

Hand Hygiene Practices Among Health Care Workers

By

Manpreet Kaur

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2015-2017



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

Hand Hygiene Practices Among Health Care Workers

By

Manpreet Kaur

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2015-2017

Sterling Hospital, Vadodara



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Manpreet Kaur** of MBA Hospital Management from The IIHMR University, Jaipur has undergone internship training at **Sterling Hospital, Vadodara** from February 10, 2017 to May 10, 2017.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.

(Col.) Dr. Ashok Kaushik

Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Date: 13rd May, 2017

TO WHOMSOEVER IT MAY CONCERN

Sterling Hospital Vadodara, a unit of Sterling Add Life India Private Ltd a premier Company in the healthcare sector is a 192-bedded multi-specialty tertiary care hospital.

This is to certify that **Dr. Manpreet Kaur**, student of IIHRM University, Jaipur has completed her summer training for 3 months in Medical Administration department at Sterling Hospital, Vadodara from **10th February 2017 to 10th May 2017**.

For Sterling Add Life Pvt. Ltd.

Unit: Sterling Hospital, Vadodara

*C10F
13/5/17*

Jagrati Raizada
Zonal Manager HR

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“Hand Hygiene Practices Among Health Care Workers”** submitted by **Dr. Manpreet Kaur** Enrollment No. **IIHMR-U/01/2015-17/0298** under the supervision of **Dr. Ashok Kaushik** for award of **MBA Hospital Management** of IIHMR University, Jaipur carried out during the period from **10th February 2017 to 10th May 2017** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

THE IIMMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled "**Hand Hygiene Practices Among Health Care Workers.**"

Manpreet Kaur

Signature of student

Acknowledgement

Nothing really can be accomplished alone. It's the direction, guidance, involvement and support of more than few that results into realization.

My institute –Institute of Health and Hospital Management Research (IHMR), Jaipur, all the faculties at IIHMR and its education deserves the foremost appreciation for providing me the opportunities to understand my individual capabilities. I acknowledge the contribution of Dr. Ashok Kaushik Pofesser and Dean Academic and Student Affairs at IIHMR University, Jaipur in the completion of project and constantly encouraging me.

I am indebted to Mr. Hemant Bhatnagar (Centre Head of Sterling Hospital ,Vadodara) and Dr. Vishal Zinzuvadiya (Medical Superintendent) for their valuable guidance and help despite of their busy schedule.

I extend my sincere thanks to Mrs. Jyoti Patankar (Microbiologist) for the cooperation and guidance during the two months as this study is an accomplishment due to her timely help and constant support.

I am also grateful to the employees of the Human Resources,Department Heads and staff for cooperating with me inspite of their hectic schedule and to accomplish my task.

Regards

Dr. Manpreet kaur

Table of contents

S.No.	Title	Page No.
(A)	List of abbreviations	
(B)	Abstract	
(C)	Section 1: Hand Hygiene among HCWs	
	Introduction and objective	
	Review of Literature	
	Historical Existance of Hand Hygiene	
	How Pathogens are transmitted by hands	
	Factors hindering Hand Hygiene	
	How to practice Hand Hygiene?	
	Why observe Hand Hygiene Practices ?	
	How to observe hand hygiene Practcies?	
	Poor Hand Hygiene Compliance	
	How to Improve Hand Hygiene Practcies	
	Section 2: Methodology	
	Study setting and design	
	Surveillance	
	Section 3: Effect of HHC on HAI	
	Section 4: Hand Hygiene Knowledge among HCWs	
	Observation of WHO 5 Moments of HH	
	Moment Specific HHC Rates	
	HHC among Doctors & Nurses	
	Section 5: Discussion	
	Conclusion	
	Summary	
	Recommendations	
	Learning Points	
(D)	References	
(E)	Annexure	

List of Tables and Figures

Tables

Table1:- shows HH Knowledge among HCWs

Table 2:- shows WHO Five moments for Hand Hygiene practices data amongst HCWs

Table 3:- shows HH Adherence rate Amongst Doctors and Nurse

Figures

Figure1:- shows HH Knowledge among HCWs

Figure 2a : shows Observation of the ‘ WHO Five Moments of Hand Hygiene’ among HCWs

Figure 2b: shows WHO 5 Moments of Hand Hygiene practices data among HCWs

List of abbreviations

CCU-Critical care unit

GN-General Ward

HAI – Healthcare Associated Infections

HH-Hand Hygiene

HHC-Hand Hygiene Compliance

HCWs-Health Care Workers

ICCU-Intensive critical care Unit

MICUs-Medical intensive care units

OTs-Operation theatres

RMO-Resident Medical Officer

SICU-Surgical intensive care unit

WHO-World Health Organisation

Abstract

Background

Health care-associated infections are found to be a source of morbidity as well as mortality. Hand hygiene is known as most effective protective measure.

Objective

To determine Hand Hygiene Knowledge among HCWs .

To determine " WHO 5 Moments of Hand Hygiene." Among HCWs.

To determine Hand Hygiene Compliance among Doctors and Nurses.

Method

A descriptive cross sectional study was conducted at Sterling Hospital, Vadodara .The data was collected from 400 HCW to measure hand hygiene Compliance rate. Data was collected through self-made questionnaire and performa to assess the knowledge and compliance rate concerning with hand hygiene among HCWs.

Results

It was found from study that majority of HCWs having good knowledge regarding hand hygiene (88%).The overall hand hygiene compliance rate was found to be 47.50%. Hand hygiene compliance rate found to be highest after patient contact (66.67%), followed by before touching a patient (53.18%) , then After exposure to body fluid (48.35%) , hand hygiene compliance rates were found to be lowest before aseptic procedures (25.27%) & after touching patient surroundings (25.17%).The study also showed that nurses exhibited a little better HHC (49.90%) as compared to doctors (42.53%).

Conclusion

From study, Hand hygiene compliance rate was found to be inadequate just 47.50% even though healthcare workers demonstrated good knowledge regarding hand hygiene.

Keywords: Hand Hygiene , Infection Control, HCWs, WHO, Sterling hospital.

Hand Hygiene among HCWs



Introduction

HH is regarded as the most significant and effectual universal preventive method for infection control in health care units . Proper hand hygiene compliance is related with the reduction in Hospital Acquired Infections (HAI) and results in the patient safety. Although hand hygiene procedures and methods are found to be simple , but compliance of hand hygiene guidelines and protocols is found to be poor globally.

- Hand hygiene refers to handwashing, alcohol-based handrub, antiseptic solutions hand washing, or surgical handwashing. Hand washing implies washing hands with water and simple soap.
- Alcohol-based handrub is basically an alcohol-consisting solution used to wash hands which leads to reduction in number of pathogens..
- Washing hands under water with soap or detergents consisting an antiseptic agent is called Antiseptic hand washing .
- An antiseptic hand wash or antiseptic hand rub which is done prior to a surgical procedure to reduce transmission of an infection is called Surgical hand hygiene .

HAI's Impact and Burden

Impact of HAIs on health care

- Leads to increased morbidity as well as mortality
- Leads to prolonged length of hospital stay
- Enhance financial burden
- Personal costs to the patient as well as family

HAI Burden in the US (2007) – 38% mortality = 99,000 deaths – Incidence: approximately 6%,

1.8 million people affected – Estimated annual cost = \$4.6 billion

Objective

To determine Hand Hygiene Knowledge among HCWs .

To determine " WHO 5 Moments of Hand Hygiene." Among HCWs.

To determine Hand Hygiene Compliance among Doctors and Nurses

Review of literature

Health Care Associated infections are thought to be a very dangerous problem in health care settings as they are associated with prolonged length of hospital stay, increased mortality, morbidity and excessive burden on area of health care. Poor compliance of hand hygiene among HCWs is a common type of medium for the transient of various HAIs. So infection control is an essential to shrink high levels of HAIs and proper HH is thought to be the most effective universal preventive measure for infection control.

Ignaz Semmelweis (1 July 1818 – 13 August 1865) was a Hungarian doctor ,now he is known as author of strategies completed for contamination control. He is known as the "hero of moms", He found that the occurrence of "childbed fever" or "puerperal fever " could be fundamentally made low by the correct HH in obstetric facilities. In mid-nineteenth century , puerperal fever observed to be exceptionally normal among healing facilities and it was deadly in nature. Ignaz recommended that performing hand washing with germ-free arrangements in 1847 while working in Vienna General Doctor's facility, where specialists' wards were found to have 3 times higher mortality when contrasted with midwifery wards

Hand cleanliness is viewed as a most imperative technique to maintain a strategic distance from transient of pathogens and to lessen the rate of HAIs. Despite the basic techniques of hand cleanliness, adherence with HH among social insurance suppliers is observed to be low as 40%. To manage this issue, are endeavors are persistently to be made to perceive useful and maintainable measures by WHO. One essential technique is proposition of idea of "My five minutes for hand cleanliness" by WHO. These 5 minutes to be utilized for hand cleanliness incorporate the activity before to pt contact, before conveying an aseptic and clean methodology, after presentation to dangerous body liquids, in the wake of reaching an a patient, and subsequent to touching the surroundings of patient. This idea

selected to propel preparing ,comprehension, checking, and revealing hand cleanliness among HCWs in human services settings.

Medical caretakers observed to be contain the biggest % of the HCWs and furthermore known as "core of the human services framework". As medical attendants invest more energy with in doctor's facility near patient so they contact understanding more when contrasted with some other Human services Specialists, their adherence to hand washing strategies ,methodology and rules has all the earmarks of being more imperative in diminishing the travel of the maladies amongs patients. Because of pivotal part of attendants in care of patient , they should have essential and well-run data related with hand cleanliness.

The essential of social insurance world is constantly associated with an extensive variety of security issues. However, in any case progresses in medicinal services framework , patients dependably experience the ill effects of unintended harm in healing facilities as indicated by (Devani et al. 2011).

A standout amongst the most real, present discourses in social insurance conveyance in doctor's facilities is medicinal services related diseases (HAI), now and again likewise called clinic procured contaminations (Mani et al. 2010; Momen and Fernie 2010) or nosocomial contaminations, which is 'any disease that creates therefore of treatment in healing center in a patient' as indicated by (Minnaar 2008, 2).

Hand cleanliness was thought to be a pivotal consider decreasing doctor's facility gained contamination amid the underlying period of medicinal services frameworks as per (Akyol 2007; Ott and French 2009). The battle with HAI was observed to be begun when the Hungarian obstetrician, Ignaz Semmelweis (1847), found that puerperal fever was watched more in a maternity ward, where doctors gave care to ladies in labor, when contrasted with on the ward where birthing specialists helped conveyances in labor room. He watched that doctors were sulling their hands while performing examination techniques and afterward later on looking at of ladies without hand washing. He was the first to watch the significance of hand washing in keeping the transmission of contamination (Akyol 2007; Meers et al. 1992; Trampuz and Widmer 2004). Similarly huge was the work of Florence Songbird amid the Crimean war, when she was called for giving essential general wellbeing in a military doctor's facility in Scutari in 1854. Her intercessions to advance

individual cleanliness, cleanliness in the healing facility condition, nourishment and living conditions brought about a reduction in mortality. She was one of the main who perceived the connection between disease control and nursing as indicated by (Meers et al. 1992; Minnaar 2008; Smith and Lokhorst 2009).

