**Summer Training at**

**Apollo BSR Hospitals Bhilai, Chhattisgarh**
**(April 1–June 1, 2014)**

# Study on Hospital Infection Control Basic Awareness and Implementation

**By**
**Komal Pandit**

**Under the guidance of**
**Dr. Seema Mehta**

**MBA- Hospital & Health Management (MBA-HM)**
**2013-2015**


**The IIHMR University, Jaipur**
**2014**

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# CERTIFICATE

This is to certify that **Dr.Komal Pandit** has undergone her summer training **in APOLLO BSR HOSPITAL, BHILAI** from 1st April 2014 to 31st May 2014.

The candidate has successfully carried out the project"**A study on Hospital Infection Control – basic awareness and implementation"** assigned to her during summer training and her approach to the study has been scientific and analytical .

The summer training is partial fulfillment of course requirement is recommended for the award of post graduate diploma in Hospital and Health management.

I wish her success in all her future endeavors'.

Dr.Ashok Kaushik
Dean (Academic & student affairs)
IIHMR Jaipur

Dr.Seema Mehta
Assistant Professor
IIHMR,Jaipur

Apollo BSR Hospitals
BHILAI
touching lives

ABSRH / INT / ICT

DATE: 07.06.2014

# TO WHOM SO EVER IT MAY CONCERN

## CERTIFICATE OF INTERNSHIP

This is to certify that **Dr. Komal Pandit** student of **"Institute of Health Management & Research, Jaipur, Rajasthan"** has done 2 months internship from **01st April 2014 to 31st May 2014** in our Apollo BSR Hospitals – Bhilai on the topic "**Hospital Infection Control-Basic awareness and Implementation**".

She was punctual and found to be sincere during her internship.

**For Apollo BSR Hospital**
**(A Unit of BSR Superspeciality Hospitals Ltd.)**

Guided By: -

**Sreekala C.S**
**(Manager – Quality&Operations)**

Directed By:-

**Sanjay Shrivastava**
**(Chief Administrative Officer)**

## ACKNOWLEDGEMENT

I extend my sincere gratitude to **Mr Sanjay Shrivastav** ,chief administrative officer for giving me the opportunity to do this study and undergoing the process of learning at APOLLO BSR BHILAI. I thank them for all the trust and faith they posed in me and I only hope that I have been able to live up to their expectations. Their guidance and support was helpful in enhancing my work.

I extend sincere gratitude towards **Mrs Shreekala** , manager- quality and operations who has been my mentor for the summer internship program & has been instrumental in helping me shape this study in a desirable way.

I would also like to thank **Mr. Sanjay Borkar** and **Mrs Shreekala** Quality department, for supporting my work all along. I would also like to extend my thanks to **Mrs Abha minz**, **Ms**. **Salomi** (nursing superintendant), **Bindu** and **Rijo** (infection control nurse), **Sneha**, **Safina**and **Shikha** (microbiologist) – infection control department Apollo BSR Bhilai for helping me through my study.

Last but not the least; I would like to thank the entire **staff of APOLLO BSR HOSPITALS** BHILAI for their support and guidance. s

I would like to express my sincere thanks to **Dr. S.D. Gupta**, Director, IHMR, **Col. Dr. Ashok Kaushik**, **Dr Suresh Joshi, Ms. Seema Mehta (mentor)** and all my faculty members for the proper guidance and cooperation extended by them. I am also grateful to my parents, my family and my friends for giving me moral support.

However, I accept the sole responsibility for any possible error of omission and would be extremely grateful to the readers of this project report if they bring such mistakes to my notice.

**Date – 6 TH June, 2014** **Dr. Komal Pandit**

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# PREFACE

Summer internship is an integral part of the PGDHM curriculum. As a part of the course; students of first year are required to undergo summer placement at any reputed organization to get in depth exposure of various departments in the organization and better understanding of the health care delivery system and its functions.

The major objectives of the summer training programme are as follows:

1) To understand and learn day to day operational management of a Hospital / Health Care Organization and its service centers.
2) To study identified issues/ problems associated with some specific operational area /programme.
3) To acquire more knowledge on roles and responsibilities of key players and stakeholders in the hospital. To understand various functions in hospital by interactions with key stakeholders, policy makers, academicians and researchers.
4) To work on the project/task assigned by summer training organization.

