygiene compliance rate after body fluids exposure risk	6 (60%)	16 (94.1 %)	0.4
Nurse's hand hygiene after touching a patient	n (90)	n (60)	-
The rate compliant with nurse hand hygiene after touching a patient	10 (11.1%)	33 (55%)	0.002
MD's hand hygiene after touching a patient	n (40)	n (57)	-
MD's hand hygiene compliance rate after touching a patient	2 (5%)	20 (35 %)	0.1
Nurse's hand hygiene after touching patient surroundings	n (36)	n (16)	-
The rate compliant with nurse hand hygiene after touching patient surroundings	7 (19.4%)	10 (62.5%)	0.006
MD's hand hygiene after touching a patient surroundings	n (12)	n (4)	-
MD's hand hygiene compliance rate after touching a patient surroundings	1 (8.3%)	1 (25 %)	-
Overall hand hygiene	N (392)	N (392)	-
Overall hand hygiene compliance rate	102 (26%)	219 (55.8%)	< 0.001

CHAPTER FIVE: DISCUSSION

All surgical ward's units of care had at list one bucket of water. The existence of bucket of water with faucet solved the problem of lack of water 14.5%. Furthermore this action resolved the problem of the distance. Therefore we saw that the mean distance from the unit of care to the nearest sink was 12 m. likewise the distance from the considered unit of care become 0 m after installing the buckets of water with faucets. On the other hand, the availability frequency of water become for always 100%. The bucket of water with faucets was installed to be used when there was no water especially for hand washing when hands were visibly seen soiled. The availability frequency of essential hand hygiene supplies was less than 50% before the intervention but after the intervention about all essential hand hygiene supplies were available except the paper towels. The availability frequency was less than 50%. Indeed, this did not interrupt the hand hygiene as well as the alcohol based gel was 100% available. Literature has shown that the use of alcohol based gel reduce the routine hand washing hence the stock out of the paper towels did not stop day to day hand hygiene activity. At the sometime the availability frequency of the antimicrobial soap was about 90%.

Beside the essential hand hygiene supplies we availed hand hygiene guidelines and reminders in order to for the sustainability of hand hygiene. Also, we trained the health care workers in for improving their knowledge about hand hygiene. Eleven health workers were trained. In the meantime, we gave the pre test and post. Eight health care workers have got more than 70%. Three others have got less than 70%. Soon, daily supervision and feedback were provided in order to incite the health care workers to adhere to hand hygiene practice.

In general our intervention succeeded by introducing the use of alcohol based gel, availing the bucket of water, the paper towel, training health care workers on hand hygiene and

supervise hand hygiene activity. Hand hygiene compliance rate have been improved from 26% to 55.8 %. P- Value < 0.05. Hand hygiene compliance improved from 39.8% to 52.3% before touching a patient. Moreover, the great changes happen to nurse hand hygiene from 37.1% to 53.5% while MDs hand hygiene compliance before touching a patient was 46.6% before the intervention and 51.4% after the intervention. Nurses and MDs hand hygiene before touching a patient was about the same after the intervention. In the second place, hand and before aseptic procedure was 19% at the baseline and at the verification 58.6%. Nurse's hand hygiene compliance before aseptic procedure improved from 18.3% to 58.9%. In like manner, hand hygiene compliance improved to MDs before aseptic procedure from 21.4% to 58.3%. For instance, both nurses and MDs improved hand hygiene compliance.

Again, hand hygiene compliance improved from 62.7 to 94.5%. Hand hygiene was about the same to MDs after touching body fluid exposure risk. According to the literature, our data has shown that was not a problem of hand hygiene compliance before body fluid exposure risk as well as hand hygiene compliance was more than 50%. Hand hygiene compliance after touching a patient improved from 9.2 % to 45.2%. In the other words our intervention changed 36% of hand hygiene compliance after touching a patient. Hand hygiene compliance rate by MDs after touching a patient seem to be very low according to literature but for us this it was a big improvement as it was changed from 5% to 35%. Lastly, hand hygiene compliance rate after touching patient surroundings was 16.6% at the baseline and 55% in post intervention. Nurses hand hygiene compliance changed from 19.4% to 62.5%. Subsequently, MDs hand hygiene compliance improved from 8.3% to 25%.