Despite the fact that the degree of HAI issues and adherence to disease control arrangements, hand cleanliness rehearse remained incompetently low agreeing to (Takahashi created nations once in a while surpass over half (Mani et al. 2010; Maxfield and Dull 2011; Ott and French 2009). Thinks about demonstrate that in the USA it is half, in Switzerland it is 42% and in the it is UK 32% (Takahashi and Turale 2010). Along these lines, poor consistence prompts high grimness and mortality. In the USA, there are roughly 2 million individuals who get HAI and 88000 - 99000 deaths are because of HAI yearly. Additionally, HAI influence almost 10% of hospitalized patients and present a noteworthy test in social insurance offices. Thus, yearly medicinal costs have been expanded in the USA to roughly \$ 4.5 billion (Maxfield and Dull 2011; Smith and Lokhorst 2009; Trampuz and Widmer 2004).

Momen and Fernie (2010) expressed that in Canada close around 8000 patients bite the dust from HAI yearly. Canadian doctor's facilities utilize around \$100 million every year for treating patients with HAI. European nations additionally observed to be have a high rate of HAI: in the UK, for instance, every year around 9% of individuals conceded because of HAI; this is one of the most astounding rate in Europe (Nazarko 2009). The normal number of passings because of HAI among conceded patients in the UK is 500 patients every year as indicated by (Smith 2009; Takahashi and Turale 2010). The circumstance is significantly more most noticeably awful in creating nations, where assets and in addition offices are restricted. As indicated by Ogunsola and Adesiji (2008), the outcomes from a review directed crosswise over 14 creating nations to survey the issue extent of HAI, expressed an extensive variety of nosocomial disease, from 3 – 13.4% in an individual doctor's facility. then again, Devnani et al. (2011), from another review led in creating nations, additionally detailed a higher rate of HAI, around 6 – 27%. Sadly, more than 1.4 million individuals overall create genuine sickness from HAI amid their hospitalization time (Devnani et al. 2011; Momen and Fernie 2010).

Hand cleanliness strategies among Human services Workers is thought to be the most noteworthy and savvy technique to forestall HAI, a view perceived universally (Momen and Fernie 2010; Ott and French 2009; Takahashi and Turale 2010). The WHO intensely underscore the basic requirement for hand cleanliness amid medicinal services conveyance, to avoid conceivable disease and came about inconveniences. In this manner, the 'Spotless Care is the Sheltered Care' program, created by WHO in 2005 as a piece of 'First Worldwide Patient Security Challenge'. This offers new rules close by cleanliness understanding, preparing, perception and also execution detailing in social insurance units.

Hand washing utilizing cleanser and water observed to be valuable to create individual cleanliness from antiquated circumstances. In spite of the fact that a connection between hand washing and the travel of infection was demonstrated in the century 1800's.

A review was done in 2011 in fundamental Emergency unit a Kuwaiti clinic named Mubarak Al-Kabir Educating Healing facility,. This was a tertiary care clinic comprises of a 500-beds. It was an imminent, interventional think about which was directed to quantify the effect of HH consistence on Healing center Procured diseases.

Information was gathered by utilizing WHO rules and conventions. Information was gathered for both pre-mediation and additionally post-intercession for hand cleanliness adherence rate and HAIs.

From the review, Hand cleanliness adherence rates of pre-and post-mediation were observed to be 43% and 61.4%, correspondingly. It was likewise found that that doctor's facility medical caretakers exhibited over half to the HH rehearses than specialists 45%.

From the review, a striking diminishment in the rate of doctor's facility procured diseases found as lessening from 37.2% to 15.1% in pre-and post-mediation periods, correspondingly. This review was led to study that utilization of medicinal gadgets and rate of healing center procured contaminations previously, then after the fact the intercession systems and demonstrate coordinate part of HH in the counteractive action of clinic obtained diseases.

How micro organisms get transferred by hands?

Micro organisms causing HAIs get transferred from one to another patient via HCWs' hands generally require following steps

- i. Micro organisms should be present on the patient body and its surroundings.
- ii. Micro organisms should be get transfer to the hands of Health Care Workers.
- iii. Micro organisms should be able to survive on hands of Health care givers for some time.
- iv. Hand hygiene is deficient or truant
- v. The hands of the health care provider infected with micro organisms should transfer micro organisms to patient.

Purpose of Hand Hygiene

- It promotes a culture of safety and quality of care
- Reduction in HAIs such as
 - Ventilator Associated Pneumonia
 - Central venous catheter associated blood stream infections
 - Urinary Catheter associated infections
- Reduction in risk of outbreaks
- Reduction in transmission or acquisition of Multi Drug Resistant Organisms

Factors hindering proper hand hygiene compliance

Factors responsible for hindering proper hand hygiene are following:

- Knowledge may be insufficient regarding procedures, methods, protocols and techniques for hand hygiene.
- Inconvenient placement of sinks/basins or non-availability.
- Thinking that if using gloves, additional HH is not required.
- Lack of time for HH, due to workload, emergency and understaffing
- HH agents may cause skin irritation and dryness
- Lack of positive role models, motivation, rewards etc.
- Not aware regarding the risk of poor hand hygiene

- Lack of scientific information showing a impact of improved HH on HAI rates and poor attitude of staff.
- The wearing of jewellery, rings and watches also hinder accurate hand hygiene practices.
- Fingernails, nail polish and artificial nails also hinder proper hand hygiene.

Why should you clean your hands?

Appropriate hand hygiene is highly important to reduce risks of cross infection. Hence hand hygiene matters a lot.

- To provide protection to the patient from dangerous pathogens present on your hands or on his/her skin.
- To provide protection to yourself as well as the health-care surroundings from dangerous germs

How to practice Hand Hygiene in health care settings?

Hand hygiene may be carried out

- with an alcohol based handrub
- with soap and simple water

Hand hygiene effectiveness is impacted by

- Technique used
- Product used

Hand Rubbing using an alcohol based Hand rub

The most effective method for accurate HH is considered to be an alcohol-based handrub. The WHO Guidelines on Hand Hygiene in Health Care area says that when an alcohol-based hand rub must be used as a preferred means for performing routine hand hygiene when it is present

Adequate ABHR generally requires: – 20–30 seconds.

Alcohol-based hand rub advantages:

- Results in more reduction in germs than soap and water
- more cost effective.
- Less time requirement to use
- Results in less skin irritation & dryness
- Can be made readily accessible to HCWs

Alcohol-based handrubs disadvantages:

- Alcohol is found to be ineffective against bacterial spores. Washing hands with soap and water should be preferred for removing bacterial present on hands
- Alcohol is poorly effective against non-enveloped viruses e.g. polio, rotavirus, Hepatitis A etc.. Thus in virus outbreaks, it is recommended to use ABHR, until hands consists of visibly dirt or soiled – then only soap and water HH is recommended.
- Alcohol is found to have low activity against protozoa and tropical parasites . Hence Hand washing is preferred.

Precautions to be taken during use of ABHRs

- Alcohol-based handrubs must be put away far from high temperatures or flames, according to tenets of National Fire Protection Agency proposals.
- In Europe, where liquor based handrubs utilized broadly for a long time, the announced rate of flames identified with such items observed to be to a great degree low.
- In the U.S., a report of a blaze terminate that happened accordingly of an unordinary arrangement of occasion was accounted for , where a medicinal services laborer applying a liquor gel to her hands, then immediately evacuating a polyester seclusion outfit, and touching a metal entryway before the liquor dissipated. Evacuating the polyester outfit created a lot of friction based electricity that delivered a capable of

being heard static start when she touched the metallic entryway, lighting unevaporated liquor staring her in the face.

Hand Washing

Hands should be washed with soap and water when they are visibly dirty or soiled with blood or body fluids, when exposure to potential spore-forming organisms is high suspected or proven, or after using the laboratory.

- Adequate hand hygiene with water and soap generally requires 40-60 seconds
- Average time usually adopted by health-care workers: <10 seconds

Hand washing policy

1. Prior to and after handling patient's particular that are infected.
2. Prior to and after performing aseptic techniques and procedures
3. After handling contaminated material or exposure to blood and body fluids.
4. On arrival as well as prior to departure from duty.
5. Before and after using bathroom, before going to cafeteria and after changing clothes.
6. Before and after touching wounds and dressing of a patient.
7. Before preparing or serving food tray.
8. After touching hair, forehead, chin, nose, mouth or handkerchief.
9. Prior to and after contact with patients who are susceptible to infections.
10. After coming in contact with contaminated sources like sputum collection pots, urine bags, suction bottles etc.
11. Before wearing and after removing used gloves. Gloves not be used as a substitute to perform hand hygiene.
12. Attendants and visitors to specialized areas should make aware regarding the importance of hand hygiene and must be encouraged to do it correctly.

Equipment

1. Sink with elbow operated or not elbow operated taps
2. Liquid soap or antiseptic solution in dispenser near bed
3. Disposable Paper, napkins and towels in dispenser.

4. Waste container operating with foot pedal

Hand washing procedure

1. Roll up sleeves above elbow
2. Turn on the taps with the help of elbows as it reduces reduces the risk of infectivity.
3. Wet hands as well as fore arms under running water.
4. Use elbow to depress the arm of the Dispenser, and allow a sufficient quantity of solution onto the hand to generate visible lather on all surfaces of hand
5. Allow the water to run constantly and do not allow hands to touch any part of the taps or sink while performing hand hygiene.
 - a) Lather hands using a friction motion making sure that every part of the hands and wrist are covered with leathery foam.