During the training period I had an **Overview of various departments of the hospital.** I also carried out a study titled "**hospital infection control- basic awareness and implementation**"

The aim of the study was to identify the various infection control measures required in various departments (patient care areas and supporting departments) and to access the professionals' knowledge of basic infection control measures for patient and staff while working within the environment and to access implementation of the knowledge by professionals and staff of hospital.

# ABOUT THE ORGANISATION

Apollo BSR is a multi specialty hospital with a motto to provide quality healthcare at affordable cost. It has a fully equipped centre of international standard for cardiac intervention and surgeries.

**VISION:**

"To be the most preferred Health care service provider in the community by continuously improving the existing standard of Medicare"

**MISSION:**

"Apollo BSR Hospitals always provide comprehensive and modern healthcare solutions to patients with a humane approach"

**The Journey:**

The group started with a diagnostic centre in the year 1993 at Bhilai. Over a period of time all modern diagnostic facilities like 1.5 T MRI, 64 slice cardiac CT, Multi slice spiral CT scan, 4-D real time color Doppler, Ultra modern Pathology, Endoscopy, Bronchoscope, mammography, echocardiography, UltraSonography , Digital X-Ray etc. have been installed at our various centers. Thereafter similar centers have been established at other locations such as Nagpur, Raipur, Korba and Rajnandgaon.

In the year 2000 the group ventured into establishing ultra modern super specialty cancer hospital in Bhilai- BSR Cancer hospital which is the only comprehensive cancer management centre in Chhattisgarh. After 17 year into being called a pioneer and leader in diagnostics in central India and 8 years in comprehensive cancer management, BSR health care is now well known name in healthcare sector.

BSR realized the need for a multispecialty Tertiary care hospital in Central India and prompted by desire to extend high quality Medicare beyond the confines of the rich class . BSR Healthcare has set up Super specialty Hospital at Bhilai, Apollo BSR hospital, Bhilai became operational from September 2007.

Commitment to the community.

"Caring for the community"

Those simple words describe the past, present, and future of Apollo BSR hospitals Bhilai. Their roots run deep in the community, starting with the 1st high tech diagnostic centre in 1993. After 15 years of being pioneer in diagnostics in entire central India , BSR healthcare started comprehensive cancer management hospital- BSR Cancer hospital and Research centre at Bhilai in June 2001. Apollo BSR is 175 bedded Super Specialty Hospital providing secondary and tertiary level healthcare at affordable cost in association with Apollo Hospitals Chennai. The inpatient beds are classified into deluxe suite, private room, double bed wards, shared wards and dedicated cancer wards.

The hospital enjoys the reputation of being the first and only hospital to have a digital flat panel Cath lab and 4 modular OTs with laminar air flow and HEPA filters for coronary Bypass surgeries, Coronary Angioplasty and other special surgeries. They are having 42 bedded ICU including cardiac, surgical, Medical, neonatal and pediatric ICU.

Apollo BBSR at bhilai is an attempt to integrate the best and most qualified medical professionals and doctors by providing them the best infrastructure, latest technologies in Biomedical engineering and health care services along with a dedicated team of nurses, technicians, staff and professional management in such a way that our super speciality hospital can provide the best health care services so that the patients in C.G. as well as neighboring states could be benefited. Already they have got a very good response from the patients in this region and they are regularly getting the patients not only from C.G. but also from neighboring states. They are recognized and empanelled by Govt. Of Chhattisgarh, CSEB, NSPCL, FCI, BSNL, CISF, NMDC, SECL, and various insurance companies\TPAs. They have also started more departments like Infertility clinic, , cosmetology, joint replacement surgery, high end ophthalmology etc.

They have plans to increase beds from 175 beds to 200 beds which will include 10 more beds in ICU, since bhilai is very well connected by air (nearest airport Raipur 40 kms), Rail (nearest Railway station Durg 5 kms), and Road (on main National Highway NH6).