Both nurses and MDS improved much hand hygiene compliance after touching patient surroundings.

5.1. Contributing factors to success

The project was successfully improved because we involved Kibogora District Hospital health care workers to work together as one team. Beside that we used to delegate Kibogora District Hospital Colleagues for some activities that I could not accomplish alone and when I was doing other project activities.

5.2. Challenges faced during the intervention implementation and solution under taken

Some time the health workers were not available due to specific effective's staff tasks. However, with delegation the implementation of the project was smoothly conducted and achieved.

In addition, we met the challenge related to the small space. The surgical ward was crowded by the patients, the health workers, the students in internal ship and the beds. To overcome this challenge, we increased the number of small sized bottles of alcohol based gel and manufactured few and small buckets of water with faucets so that they could not occupy the big space. We had known the stock out of paper towel during the implementation. We overcame that challenge by advising the health care workers to wash hands whenever it is seen soiled and then, to dry hands by free fresh air.

Lesson learned during the implementation of the project

The project to increase the hand hygiene compliance rate in the surgical ward is an interesting project. Therefore this project was admired by the accreditation committee and financed by Kibogora Hospital. The suggestion of the accreditation committee is that the project should be implemented in all departments of Kibogora hospital. As the Hospital is in the accreditation process, this project will help the hospital to meet the accreditation

requirements. For effective hand hygiene practice, it is recommended to wash hands with water and soap. To hand rub with alcohol based hand sanitizer or foam hand sanitizer or pocket hand sanitizer can also help to comply with hand hygiene because it is easy to be used and can avoid the propagation of cross infection. But hand rubbing alone is not sufficient to comply to hand hygiene policy. Hand rub is suitable for emergence situation, when continuous water is not available and when there is no any other solutions such as using the foot activated taps or pots of water installed for hand washing where there is no regular water flow. Instead of offering care with soiled hands, health workers should hand rub with hand san gel or alcohol based hand sanitizers which is also available in the ware house, after filling it in small sized bottles which are also available in the store. The small sized bottles filled in hand san gel can selves as pocket hand sanitizer and can solve the problem of supply the expensive foam hand sanitizers, the frequent requisition of many paper towels and can reduce routine hand washing with anti microbial soap. To avail hand hygiene guidelines and hanging the hand hygiene reminders at the visible area and to supervise the hand hygiene activities helped health care workers to comply with the policy of hand hygiene. The plastic foot activated taps or the buckets of water can address the problem of the long distance from the unit where there is no sink to the nearest unit where sinks are installed.

Project limitation

We conducted the project to improve hand hygiene compliance rate when Kibogora District Hospital was in crisis of money. That consumed much energy to convince the Kibogora Hospital Decision Makers before they approved the budget used in this project. Moreover, time was limited. We used to work during extra hours in order to gain enough time.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

Availing the bucket of water with faucets, the individual alcohol based gel; the hand hygiene guidelines, hanging hand hygiene reminders, training the health workers on hand hygiene and supervising hand hygiene activity improved the hand hygiene in the surgical ward of Kibogora Hospital from 26% to 55.8% from January to March 2017.

P.value was < 0.01 . The H_0 was rejected.

6.2. Recommendations

6.2.1. To Kibogora hospital managers

- Avail enough drying wipe or paper towels
- Improve procurement process in order to avoid stock out of hand hygiene supplies
- Implementing the hand hygiene project in other departments

6.2.2. To surgical ward health care workers

- MDs have to clean hands after touching a patient and after touching patient surroundings.
- Nurses, they have to clean hand after touching a patient surroundings.

6.2.3. To the other researchers

- Determine the rate of hospital acquired infection at Kibogora District Hospital
- To conduct the similar projects in all departments of Kibogora District Hospital and his catchment area.