b) Seven Steps of hand hygiene

1: Rub Palm to palm

2: Rub palm of right hand over back of left hand and the other way around

3: Join fingers and rub hands together

4: Rub the Back of fingers of both sides

5: Rub the thumbs in a pivoting way

6: Rub the fingertips on palm of both hands

7: Rub both Wrists

7 STEPS TO HANDWASHING



1 Rub palms together



2 Rub the back of both hands



3 Interlace fingers and rub hands together



4 Interlock fingers and rub the back of fingers of both hands



5 Rub thumb in a rotating manner followed by the area between index finger and thumb for both hands



6 Rub fingertips on palm for both hands



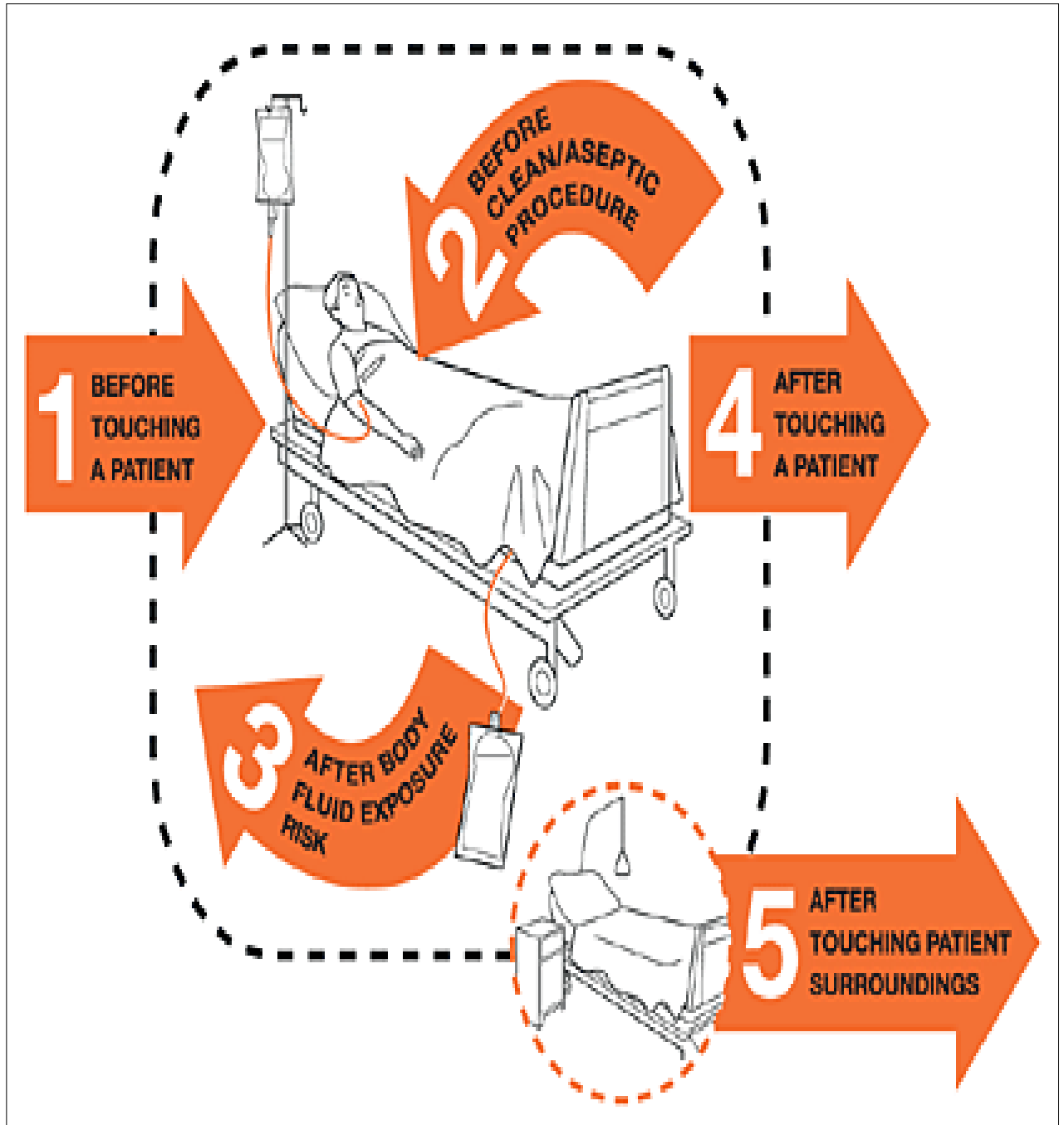
7 Rub both wrists in a rotating manner.

The Golden Rules for Hand Hygiene

- Hand hygiene must be performed precisely where you are conveying social insurance to patients (at the purpose of-care) .
- During human services conveyance, there are 5 minutes (signs) when it is fundamental that you perform hand cleanliness ("My 5 Minutes for Hand Cleanliness" approach)
- To clean your hands, you ought to lean toward hand rubbing with a liquor based detailing, if accessible. Why? Since it makes hand cleanliness conceivable comfortable purpose of-care, it is speedier, more successful, and better endured.
- You ought to wash your hands with cleanser and water when obviously dirty and after contact with a patient/persistent condition with *C. difficile*.
- You should perform hand cleanliness utilizing the suitable method and time span.



WHO 5 Moments of Hand Hygiene



1: Before touching a patient

Examples showing direct contact are as following:

a) Before supporting a patient in personal care activities like:

- to help in take a bath
- to assist to eat
- to move
- to get patientt dressedup, etc

b) Before inserting non-invasive treatment like :

- applying oxygen mask
- providing physiotherapy

c) Before stroking forehead and shaking hands etc.

d) Before non-invasive examination like:

- checking pulse,
- blood pressure,
- recording ECG etc.

2: Before clean/aseptic procedure

Examplng showing clean/aseptic procedures are following:

a) Before

- instilling eye drops in eyes of patient
- brushing teeth of patient
- examining mouth,ear, nose with or without instrument
- inserting suppository or pessary
- performing a digital vaginal or rectal examination
- suctioning mucous etc

b) Before

- applying ointment on vesicle,
- dressing a wound with or without instrument
- performing a percutaneous injection or puncture

c) Before

- Inserting invasive medical device such as
nasogastric tube
endotracheal tube
nasal cannula
percutaneous catheter
urinary probe
drainage etc.
- Disrupting any circuit of an invasive medical device for
food
medication
drain
suctioning
monitoring purposes etc
- Before
preparing food
medications
sterile material
pharmaceutical products etc

3: After body fluid exposure risk

Examples showing body fluid exposure risk are followings

a) As contact takes place with a mucous membrane or with non-intact skin

b) After

- a percutaneous injection or puncture takes place
- disrupting and opening an invasive circuit
- inserting an invasive medical device such as

drain

vascular access

catheter

tube etc

c) After removal of an invasive medical device

d) After removal of any protection like

napkin

gauze

dressing

sanitary towel etc

e) After

- Handling of an organic sample
- clearing excreta and any other body fluid which is infectious
- after cleaning any contaminated surface and soiled material (soiled bed linen, dentals, instruments, urinal, bedpan, lavatories, etc).

4: After touching a patient

Examples showing direct contact are following

a) After supporting a patient in personal care activities like:

- to help in take a bath
- to assist to eat
- to move
- to get patientt dressedup, etc

b) After non-invasive treatment like :

- application of oxygen mask
- providing physiotherapy
- changing bed linen of patient etc.

c) After stroking forehead and shaking hands etc.

d) After non-invasive examinations like:

- checking pulse,
- blood pressure,
- recording ECG etc.

5: After touching patient surroundings

Examples showing contacts with patient surroundings:

a) After doing maintenance activities such as

- changing of bed linen of the patient out of the bed
- clearing of bedside trolley and table
- holding railings of bed etc.

b) After performing a care activity such as

- adjusting a monitoring alarm
- perfusion speed alterations etc

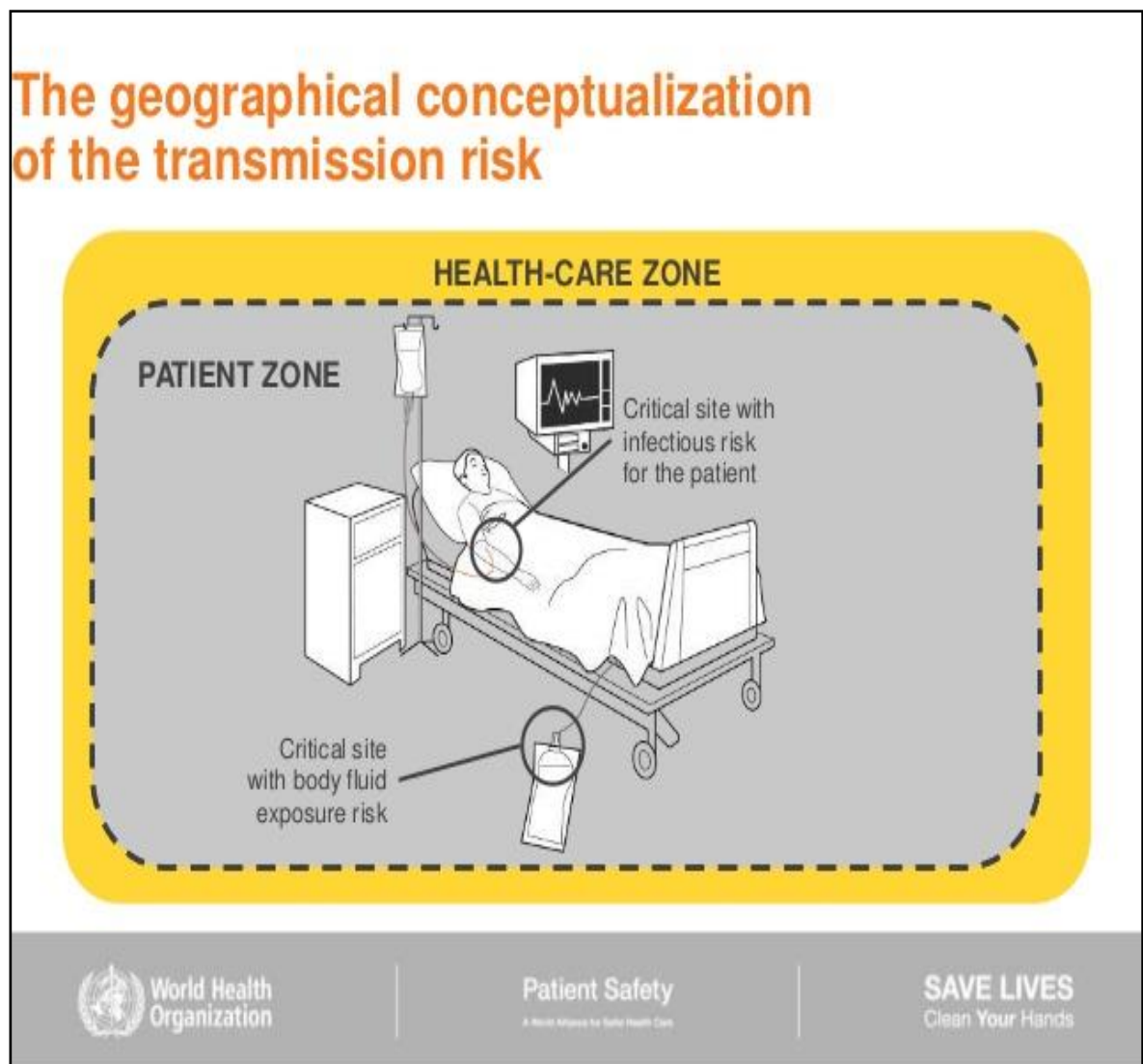
c) After having contacts with surfaces or inanimate objects like

- leaning against a bed, or a night table
- after touching curtains
- after touching trolley etc.