**Milestones achieved- 3** years consecutive award of APOLLO clinical excellence(ACE)
NABH (7 th march 2014)

**Various departments in the hospital are**

**Clinical Services:**

- 24-hour Accident &Emergency Services (Trauma Unit)
- Anaesthesia

- Cardiology
- Cardiothoracic Surgery
- Dental
- Dermatology and Venrology
- Endocrinology & Diabetology
- ENT
- Gastroenterology
- General & Laparoscopic Surgery
- Health Check-Ups
- Infertility Clinic-(IVF,IUI)
- Internal Medicine
- Medical Oncology
- Nephrology
- Neurology
- Neurosurgery
- Obs. & Gyanaecology
- Ophthalmology
- Orthopaedics
- Paediatrics/ Neonatology
- Pain Management
- Plastic Surgery/Cosmetic Surgery
- Psychiatry & Psychotherapy
- Respiratory Medicine
- Surgical oncology
- Urology

**Critical Care Units**

- Medical Intensive care unit
- Cardiac Intensive unit
- Surgical intensive care unit
- Neonatal Intensive care unit
- Intensive Cardiac care unit

**Diagnostic Services**

- Laboratory
- Radiology (MRI Service delivery at BSR Diagnostic centre)
- Radiotherapy Department (Service delivery at BSR Cancer Hospital)
- Nuclear Medicine Department (Service delivery at BSR Cancer Hospital)

**Therapeutic services**

- Clinical consultation services
- Clinical inpatient service
- Operation theatres
- Labour room

- Digital Cath Lab
- Dialysis Unit
- Bronchoscopy
- Endoscopy
- ECG, Echo, TMT, EEG, EMG, PSG, Spirometry

**Ambulatory Care Area**

- Outpatient services
- Emergency services
- Pharmacy services (IP- 24 Hrs, OP Pharmacy)
- Physiotherapy Department

**Auxiliary Services**

- Dietary services
- Central Sterile and Supplies Department
- Laundry
- Stores (general, medical) & Substores
- Mortuary
- MGPS (Cylinders and piped medical gases)
- Engineering services
- Housekeeping
- Security
- Medical record department
- Hospital Management Information System
- Administrative Office
- Ambulance & Non ambulances

# SPECIFIC PROJECT:

## HOSPITAL INFECTION CONTROL - BASIC AWARENESS AND IMPLEMENTATION

## OBJECTIVES

- To assess the infection control measures obtained by hospital.
- To assess the knowledge regarding the infection control practices by medical and non – medical staff
- To assess the practical implementation of the infection control practices on the regular basis.
- To identify the training needs if any for the staff.

The areas covered for this project are as follows:

1. All ICUs (Medical, Surgical, Cardiac)
2. Wards (general , general 1, general 2, private, semi-private, executive, deluxe, super deluxe)
3. Kitchen
4. Laundry
5. CSSD
6. Housekeeping
7. BMW(Biomedical Waste)

## INTRODUCTION

Health care-associated infection (HCAI), also referred to as "nosocomial" or "hospital" infection, is defined as: "An infection occurring in a patient during the process of care in a health-care facility which was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff."

HCAI is acknowledged as the most frequent adverse event in health care, but the global burden remains unknown because of the difficulty of gathering reliable data.

## Burden of HCAI worldwide

According to a literature review of national or multicentre studies published from 1995 to 2008, the overall prevalence of HCAI in developed countries varies between 5.1% and 11.6% .

While HCAI surveillance systems are in place at national/sub-national level in many developed countries, only 23 developing countries (23/147 [15.6%]) reported a functioning national surveillance system in a survey conducted by the WHO First Global Patient Safety Challenge. Therefore, very scanty data are available from the vast majority of low- and middle-income countries. Only nine published studies reported HCAI data at national level. Studies conducted in health-care settings in developing countries report hospital-wide HCAI rates markedly higher than those in developed countries.

The burden of HCAI is also much more severe in high-risk populations, such as adults housed in critical care and neonates, with overall infection rates and device-associated infection rates several-fold higher than in developed countries. The incidence of infection acquired in critical care in developing countries is at least twice that of the United States. In particular for some device associated infections (e.g., bloodstream infection and ventilator associated pneumonia), incidence densities can be up to 19 times higher than in developed countries.