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APPENDICES

Appendix A: Tarry sheet to collect data on the base line and the outcome

Moment	Opportunity		Hand hygiene activity	
	NURSE	MD	NURSE	MD
Before touching a patient				
Before aseptic procedure				
After body fluids exposure risk				
After touching a patient				
After touching patent Surroundings				
Total				

Appendix B: Tarry sheet to collect data on available reminders and guidelines about hand hygiene

Considered area	Rating 1or 0
Female unit	
Male unit	
Treatment room	
Nursing barrier category C	
Bath room	
Private room 1	
Private room 2	
ICU	
Dressing room	
Private examination	

Appendix C: Tarry sheet to collect data on availability frequency of water

Material	Number of visits	Availability frequency	%
Water of faucets			
Other water container			

Appendix D: Tarry sheet to collect data on availability frequency of hand hygiene items in the surgical ward.

Material	Number of visits	Availability frequency	%
Antimicrobial Soap			
Alcohol based gel			
Drying wipe or paper towel			

Appendix E: Questionnaire to evaluate the knowledge about hand hygiene

INDIVIDUAL CONSENTFORM

My name is NGARUKIYE Thacien. I am a student of Muster in Hospital and Healthcare Administration (MHA) Cohort 3, College of Medicine and Health Sciences, University of Rwanda.

In order to accomplish our studies, a research project must be carried out. We are carrying out a research project on “ **LOW HAND HYGIENE COMPLIANCE IN SURGICAL WARD OF KIBOGORA DISTRICT HOSPITAL** ” as partial fulfillment of the requirements for Master of Hospital and Healthcare Administration.

You have been selected to be asked the questions in this study. I would very much appreciate your participation in this study.

I would like to ask you some questions about hand hygiene and I can also observe your hand hygiene practice at any time. The results of this study will be used to improve or strengthen the guideline related to hand hygiene.

Asking you questions will usually take about 45 minutes to complete. The information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this study is voluntary and you can choose not to answer any question or all of the questions. The study does not involve any obvious risks to you, except we will take a bit of your time as you answer the questionnaire. However, we hope that you will participate in this study since your views are important.

At any time you need clarifications over the research study, direct your questions to: NAMES PHONE NUMBERS SIGNATURE 078..... I would like to participate in this study and I have understood all the explanations given by the interviewers relating to this study.

Signature of Participant _____ Date ___/___/2017

QUESTIONS

1. State the five moments of hand hygiene

2. True or false

Hand hygiene includes:

- a. Hand washing only
- b. Hand rubbing only
- c. Change gloves after each aseptic procedure
- d. Change gloves after septic procedure
- e. Hand washing and hand rubbing can work independently

3. State at list five opportunities that need hand hygiene practice?

4. Choose the right answer

1. The steps of hand washing are:

- a. Eleven
- b. Eight
- c. Five
- d. Varies

2. The steps of hand rubbing are:

- a. Eleven
- b. Eight
- c. Five
- d. Varies

3. True or false

a. Health care workers have to hand rub with the alcohol based gel immediately before performing a clean/ aseptic procedure?

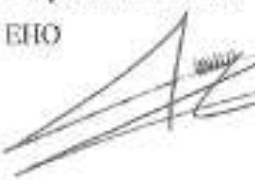
- b. Health care workers have to hand rub with the alcohol based gel immediately before performing a septic procedure?
- c. Health care workers have to hand rub with the alcohol based gel immediately after performing a septic procedure?
- d. a and b are true
- e. b and c are true