Application of “WHO 5 Moments for Hand Hygiene” in workplace

The hand hygiene is very connected with the exercises performed by medicinal services specialists inside the topographical region encompassing a patient. In the event that attention is continued a solitary patient, the medicinal services related condition can be isolated into two suitable land territories which are as taking after

- The patient zone
- The health-care area



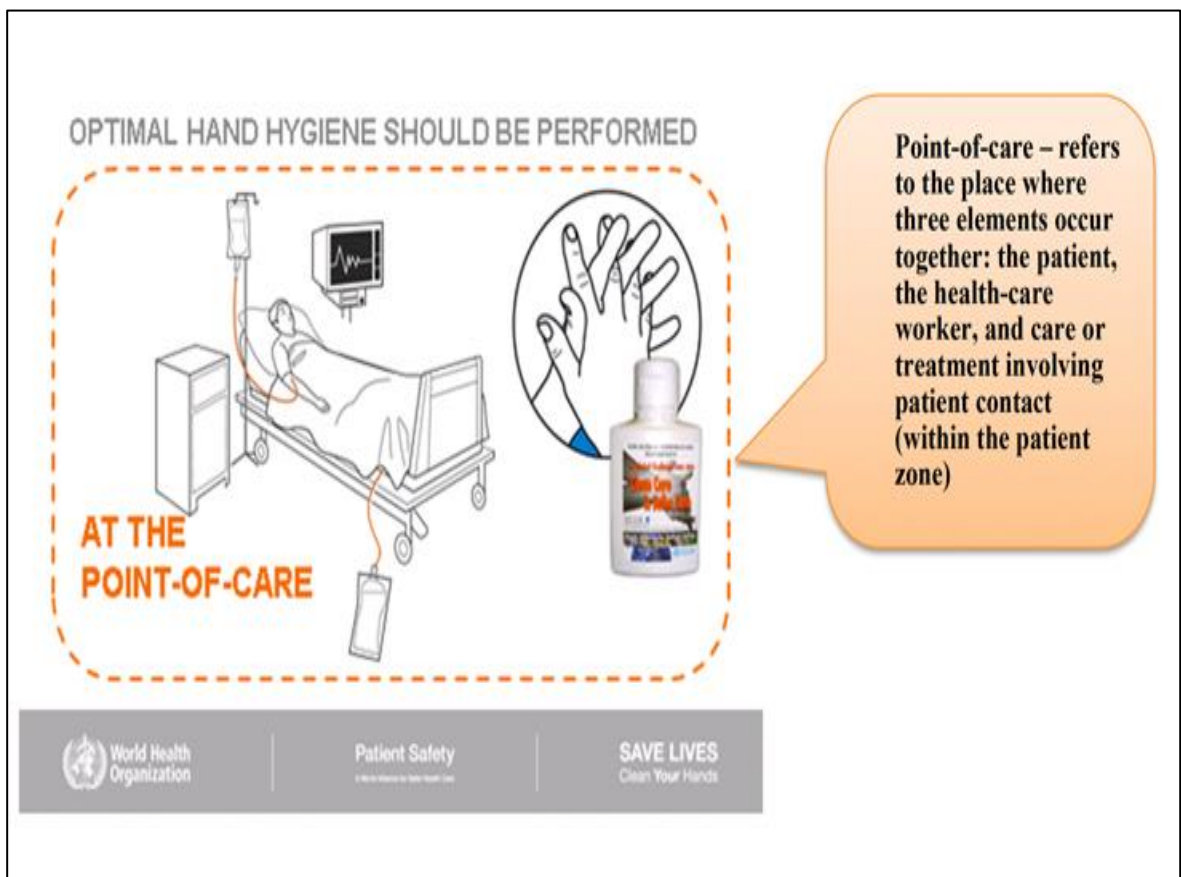
1. The patient zone

The "WHO 5 snapshots of hand cleanliness" are essentially worried with the contacts which happens inside the patient zone while conveying medicinal services in the part. The patient zone fundamentally comprises of a patient and close surfaces and things that are immediately and totally given to understanding. It incorporates the patient and prompt surroundings of A. It fundamentally comprises of the patient and in addition lifeless destinations in addition to surfaces which are reached by patient or in direct physical contact of the patient like the bed rails, table close to bed, bedding material, implantation tubings, bed side trolley and further restorative types of gear. It comprises of surfaces which normally interacted with human services specialists while giving consideration to the patient like screens, cautions, recording instruments, handles and catches, and different surfaces.

The patient's zone is not considered as a static geological region like the range around the patient checking his informal lodging furniture and hardware and so on, yet the part encompassing the patient and closing patient anytime. It alludes to the patient into the human services range, where he or she stays and goes.

This model is not limited to an out of commission patient, but rather likewise actualized similarly to those patients who are sitting in a seat or who are being dealt with by physiotherapists in a typical treatment range. Accordingly the idea of "My 5 snapshots of hand cleanliness" applies additionally to condition that recognize a "transient" patient zone (for instance: while assisting the patient at the can). The patient territory may change observably as per the setting, the length of healing facility stay, the sort of care to be conveyed to the patient and so forth.

Quiet surroundings are usually contaminated by the patient's own verdure. therefore, any thing considered for reuse, must be prior disinfected whil entering and leaving the patient environment. Any thing which is not normally committed to patient care and ordinarily moved to social insurance zone ought not be measured as patient environment, notwithstanding of their instantaneousness to the patient (for e.g. the modernized or paper chart,pens, pencils, and so on). Individual effects are thought to be a piece of patient zone since they couldn't be removed from it. Different things and surfaces which are immediately presented to the patient like surfaces of washroom shared by numerous individuals, a table of physiotherapy or radiology division must be disinfected after the patient left office and so on.



2: The health-care area

The health-care zone comprising of the considerable number of surfaces in the social insurance unit outside the patient zone of patient An, i.e. counting different patients and their particular patient zones and the more extensive environmen of healt caret. In the greater part of social insurance settings, the medicinal services region is characterized by

the nearness of different and plenteous microorganisms, tallying multi-safe germs. Performing hand cleanliness by taking after the 5 snapshots of hand cleanliness while providing consideration to patients in their respective patient zone gives protection to the more extensive medicinal services condition from defilement of germs from patients.

Indications for use of Gloves

Hand hygiene practices are independent on use of gloves whether sterile or non-sterile.

Glove use neither alters nor replaces the need of hand hygiene:

- Hand hygiene should be performed before putting on gloves and immediately after removing gloves



Prevent Cross-Contamination with Proper Glove Removal Techniques



1. Remove first glove by peeling it off from top to bottom



2. Peel off second glove from the inside



3. Throw them away immediately



4. Wash your hands thoroughly

CENTURY

- Gloves must be detached to follow HH while providing care to a single patient as per indicated by WHO 5 Moments for Hand Hygiene.
- Hand hygiene products should not be used on gloves.
- Lengthened and random use of gloves must be ignored as it leads to skin sensitivity or adverse reaction.

Why observe hand hygiene practices?

- The motive of observing hand hygiene is to know the degree of compliance with hand hygiene practices by healthcare workers.
- The results of the observation help to identify the most suitable interventions. The main focus should include hand hygiene with 3 aspects:
 - Hand hygiene Promotion
 - Hand hygiene Education
 - Training for hand hygiene practice
- The results of observation can be reported to health-care workers, either to explain and educate the current practices of hand hygiene in their healthcare setting and focus should also be put on to highlight the aspects that need improvement, or to compare baseline with follow-up data to show possible improvements resulting from the promotion efforts

How to observe hand hygiene?

There are three main methods for measuring hand hygiene performance, each of which has advantages and disadvantages:

- Directly observing
- Measuring product use
- Conducting surveys

These three are explained in detail in following section:

Direct Observation

Coordinate perception of the hand hygiene execution of social insurance laborers is thought to be and set apart as "best quality level" of measuring hand cleanliness consistence.. Perception permits to notice which items are being utilized for performing hand cleanliness, the watchfulness of purifying, the devices and strategy being utilized for drying hands in the wake of performing hand cleanliness, use of gloves, and whether the staff individuals are taking after hand washing minutes for hand cleanliness when there is

an open door present to do as such. This technique helps eyewitnesses to watch who is and who is not taking after to rules and to give opportune input when change is required to be finished. Coordinate perception likewise permits human services suppliers to weigh up office particular elements that may impact adherence to hand cleanliness rule . Interestingly, coordinate perception might be work requesting and expensive, so it requires the watchful choice and preparing of the individuals will's identity going to study and record required information. The most greatest inconvenience of direct perception technique is that the conduct of individuals may get affected who know they are under perception. On the off chance that you settle on a choice to decide adherence to hand cleanliness rules by utilizing the immediate perception strategy, you initially should need to choose to whom you need to be watch; will's identity conducting the perceptions, when, where, and how regularly to screen. The triumph of this strategy would be depend up on the right consequences of adherence rates, the vigilant preparing of information authorities, utilization of fathomable, straightforward structures.

Measuring Product Use

Estimation of the measure of fluid cleanser, liquor based hand rub, and paper towels that are being utilized by medicinal services specialists and estimation of the recurrence with which given items are utilized—is an aberrant technique for measuring adherence to hand cleanliness rule by staff individuals. Measuring item utilize strategy is more affordable than direct perception technique. It doesn't require many staff individuals or a great deal preparing as required in direct perception technique. Measuring item utilize can be set aside a few minutes and in wherever effortlessly. It additionally permits to take after patterns in your association over the long run. Furthermore, on the grounds that measuring item utilize is unremarkable, there are less opportunities to adjust conduct of social insurance laborers under perception .While then again, measuring item utilize does not demonstrate whether human services specialists are performing hand cleanliness when it is required or whether they are performing hand cleanliness accurately. Measuring item utilize does not deliver any relevant data in regards to when or why hand cleanliness rules are not clung to and frequently does not tell who is (or isn't) performing hand cleanliness. What's more, many elements are mindful to making this estimation technique mistaken, including item wastage or spillage, utilization of item by patients and relatives, and the

acquiring of item in the middle of units. As the quantity of chances for hand cleanliness contrasts generally as indicated by the setting and patient populace, it is essential to take note of the adherence rates utilizing reasonable quantities of likely open doors. The sum and recurrence of item utilize can be followed physically by weighing or measuring the measure of fluid cleanser or liquor construct hand rub in light of a given unit previously, then after the fact an organized timeframe. An option technique is utilization of electronic checking gadgets and electronic observing frameworks to ascertain the recurrence with which these items are being utilized. In check to cost, mechanized frameworks in some cases may have different confinements that can participate exactness.