## Impact of HCAI

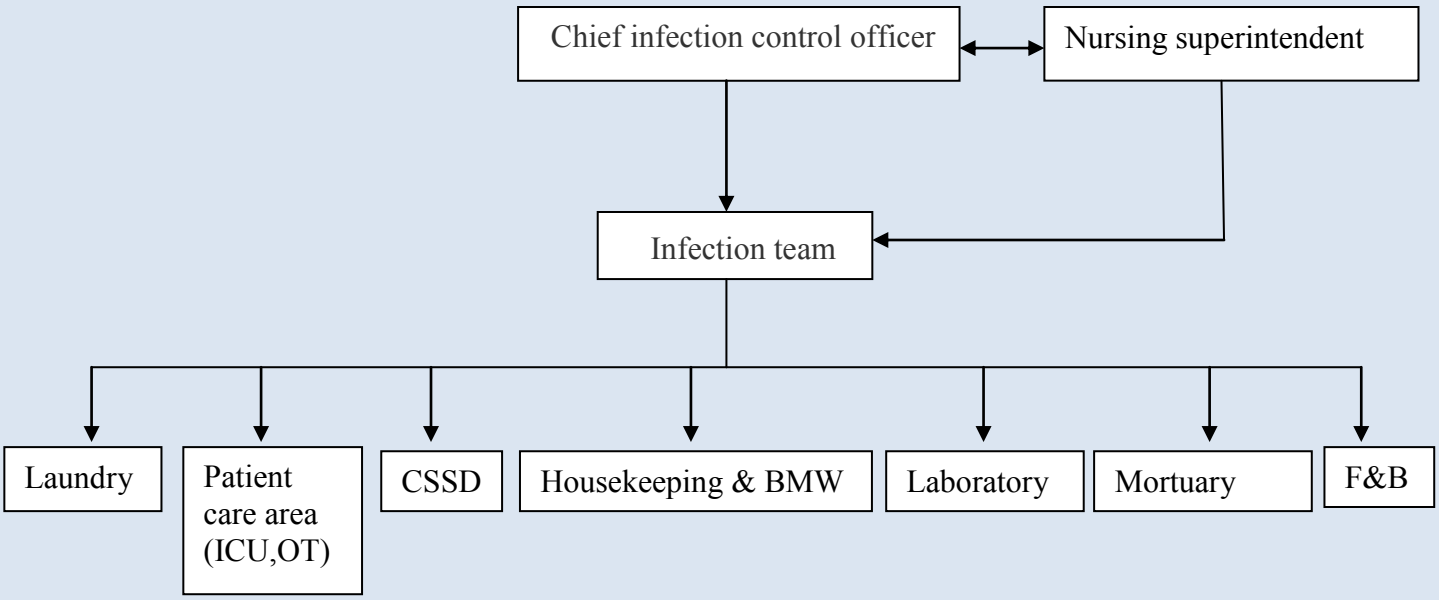
According to the available evidence, the impact of HCAI implies prolonged hospital stay, long-term disability, increased resistance of microorganisms to antimicrobials, massive additional financial burden for health systems, high costs for patients and their family, and unnecessary deaths.

Some infections, such as bloodstream infection and ventilator associated pneumonia, have a more severe impact than others in terms of mortality and extra costs. For instance, the mortality rate

Directly attributable to bloodstream infection in critically ill patients has been estimated to be 16–40% and the increase in length of stay between 7.5–25 days.

Very few studies from developing countries assessed HCAI impact and no report provided national estimates. Increased length of stay associated with HCAI varies between 6 and 23 days in non-critically ill patients. In developing countries, crude excess mortality in adult critically ill adults affected by ventilator-associated pneumonia is reported to be as high as 27.5%.

## ORGANOGRAM:


Chief infection control officer
Nursing superintendent
Infection team
Laundry
Patient care area (ICU,OT)
CSSD
Housekeeping & BMW
Laboratory
Mortuary
F&B

# DATA COLLECTION & METHODOLOGY

## Data Collection:

The procedure followed is enumerated below:

i. A study of the duties of each individual was conducted to understand the roles and responsibilities of the medical and non-medical staff working in patient care areas.
ii. Nursing and non- medical staff in each department were interviewed in detail to know about the infection control measures carried out by them, in addition observation of the staff while working in the department was also done.
iii. Structured checklists were prepared by referring to the NABH guidelines textbook and internet for the respective departments, which is given in the annexure.
iv. In addition a general questionnaire was also prepared for observation regarding clinical procedures like hand hygiene, injection infusion, and transmission precautions.