Appendix F: Implementation plan

Tasks	Responsible	Feb, 2017				March, 2017			
		Wk 1	Wk 2	Wk 3	Wk 4	Wk 1	Wk 2	Wk 3	Wk 4
Installing the buckets of water									
Acquire the requisition form	MEO								
Requirement of the bucket, faucets and glue	MEO								
Contact the concerned team	MEO								
Confection of buckets of water	MEO								
Fill the water in the bucket	MEO								
Place the bucket of water in each unit of care	EHO								
Availing the essential supplies									
Acquire the requisition book	ISW								
Request the gel alcohol, the antimicrobial soap and the paper towels	ISW								
Prepare and distribute the small sized bottles with alcohol based gel to the health workers	PHN								
Place the antimicrobial soap and the wiping papers near the sources of water	ISW								
Organize the training									
Preparer the training materials	MR								
Preparer and write the pre and post interview									
Identify the participants	MR								
Invite the participants	MR								
Book training room	AO								
Preparer breakfast and lunch	AO								
Start the training	AO								
Avail guidelines and reminders									
Create the team	MR								
Define the activities to be done	MR								
Elaboration of hand hygiene guidelines	MR, EHO								
Search ideas from literatures	EHO								
Communicate the date to meet for developing the guidelines	MR EHO								
Writing the guidelines	EHO								
Send the guidelines to the accreditation committee	EHO								

Modifying the guidelines according to the committee inputs	MR, EHO								
Send the guidelines to the Hospital Direction for the signature	EHO								
Avail hand hygiene guidelines to the surgical ward	EHO								
Multiply the copies of hand hygiene reminders from the guidelines	MR								
Hanging hand hygiene reminders in the surgical ward	MR								
Supervision									
Invite the team	MR								
Communicate the date to meet	MR								
Developing the supervision tools	MR								
Conducting the supervision	ISW								
Communicate the feedback to the team member for the improvement	ISW								
Evaluation									
Collecting data to the root cause	EHO								
Compilation of the data	MR								
Analyzing the data	DM								
Communicate the result to the concerned team	MR								

Appendix G: Guidelines

 MINISTRY OF HEALTH WESTERN PROVINCE NYAMSHEKE DISTRICT KIBOGORA HOSPITAL P.O.BOX. 01RUSIZI	TITLE: HAND HYGIENE GUIDELINES		
	Code/number : HSE – 01 – FAD	Effective Date: March 2017	Revision Date: March 2017
	Department: Surgical ward	Applies to: All Staff, patient and visitors	
	Responsible Person: EHO 	Approval: Names/Title Dr NGENGIYUMVA Nathanael Hospital Director 	

I. PURPOSE:

To prevent self contamination and control the risks of diseases transmission through hands to patients/clients, hospital staff and public by promoting good hand hygiene practice within KIBOGORA Hospital.

II. POLICY STATEMENT(S)

KIBOGORA Hospital shall ensure proper and timely hand hygiene, continuous education, and innovation on hand hygiene to visitors and patients to prevent the spread of infectious disease especially in the surgical ward.

KIBOGORA Hospital Administration shall ensure availability of adequate facilities, tools and essential hand hygiene supplies close to the point of care to clean hand effectively.

KIBOGORA Hospital staff must perform hand hygiene before and after touching a patient, before a procedure, after a procedure or body fluid exposure, and after touching a patient's surroundings

III. Definitions

Hand hygiene: is the act of cleaning hands with the use of water or other liquid, or with the use of soap for the purpose of removing soil, dirt and/ or microorganisms. Hand hygiene is the simplest and most effective measure for preventing health care associated infections.

Infectious disease: is a disease caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi which can be spread, directly or indirectly, from one person to another

IV. Equipment/Forms:

- Hand washing Guidelines
- Posters of effective washing hands steps
- Hand washing facilities and supplies

V. Procedures

- Follow established guidelines on hand hygiene practices
- Allocate hand hygiene supplies in all units of the surgical ward
- To communicate those policies to all staff in service, training and a poster of reminders above sinks or at elsewhere in the surgical ward.

VI.1. Hand washing procedures

- a. The procedure takes 40 to 60 seconds
- b. Push long sleeves above elbows
- c. Remove hand/wrist-worn jewelry, e.g. rings, watches and bracelets
- d. Inspect hand surfaces for cuts/abrasions to protect it.
- e. Turn on tap and, using cold or warm water, wet hands and wrists thoroughly under running water
- f. Keep hands and forearms lower than elbows during washing
- g. Apply sufficient soap to lather or make bubbles all surfaces of hands, fingers and wrists
- h. Rub hands together vigorously for a minimum of 10 to 15 seconds
- i. Pay particular attention to areas under nails, on the dorsum of the hands and between fingers and fingers/thumbs
- j. Rinse well under clean running water until all traces of soap are removed
- k. Dry thoroughly from tip of fingers to wrist with paper towel
- l. Discard paper towel into a proper receptacle bin
- m. Use a dry paper towel to turn off tap if tap is not elbow-controlled
- n. Cover any cuts and abrasions prior to patient care
- o. When exiting the restroom, use a paper towel to open the door if washing facilities is located inside. Waste receptacle should be provided at the exit.