Conducting Surveys

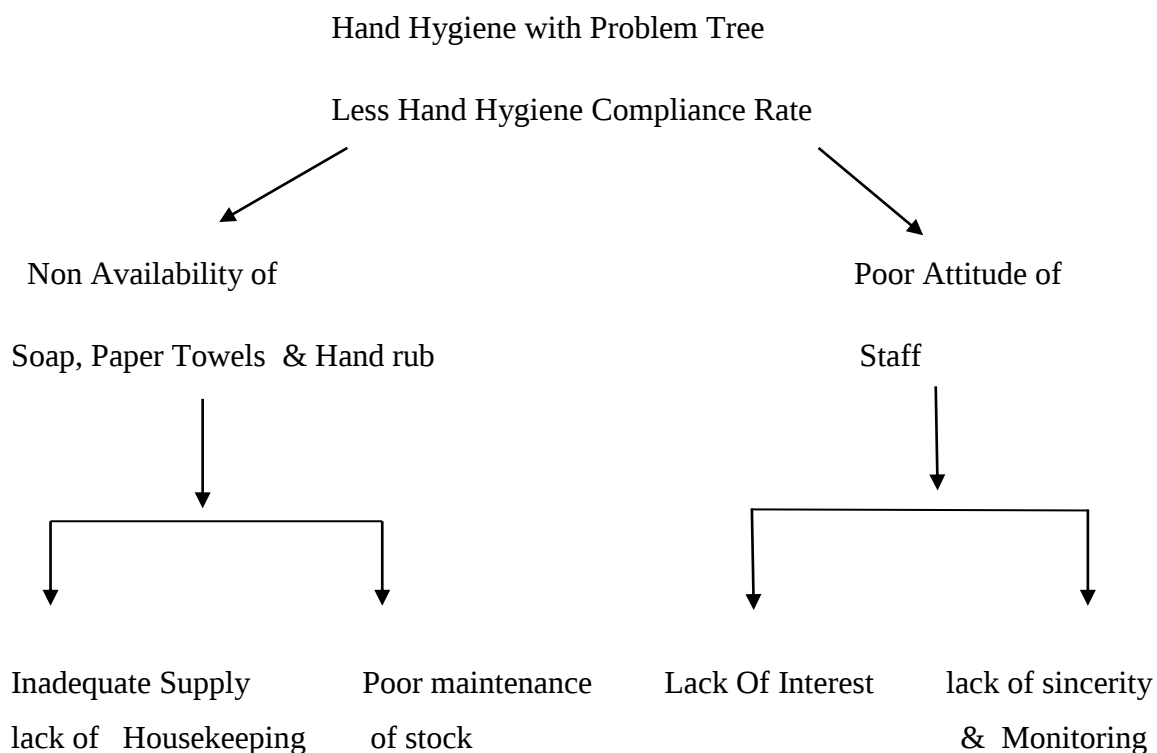
Overviews of human services specialists, patients, and relatives might be led face to face, via phone, or in center gatherings. Study can yield data in regards to observations, beliefs, and conduct related with hand cleanliness. Choosing how to direct an overview would relies on the quantity of individuals wanting to watch, where they found, and the unpredictability of the specimen. All through overviews, medicinal services specialists reveal with what they are recognizable and what they consider hand cleanliness and additionally hand cleanliness adherence rules. Reviews may uncover impression of human services suppliers with respect to their hand cleanliness conduct, view of patients and relatives. Utilizing reviews for self-announcing of hand cleanliness conduct can be erratic; social insurance laborers may have a tendency to exaggerate their adherence to rules when addressed and may wrongly review their past hand cleanliness direct. Utilizing an all around outlined and carefully managed study whose legitimacy and unwavering quality both have been built up may accomplish the most exact outcomes likely. It is key to shape your overview and the way you oversee it to the populace you need to review and the data you need to gather.

- Direct perception is known as the most exact procedure.
- The eyewitness must be acquainted with the strategies, systems and devices utilized as a part of a study and should be prepared to recognize and separate the signs for hand cleanliness execution occurring at the purpose of-care during social insurance hones.

- The spectator ought to do perceptions transparently, without irritating the progressing work, and the character of the human services specialists ought to be kept classified
- Consistence ought to be analyzed by the "My 5 Minutes for Hand Cleanliness" approach proposed by WHO.

Poor Hand Hygiene Compliance

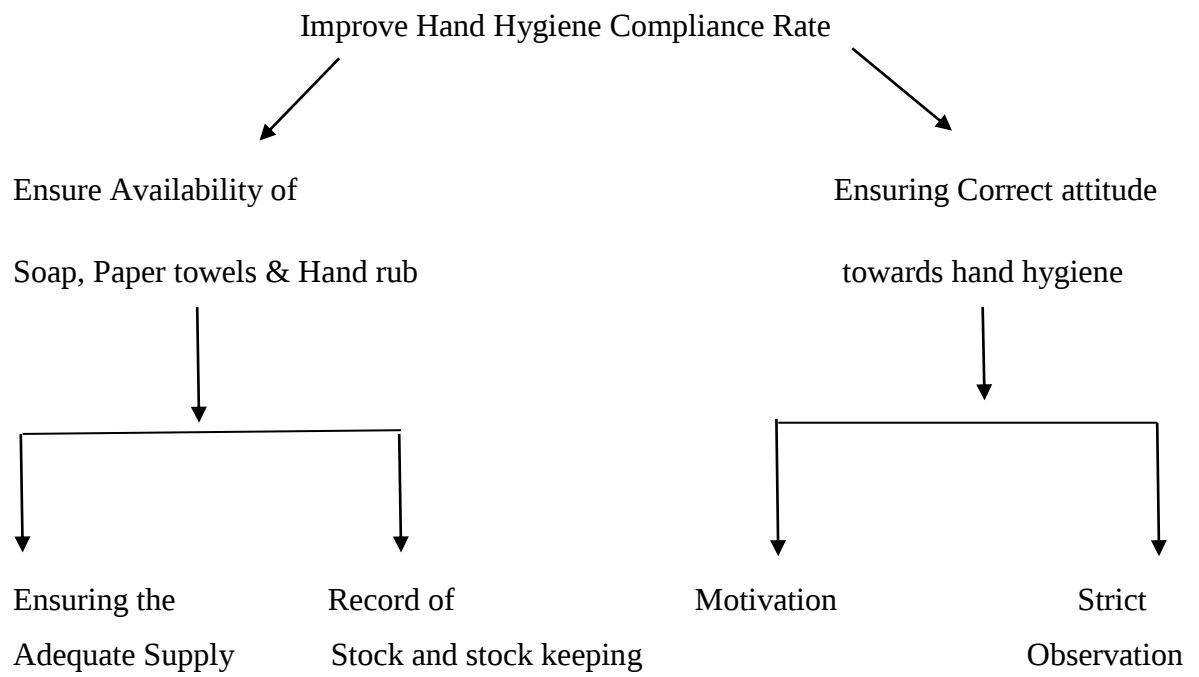
- Non Availability of Soap, Paper Towels & Hand rub
- Poor Attitude of Staff
 - Lack of Interest
 - Lack of sincerity
- Insufficient time- workload, Emergency and understaffing
- skin irritation and dryness
- Inconvenient placement of wash basins/sinks
- Inadequate knowledge regarding procedures, methods, protocols or technique for HH
- Wearing jewelery & Fingernails, nail polish and artificial nails
- Perception that no need to wash hands if wearing gloves
- Perception that Patient care is priority for health care providers
- Although most healthcare workers be aware of the importance of hand hygiene, but they may not be aware of the correct techniques and times for washing hands.



Improve Hand Hygiene Compliance Rate

- When choosing with respect to utilization of hand cleanliness items in social insurance offices, executives, administration or item determination advisory groups ought to consider
 - a) efficacy of germ-free specialists against small scale creatures
 - b) tolerability
 - c) acceptability
- Product acknowledgment might be affected by different qualities of the item, for example
 - a) color
 - b) consistency
 - c) smell
 - d) skin disturbance and dryness brought on by items
- Easily availability of items
- Dispenser frameworks ought to be in legitimate working conditions that implies

- a) delivering a suitable volume of product
 - b) time to time filling of distributors
 - c) no spillage of germ-free arrangements
 - d) Cleanser not be added to a somewhat purge cleanser allocator due to potential bacterial sulling of the cleanser.
- To lessening bacterial checks, it is trusted that
 - a) Plain cleanser is great
 - b) antimicrobial cleanser is better
 - c) alcohol-based handrubs are the best.
- For medical caretakers, the time taken to leave a patient's bedside, go to a sink or wash bowl, and wash and dry hands before going by the following patient is a restriction to perform quick handwashing or hand antisepsis.
- All the more fast openness to hand cleanliness materials may enhance adherence. Liquor based handrubs can be viewed as a superior choice than customary handwashing with straightforward cleanser and water or germicide handwash as
 - a) act speedier
 - b) require less time
 - c) irritate hands less .
- Make accessible hand moisturizers or creams to reduce the event of aggravation contact dermatitis created with handwashing and handrubbing specialists
- Soaps and cleansers for the most part make harm skin when utilized on a typical premise, HCWs ought to know about in regards to antagonistic impacts delivered by hand cleanliness operators. Data about antagonistic impacts might be gotten from producers and in addition with respect to the adequacy of hand moisturizers, hand creams, liquor based handrubs ,antimicrobial cleansers and so forth.
- Nail length is additionally essential figure to keep mind as even after watchful handwashing, HCWs frequently harbor vast numbers small scale living beings. Characteristic nail tips ought to be ¼ inch long.
- Wearing fake nails may bring about the spread of certain human services related small scale life forms. Social insurance laborers wearing manufactured nails are more inclined to harbor pathogens on their fingertips when contrasted with the individuals who have normal nails, both prior and then afterward handwashing. Consequently, wearing counterfeit nails ought to be stayed away from while having direct contact with patients of high hazard.



Ethics

The study was permitted by ethics committee of the Sterling Hospital , Vadodara.

Methodology

Study setting and design

Study type - Descriptive and cross-sectional study

Study place - Sterling Hospital , Vadodara

Study time – From 10th Feb to 10th March 2017

Study sample size - 400 participants

Study population - Nurses, Doctors, Physiotherapists, Dialysis Technicians, Phlebotomist, Others

Study departments -

All Critical Care Areas (MICU / SICU, ICCU, TCU, DIALYSIS, BMT, CCU)

Wards - GW & GW A/C

- Emergency Department

- Special/Semi Special wards (4th & 5th Floor OB, 3rd, 4th & 5th Floor NB)

Surveillance

On daily basis, survey was performed among health care workers by means of a specifically designed questionnaire that investigated the knowledge of participants about hand hygiene.

The project was headed by Infection control department in coordination with Medical Administration and Quality Assurance departments.