## Methodology:

**Study Type** – Cross-sectional study.
**Study Area** – ICUs (Medical, Surgical, Cardiac),Wards (general , general 1, general 2, private, semi-private, executive, deluxe, super deluxe), Kitchen, Laundry, CSSD
**Sampling method** – Convenient sampling method

**Study Participants**: Staff of the respective departments and nursing staff.

**Sample size** – 54 nursing staff directly involved with the patient care.

**Study Technique** – Interview, checklist.

**Study Tool** – Structured questionnaire, Checklist.

**Data Collection Plan** – This study surveyed 54 nursing staff. For collecting the data interviews and observation of the staffs of all departments and concerned areas was carried out after taking authorization from concerned authorities of these departments.

**Data analysis** – done with the aid of MS-Excel sheets. The data was entered in sheets department wise and then analyzed with the help of graphs.

**Ethical Considerations**- purpose of the study was clearly explained. The respondents were assured of the data confidentiality.

## Data Analysis, Compilation and Interpretation:

Infection control measures can be seen as

1. Essential standard precautions and
2. Support services

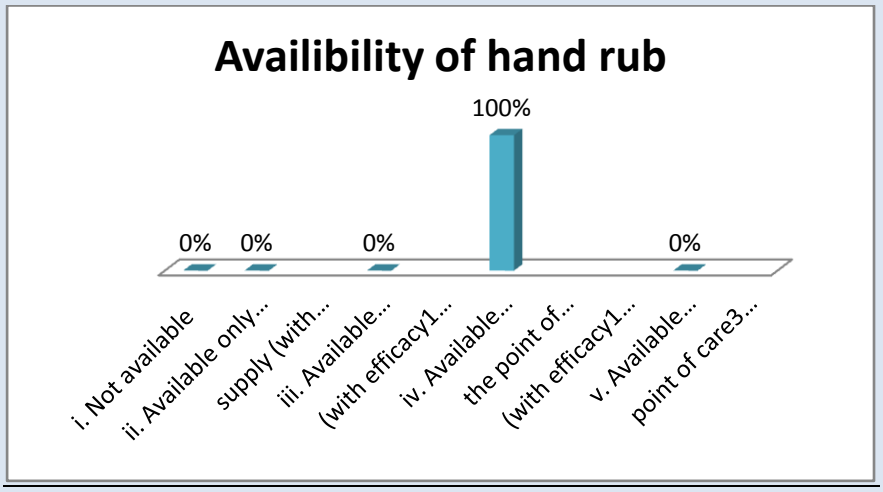
The department wise analysis of the data is as follows:

# I. HAND HYGIENE

# Hand hygiene guidelines

(According to WHO guideline)

- Availability of alcohol-based hand rub-




100% Available facility-wide with continuous supply and also at the point of care3 in the majority of wards.

**Point of care:** The place where three elements come together: the patient, the health-care worker, and care or treatment involving contact with the patient or his/ her surroundings (within the patient zone). Point-of-care products should be accessible without having to leave the patient zone (ideally within arm's reach of the healthcare worker or within 2 meters).

- Sink: bed ratio-

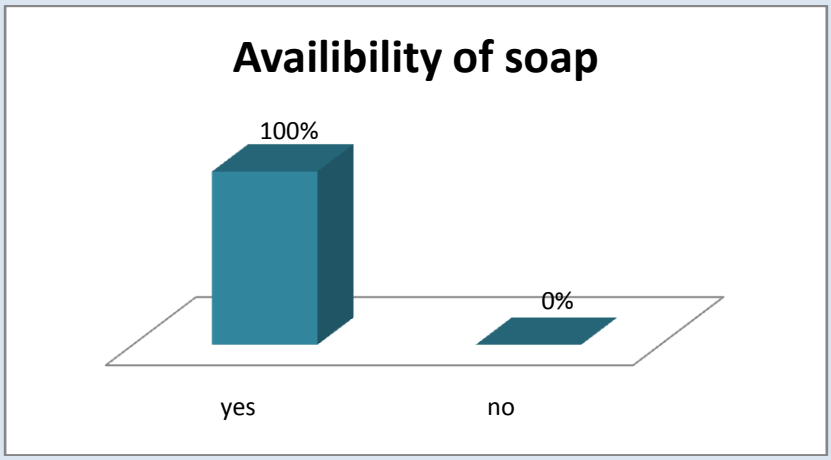
1:10 ratio is there in all ICU (micu, sicu, ccu) and also in general wards.
But there is no 1:1 ratio in isolation rooms.