VI.2. Hand rubbing procedures

1. Push long sleeves above elbows
2. Remove hand/wrist-worn jewelries, e.g. rings, watches and bracelets
3. Apply recommended hand disinfection agents to all surfaces of hands, fingers and wrists, sufficient to last a minimum of 20 seconds to dry hands (Alcohol-based (hand) rub).
4. Rub hands together vigorously, covering all surfaces until dry
5. These guidelines must be read in conjunction with Policy of Hand washing.

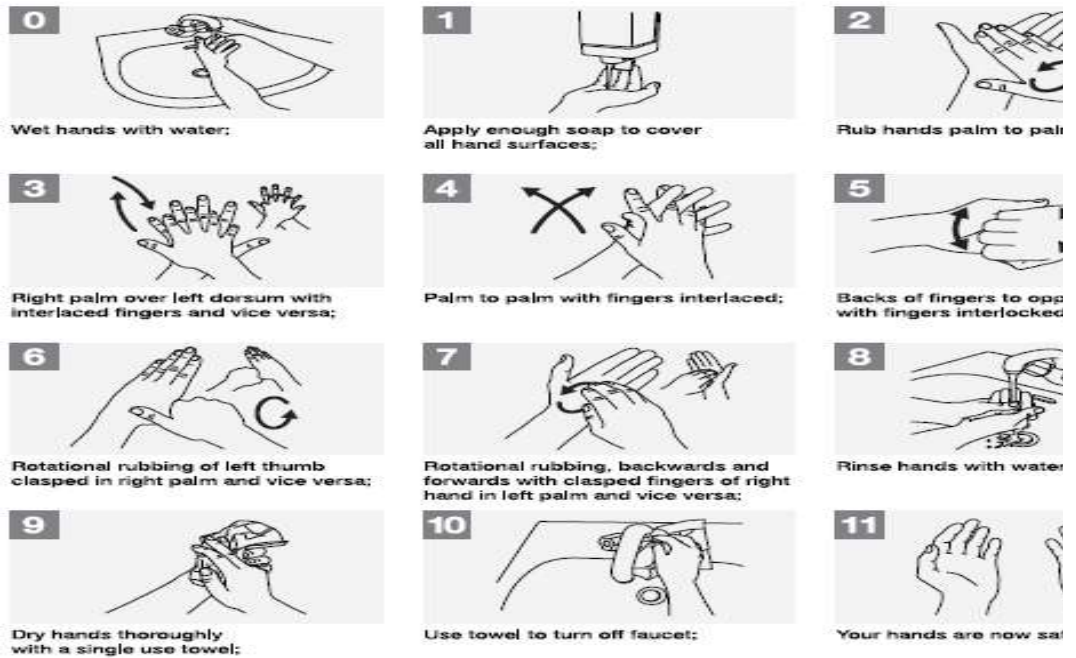
VII. Opportunities where hand washing or hand rubbing is needed