Data analysis and Results

Hand Hygiene Knowledge among Healthcare workers

The information for Learning regrading hand hygiene was gathered through a survey, rate was ascertained and afterwards arranged as taking after

- Very Poor = 30% and below
- Poor = 31 – 50%
- Good = 51-79 %
- Excellent = 80% and above

Table1:- shows HH Knowledge among HCWs

Level of Knowledge	Category	Frequency	Percentage %
Excellent	80% and Above	6	4%
Good	51-79%	132	88%
Poor	31 – 50%	10	6.67%
very poor	30% and below	2	1.33%
		150	100%

Figure 1:

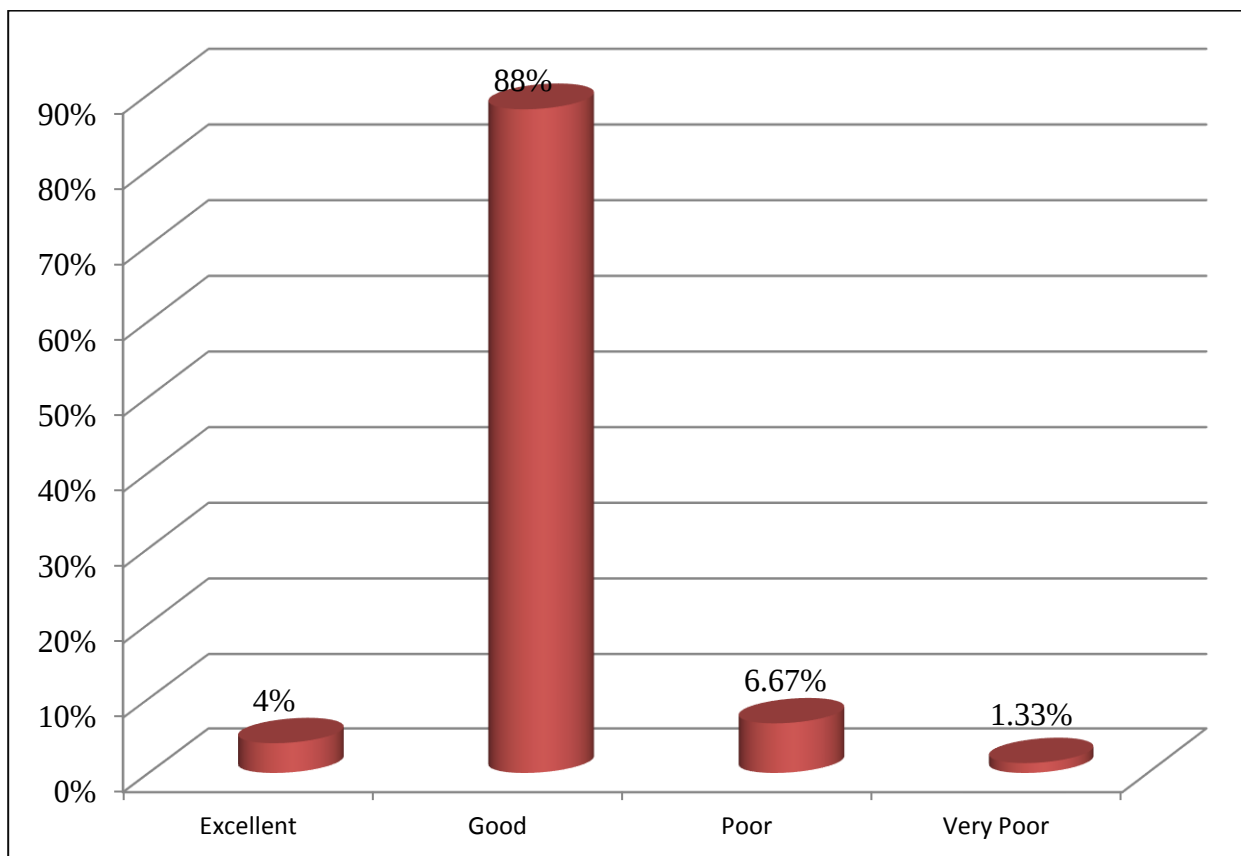


Figure1:- shows majority of healthcare workers found to be having good knowledge of hand hygiene 88% . While, 4% having excellent, only 6.67 % having poor and 1.33% having very poor knowledge regarding hand hygiene.

Observation of WHO 5 Moments of Hand Hygiene among Healthcare Workers

A moment was watched and then it was recorded as whether the healthcare observer observed required hand hygiene moment performed or not – if hand hygiene was found to be performed it was registered as a ‘correct moment’.

Hand Hygiene Compliance (HCC) formula

$$HHC = (\text{Total no. of correct moments} / \text{total no. of observed moments}) \times 100$$

Table 2:- shows WHO 5 Moments of Hand Hygiene practices data among Health Care Workers at Sterling Hospital , Vadodara

	Before Patient Contact	Before Aseptic Procedure	After Body Fluid Exposure	After Patient Surroundings	After Patient Contact	Overall
Correct	117	23	44	38	144	366
Observed	220	91	91	151	216	769
Compliance rate	53.18%	25.27%	48.35%	25.17%	66.67%	47.50%

Hand Hygiene Compliance Rate = $366/769 \times 100$

=47.50%

The aggregate number of watched moments (taking into account all five moments of hand hygiene) was 769, of which there were 366 correct moments, giving a general Hand hygiene adherence rate of 47.50%.

The total number of observed moments and the total number of correct moments recorded separately for each WHO 5 Moments of hand hygiene.

For each moment , percentage of correct hand hygiene moments was also calculated separately. It indicates the moment specific hand hygiene compliance rate.

Figure 2a:

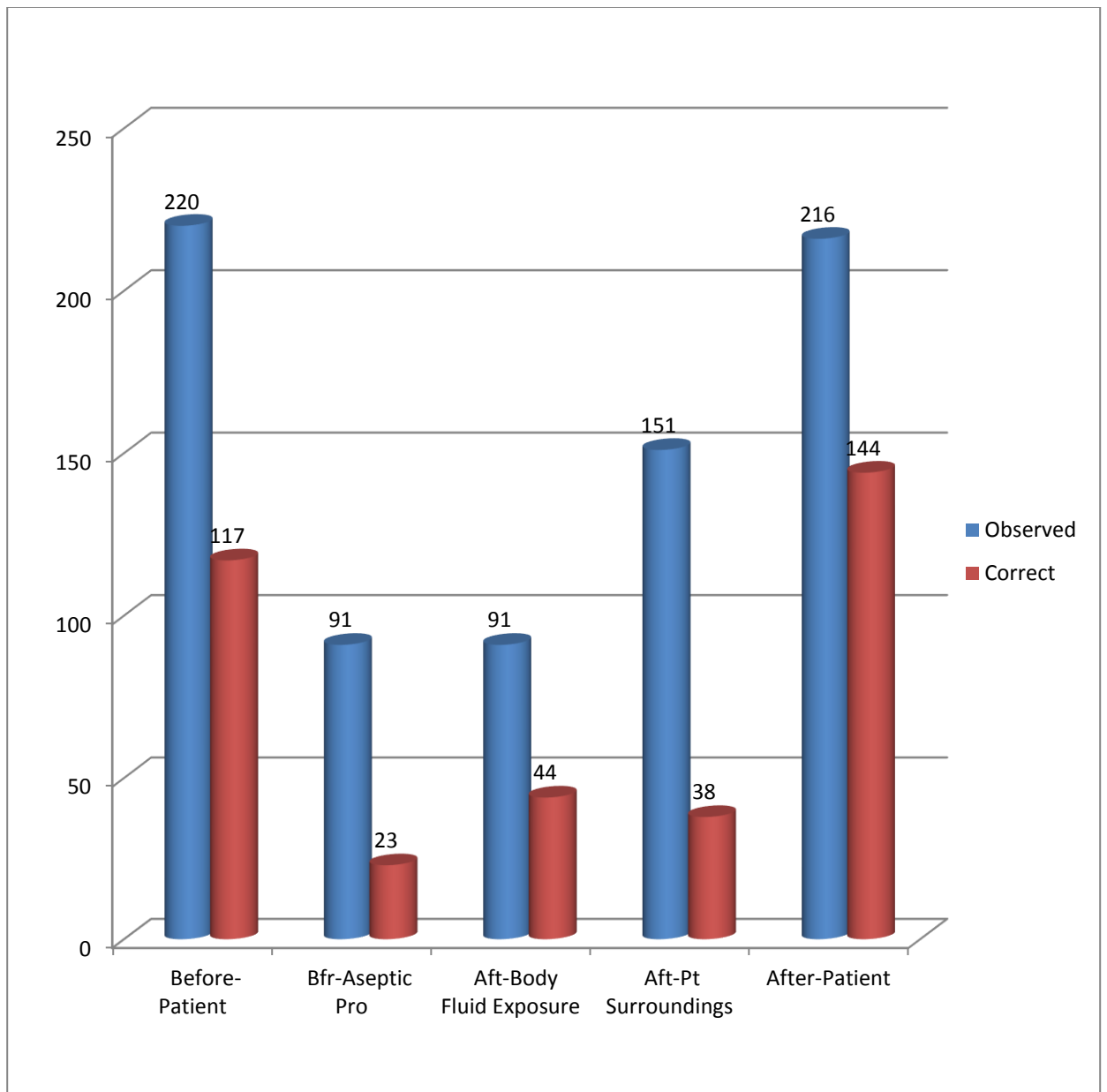


Figure 2a : shows Observation of the ‘5 Moments of Hand Hygiene’

Figure2:

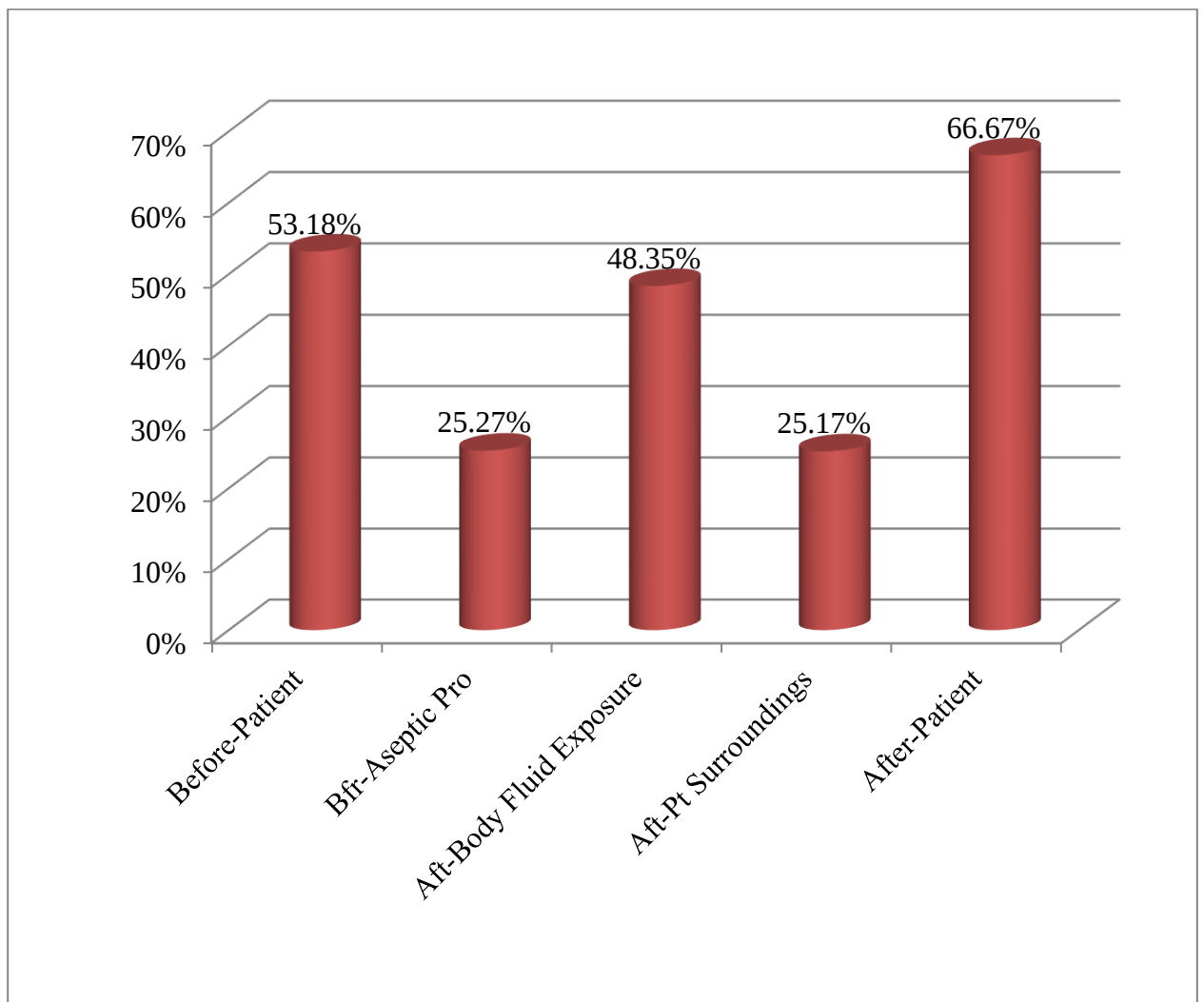


Figure 2b:-shows Moment Specific Hand Hygiene Compliance Rates. It shows that hand hygiene compliance was found to be highest after patient contact (After-Patient) – 66.67%, followed by before patient contact (Before-Patient) 53.18% and After exposure to body fluid (Aft-Body Fluid..) – 48.35% with the lowest hand hygiene compliance rates being for before aseptic procedures (25.27%) and after patient surroundings (25.17%).

Hand Hygiene Compliance among Doctors and Nurses

The hand hygiene compliance rate was also calculated amongst doctors and nurses. The hand hygiene compliance rate was not done for other healthcare worker categories as data was insufficient regarding observed moments for the other healthcare worker categories.

Table 3:- shows Hand Hygiene Compliance Rate Amongst Doctors and Nurses

Profession	Total number of Observed Moments	Total number of Correct Moments	Hand Hygiene Compliance Rate
Doctors	134	57	42.53%
Nurses	533	266	49.90%

It was found that medical caretakers exhibit a little better hand cleanliness consistence rate (49.90%) when contrasted with specialists (42.53%). The hand cleanliness consistence rate among medical caretakers was observed prone to be higher than the aggregate hand cleanliness consistence rate (47.50%), while the hand cleanliness consistence rate for specialists was lower than the aggregate hand cleanliness consistence rate, demonstrating that that attendants take after better hand cleanliness rehearses.

Discussion

From study , it was found that Greater part of social insurance specialists had great learning of hand cleanliness 88% ,While 4% have magnificent information available cleanliness, just 6.67 % have poor learning and 1.33% have exceptionally poor hand cleanliness learning. It was discovered compareable to a review done at Neville Fernando Showing Doctor's facility (NFTH) in Sri Lanka where In general, dominant part of medicinal services specialists were found to have great learning of hand cleanliness 63.4%. While, 33.7% had incredible learning on cleanliness, just 2% had poor information and 1% had exceptionally poor hand cleanliness information.

As per overall rates, Hand Cleanliness consistence among HCWs ranges from 5-89% .If fitting techniques used to evaluate hand cleanliness consistence it has been found that it once in a while surpasses 30%. This demonstrates the hand cleanliness consistence rate at Sterling Doctor's facility ,Vadodara is like overall rates.

From the minute particular hand cleanliness consistence rates, the adherence of hand cleanliness was observed to be most astounding after patient contact (66.67%), while the least rates were seen before aseptic strategies (25.27%) and after patient environment (25.17%). The minute particular hand cleanliness consistence rate was discovered compareable to a review done at Neville Fernando Showing Doctor's facility (NFTH) in Sri Lanka where the adherence of hand cleanliness was most elevated after patient contact (46.88%), trailed by before patient contact (35.29%) and After contact with patient environment (35.29%) with the least hand cleanliness consistence rates being for before aseptic techniques (28.57%) and after presentation to body liquid (25.00%). It might be because of absence of adherence of HCWs to great hand cleanliness hones. All the more ever ,HCWs will probably perform hand cleanliness subsequent to touching a patient as HCWs know that the patients are sick and in this manner may transmit disease. Least rates were found before aseptic systems and after patient surroundings despite the fact that these are the most essential minutes where hand cleanliness is required. A conceivable explanation behind this could be that HCWs wrongly expect that if gloves are worn , there is no compelling reason to perform hand cleanliness.

From study, It was additionally demonstrated that medical attendants exhibited a superior hand cleanliness consistence rate of (49.90%) when contrasted with specialists, which was 42.53% %. This demonstrated medical attendants would be wise to hand cleanliness hones than the specialists. As per a review done at the college clinics in Geneva, consistence with hand cleanliness was appeared to be higher among medical caretakers also (66%) when contrasted with specialists (10%)).

One primary confinement of this review was the technique for gathering the review information - coordinate perception may adjust HCWs conduct in regards to hand cleanliness in the event that they knew that they were being watched, (Hawthorne impact). Social insurance laborers were likewise not educated that they their hand cleanliness practices were being watched. Amid a portion of the review sessions , there was a lack in

the quantity of staff individuals because of less number of patients in the healing center, in this manner constraining the measure of information gathered.

Conclusion

From study, it was presumed that Dominant part of medicinal services laborers having great learning in regards to hand cleanliness 88%, just 4% have brilliant information of hand cleanliness, 6.67 % having poor learning and 1.33% having extremely poor learning with respect to hand cleanliness.

The general hand cleanliness consistence rate was observed to be 47.50%. Hand cleanliness consistence was observed to be most elevated after patient contact (66.67%), trailed by before patient contact (53.18%), then After introduction to body liquid (48.35%), least hand cleanliness consistence rates being watched for before aseptic techniques (25.27%) and afterward for after patient environment (25.17%).

The review additionally demonstrated that attendants display a little better hand cleanliness consistence rate (49.90%) when contrasted with specialists (42.53%).

Thus, it was found that Hand cleanliness consistence was deficient despite the fact that medicinal services specialists having great learning with respect to hand cleanliness

.Summary

Hand hygiene is portrayed as a vital apparatus in keeping the spread of medicinal services related contaminations in social insurance settings. In this way, social insurance specialists ought to have basic and refreshed data with respect to hand cleanliness. HCWs ought to build up a propensity for performing hand cleanliness precisely as per the WHO'Ss "Five Minutes for Hand hygiene ,". Preparing/Training, Checking hand cleanliness and Assessment &Feedback assumes a crucial part in making mindfulness about Hand hygiene.

Recommendations

Stream Area	Recommendations
System change	Assessment for fairness and tolerability of the liquor based hand rubs for use among medicinal services specialists
	Utilization of data to inspire HCWs and ideally utilize ABHRs more
	Ensure availability of multiple types of dispensers to meet the needs at the point of care such as • pocket bottles • wall dispensers • dispensers available on trolleys and bed rail
	Management support –make a cost-benefit analysis of system change in your organization with the help of expertise people
Training/ education	Provide mandatory education on hand hygiene for new employees and continuous training for all staff members by using multiple and innovative educational methods
	Integration in all services, protocols, standard operating procedures, and care bundles, wherever applicable
	Evaluation of knowledge regarding hand hygiene and use the results to further improve educational messages
	Provide extra-facility education such as organize an annual course on hand

	hygiene and infection control to train trainers and observers
Evaluation& feedback	Regular monitoring – Conduct hand hygiene compliance monitoring on regular basis – Continuous monitoring of ABHR consumption – Seven steps of hand hygiene are followed or not
	Feedback – Provide feedback to improve hand hygiene practices among HCWs
Reminders in workplace	Resources – collect new ideas from staff and encourage competition among wards
	Delivery of messages – provide and display posters and leaflets in areas
	Sustainability –including innovative ideas other than posters and leaflets, based on local environment and available “media”
Safety climate	Patient/community engagement – engages patients on best hand hygiene practices through education and facilitates interactions between patients and health-care workers on this topic.
	Promoting improvement –rewarding behaviour and establishes a reward system for all clinical

	settings
Proper hand hygiene	Correct Hand hygiene prevents 60- 70% chances of HAI
• For HAI	• The safety measure taken by the hospital staff for reducing the infection rate should be continued and continue with precautions.

Learning points

The two month summer training was very valuable .It provided me with an incompatible experience. The main aim of the training that is to get exposure to the functioning of the organization by visiting all permissible departments and do intensive study on the task was all fulfilled. The summer training equipped me with proficient techniques, exposure to professional world and loads of knowledge and wisdom.

The visit to all clinical and non-clinical departments was very good experience of learning functioning of hospital. It helped me to get familiar, adapted and habituated to hospital environment and working.

Due to the support and guidelines of my mentor and hospital staff I could acquire skills and exposure. Few of the learning's were as follows:

Hospital scenario:

- Hospital policies, standards and protocols
- working of hospital
- Functioning of patient care system
- Department working knowledge
- Patient safety, rights and responsibility

- Clinical and non-clinical terms to be used on work

Professional skills

- Knowledge about NABH standards
- How to collect and analyze data
- To maintain documents

Soft skills

- To interact professionally
- To make presentation and interpret data
- How to manage time
- How to make quick & good decision
- Commitment towards task

References

- World Health Organization. 2013. 'The first global patient safety challenge: clean care is safer care'. Available at: <http://www.who.int/gpsc/en/>
- World Health Organization. Hand Hygiene in Outpatient and Home-based Care and Long-term Care Facilities: A Guide to the Application of the WHO Multimodal Hand Hygiene Improvement Strategy and the "My Five Moments for Hand Hygiene" Approach. Geneva: World Health Organization; 2012.
- Australian Commission for Safety and Quality in Health Care. Implementation Guide for Surveillance of Staphylococcus aureus Bacteraemia (Consultation Edition). Sydney: Australian Commission for Safety and Quality in Health Care; 2012 [cited 2012 31st October]; Available from: <http://www.safetyandquality.gov.au/wpcontent/uploads/2012/02/Implementation-guide-SAB-Consultation-Edition-November2011.pdf>.
- Maxfield, D. & Dull, D. 2011. 'Influencing hand hygiene at spectrum health', Physician Executive Journal 37:3, 30-34.
- Devnani, M., Kumar, R., Sharma, R.K. & Gupta, A.K. 2011. 'A survey of hand-washing facilities in the outpatient department of a tertiary care teaching hospital in India', Journal of Infection in Developing Countries 5:2, 114-118.
- Cambell, R. 2010. 'Hand-washing compliance goes from 33% to 95% steering team of key players drives process', Healthcare Benchmarks and Quality Improvement 17:1, 5-6. Canham, L. 2011. 'The first step in infection control is hand hygiene', The Dental Assistant, 42-46.