<ol style="list-style-type: none"> 1. Shaking hand 2. Stroking a child's forehead 3. Helping a patient to move around 4. Helping a patient get washed 5. Applying oxygen mask 6. Giving physiotherapy 7. Taking pulse 8. Taking blood pressure 9. Chest auscultation 10. Abdominal palpation 11. Recording ECG 12. Aseptic procedure 13. Brushing the patient teeth 14. Clearing up urines, feces, vomit 	<ol style="list-style-type: none"> 15. Instilling eye drops 16. Skin lesion care 17. Wound dressing 18. Subcutaneous injection 19. Catheter insertion 20. Opening vascular access system or draining system 21. Secretion aspiration 22. Preparation of food 23. Preparation of medication 24. Preparation of pharmaceutical products 25. Preparation of sterile material 26. Manipulating any fluid sample 27. Endotracheal tube insertion and removal 	<ol style="list-style-type: none"> 28. Handling waste (Bandage, napkin, incontinence pads) 29. Cleaning of contaminated and visibly soiled materials or areas (soiled bed linen lavatories, urinal, bed pan, medical instruments) 30. Changing with the patient out of the bed 31. Perfusion speed adjustment 32. Monitoring alarm 33. Holding a bed rail 34. Leaning against a bed 35. Holding a night table 36. Cleaning the bedside table
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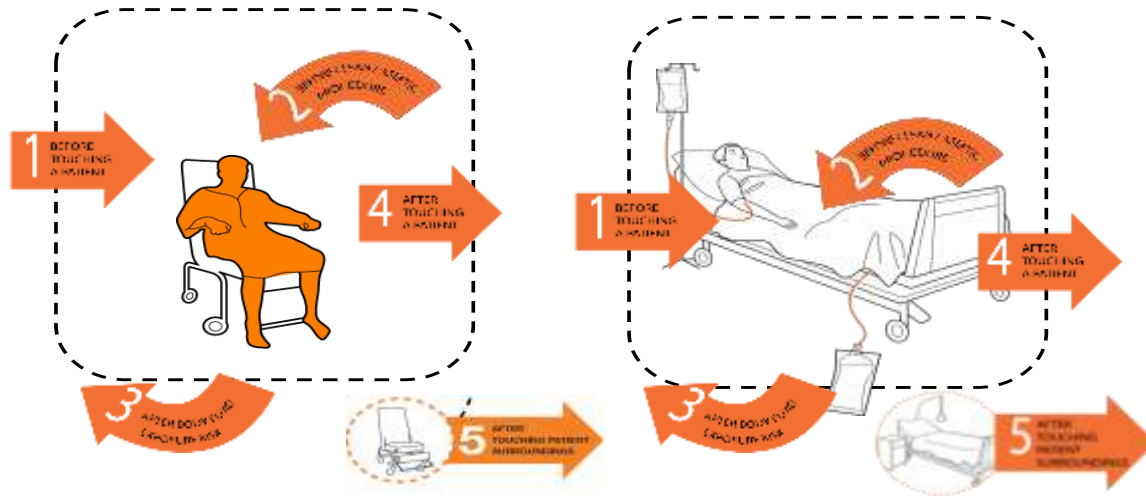
Reminder: How to hand rub



How to handwash



The 5 Moments apply to any setting where health care involving direct contact with patients takes place



15

NB:

- ✓ Chipped nails polish, and or extenders are not allowed
- ✓ Fingernails shall not extend or past fingertips and artificial nails are not permitted for nursing staff working with individuals who are at high risk for acquiring an infection.

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KIBOGORA HOSPITAL

NYAMASHEKE DISTRICT

B.P. 01 Rusizi, Tél. 0788341462 / 0789739401
Website: www.kibogora.org . E-mail:kibogorahospital@gmail.com

Date: 03/07/2016

Ref:.....

To: Mr NGARUKIYE Thacien

RE: Agreement to conduct a quality improvement project

Dear Sir,

With reference to your letter received on June the 30th , 2016 regarding the "**Request to conduct a quality improvement project,**" we would like to inform you that your request have been favorably accepted at KIBOGORA Hospital from 1st July up to 31st August 2016.

In fact, the service mentioned in your letter for helping your students will be informed about this training in advance.

Furthermore, we wish to welcome to KIBOGORA Hospital.

Yours faithfully,

Dr. NSENGIYUMVA Nathanaël
The Acting Director of KIBOGORA Hospital



CC:

- Administrator of Kibogora Hospital
- Human resources manager/KD Hospital

We serve God who Heals and who gives eternal life / Dukorera Imana ikiza kandi igatanga ubugingo