- NHMRC. Australian Guidelines for the Prevention and Control of Infection in Healthcare. Commonwealth of Australia; 2010
- Takahashi, I. & Turale, S. 2010. 'Evaluation of individual and facility factors that promote hand washing in aged-care facilities in Japan', *Nursing and Health Sciences* 12:1, 127-134.
- Momen, K. & Fernie, G.R. 2010. 'Nursing activity recognition using an inexpensive game controller: an application to infection control', *Journal of European Society for Engineering and Medicine* 18:6, 393-408.
- Penzias, A., 2010. 'Don't get complacent with hand hygiene'. *ED Nursing* 13 (5), 54-55. Smith, J.M. & Lokhorst, D.B. 2009. 'Infection control: can nurses improve hand hygiene practice?', *Journal of Undergraduate Nursing Scholarship* 11:1, 1-6.
- Mani, A., Shubangi, A.M. & Saini, R. 2010. 'Hand hygiene among healthcare workers', *Indian Journal of Dental Research* 21:1, 115-118.
- Helder OK, Bing J, Looman CWN, van Gowdsoever J, Kornelisse RF. The impact of an educational program on hand hygiene compliance and nosocomial infection incidence in an urban neonatal intensive care unit: an intervention study with before and after comparison. *International Journal of Nursing Studies* 2010;47:1245—52.
- Kampf, G. & Löffler, H. 2010. 'Hand disinfection in hospitals- and risks', *Journal of the German Society of Dermatology* 8:12, 978-983.
- Al-naami, M.Y., Anjum, M.N., Afzal, M.F., Al-yami, M.S., Al-qahtani, S.M., Al-dohavan, A.D., El-tinay, O.F., Karim, A.A., Khairy, G.A., Al-saif, A.A., Zubaidi, A.M., Al-obaid, O.A. & Al-saif, F.A. 2009. 'Alcoholbased hand-rub versus traditional surgical scrub and the risk of surgical site infection: a randomised controlled equivalent trial', *EWMA Journal* 9:3, 5-10.

- Smith, S.M. 2009. 'A review of hand-washing techniques in primary care and community setting', *Journal of Clinical Nursing* 18:6, 786-790.
- Nazarko, L. 2009. 'Potential pitfalls in adherence to hand washing in the community', *British Journal of Community Nursing* 14:2, 64-68.
- Ott, M. & French, R. 2009. 'Hand hygiene compliance among healthcare staff and student nurses in a mental health setting', *Mental Health Nursing* 30, 702-704.
- The Joint Commission. *Measuring Hand Hygiene Adherence: Overcoming the challenges*. Illinois 2009
- Minnaar, A. 2008. *Infection control made easy, a hospital guide for health professionals*. Kenwyn SA: Juta.
- Nursing and Midwifery Council (NMC). 2008. 'The code: standards of conduct, performance and ethics for nurses and midwives'. Available at: <http://www.nmc-uk.org/General-public/What-peoplesould-expect-from-a-nurse-or-midwife/The-standards-we-expect-nurses-and-midwives-tofollow/The-code/>
- Ogunola, F.T. & Adesiji, Y.O., 2008. 'Comparison of four methods of hand washing in situations of inadequate water supply'. *West African Journal of Medicine* 27 (1), 24-28.
- Werner, R. 2007. 'Hand washing and what happens if you don't', *Massage and Bodywork* 22:2, 114-118.
- Duncan, C.P. & Dealey, C. 2007. 'Patients' feelings about hand washing, MRSA status and patient information', *British Journal of Nursing* 16:1, 34-38.

- Akyol, A.D. 2007. 'Hand hygiene among nurses in Turkey: opinions and practices', *Journal of Clinical Nursing* 16, 431-437.
- Pittet D, Allegranzi B, Sax H, Dharan S, Pessoa-Silva CL, Donaldson L, et al. Evidence-based model for hand transmission during patient care and the role of improved practices. *Lancet Infect Dis.* 2006 Oct;6(10):641-52.
- Collins, F. & Hampton, S. 2005. 'Hand-washing and methicillin-resistant staphylococcus aureus', *British Journal of Nursing* 14:13, 703-707.
-] Silvestri L, Petros AJ, Sarginson RE, de la Cal MA, Murray AE, van Saene HK. Handwashing in the intensive care unit: a big measure with modest effects. *Journal of Hospital Infection* 2005;59:172—9.
- Karabay, O., Sencan, I., Sahin, I., Alpteker, H., Ozcan, A. & Oksuz, S. 2005. 'Compliance and efficacy of hand-rubbing during in-hospital practice. *Medical Principles and Practice*', *International Journal of the Kuwait University* 14:5, 313-317.
- Trampuz, A. & Widmer, A.F., 2004. 'Hand hygiene: a frequently missed lifesaving opportunity during patient care'. *Mayo Clinic Proceedings* 79 (1), 109-116.
-] Salemi C, Canola MT, Eck EK. Hand washing and physicians: how to get them together. *Infection Control and Hospital Epidemiology* 2002;23:32—5.
- Pittet D, Boyce J. Hand hygiene and patient care: Pursuing the Semmelweis legacy. *Lancet Infect Dis.* 2001:9-20.
- Tenorio AR, Badri SM, Sahgal NB, Hota B, Matushek M, Hayden MK, et al. Effectiveness of gloves in the prevention of hand carriage of vancomycin-resistant enterococcus species by health care workers after patient care. *Clin Infect Dis.* 2001 Mar 1;32(5):826-9.

- Pittet D, Hugonnet S, Harbarth S, Mourouga P, Sauvan V, Touveneau S, et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *Lancet*. 2000;356:1307-12.
- Pittet D, Mourouga P, Perneger TV, The members of the Infection Control Program. Compliance with hand washing in a teaching hospital. *Annals of Internal Medicine* 1999;130:126—30.
- US Department of Health and Human Services, Centers for Disease Control and Prevention. National nosocomial infection surveillance system manual. Atlanta, GA: Centers for Disease Control and Prevention; 1999.
- Jarvis WR. Handwashing—the Semmelweis lesson forgotten? *Lancet* 1994;344:1311—2.

Annexure

Hand Hygiene Knowledge Survey

Name:

Date:

Gender: ☐ Male ☐ Female

Location:

Personal id:

Profession:

1) Are you aware of

a) Importance of hand hygiene

☐ Yes ☐

No

b) Technique of hand hygiene

☐ Yes ☐

No

c) Proper volume of liquid soap or alcohol based handrub

☐ Yes ☐

No

2)

a) Is an alcohol based handrub is available?

☐ Yes ☐

No

b) If Yes then which type of hand rub dispensers are available

☐ Pocket Bottle

☐ Bottle fixed to trolley tray

☐ Bottle fixed to bed

☐ Wall dispenser

☐ All of Above

c) Refilling or replacement of empty dispensers takes place time to time ☐ Yes ☐

No

d) Dispensers are working properly

☐ Yes ☐

No

e) Placement of dispensers is convenient

☐ Yes ☐

No

3)

a) Are Posters illustrating handwash technique displayed beside each sink?

☐ Yes ☐ No

b) Are Posters illustrating handwash technique displayed at point of care?

☐ Yes ☐ No

4) What is the most common source of germs responsible for health care associated infections?

☐ Germs in Hospital Air

☐ Germs in Hospital water system

☐ Germs already present on or within patient

☐ Germs in hospital on point contacts/surfaces.

5) To kill the most germs present on your hand ,minimal time needed for alcohol hand rub is

☐ 20 Seconds

☐ 10 Seconds

☐ 5 Seconds

☐ 60 seconds

6) Is it necessary to perform hand hygiene after

a) Charting

Yes ☐ No ☐

b) Touching a wheel chair

Yes ☐ No ☐

c) Touching a curtain

Yes ☐ No ☐

d) Delivering food tray

Yes ☐ No ☐

7)

a) If you are done with patient care in bed A, Then clean your hands and move to care for patient in bed B. Is it required to clean your hands again while going from bed B in the same room?

- ☐ Yes
- ☐ No
- ☐ Depends on condition

b) If there are two patients in different rooms A and B, On exiting room A you cleaned your hands. Is it necessary to wash hands before entering room B ?

- ☐ Yes
- ☐ No
- ☐ Depends on condition

c) If you have cleaned your hands outside the patient room and touched the door knob to enter the room. Do you need to clean your hands before touching the patient?

- ☐ Yes
- ☐
- ☐ Depends on condition

8) Which of the following should be avoided as associated with improper hand hygiene

- ☐ Wearing jewellery
- ☐ Artificial Finger Nails
- ☐ Long finger Nails
- ☐ Regular use of hand cream.
- ☐ Damaged Skin

9) Are you aware of

a) Indications of glove use

Yes ☐ No ☐

b) Proper way of removing gloves

Yes ☐ No ☐

c) When to change gloves

Yes ☐ No ☐

10) Which of the following statement is true on the technique of hand hygiene with an alcohol base hand rub?

- a) The hand rub has to cover entire surface of both hands Yes ☐ No ☐
- b) Hands has to be dry before wash Yes ☐ No ☐
- c) You can dry you hands with the help of towel Yes ☐ No ☐
- d) Hand rubbing causes skin dryness more than hand washing Yes ☐ No ☐
- e) Hand rubbing is more effective than hand washing Yes ☐ No ☐

11) Are disposable gloves always available at designated sites? Yes ☐ No ☐

12) Are you aware about WHO 5 moments for hand hygiene? Yes ☐ No ☐

13) Do you think if you are wearing gloves you don't need to wash your hands
Yes ☐ No ☐

14)

a) Do you think hand hygiene plays an important role reducing hospital acquired infection rate? Yes ☐ No ☐

b) Hand hygiene is necessary

- ☐ After patient contact
- ☐ Before patient contact
- ☐ After risk of exposure to body fluid
- ☐ All of above
- ☐ Both a) & b)

15) Do you know about audits on hand hygiene compliance periodically performed in hospitals? Yes ☐ No ☐

WHO 5 Moments Hand Hygiene Monitoring Form

Sr No	Type of HCW	Pt's contact	Hand Hygiene				Environmental Contact	Remark
			Before Pt's Contact	After Pt's Contact	Before Aseptic Procedure	After Aseptic Procedure		
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Date:

Department:

Type of HCW : D= Doctor ,N=Nurse , TH= Therapist ,XR = Radio Technician , PH = Phlebotomist, A=Attendant , HK =Housekeeping , OT =Other

Instruction- 1 = Yes , 0 =No , N/A = Not Applicable , N/O = Not Observer