- Water supply-

Continuous
Clean, running water.

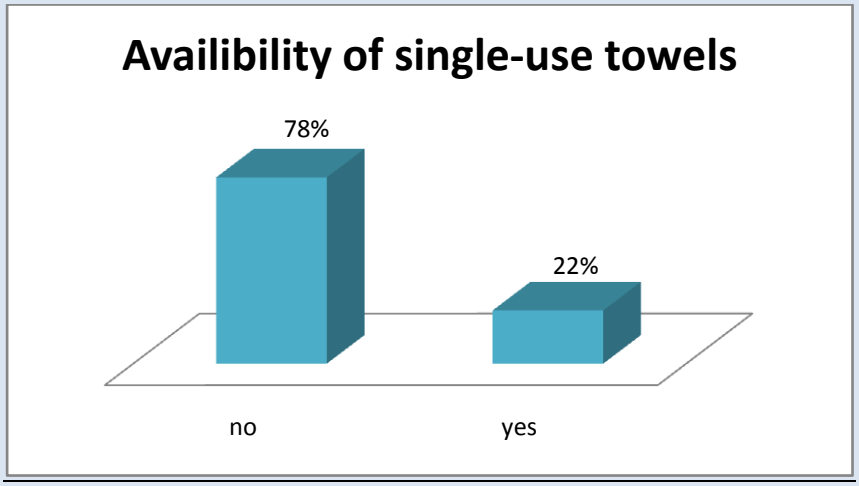
There is continuous, clean running water in all patient care areas.

- Soap-




Soap is available in all sinks of patient care area (ICU, wards)

- Single-use towels-

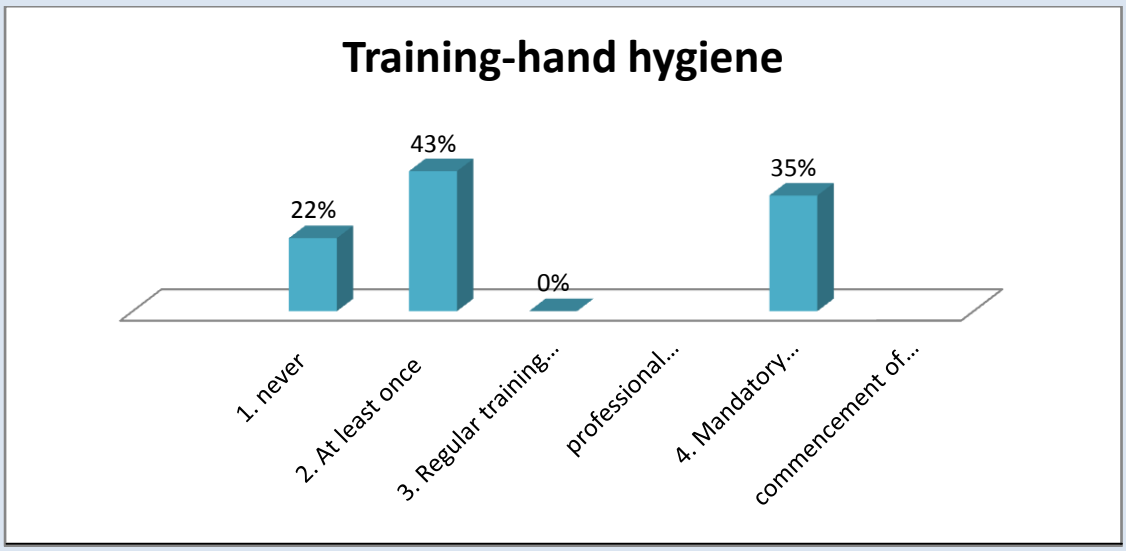



22% sinks have single-use towels-

MICU

Semi-private

- Training regarding hand hygiene-(5th april-21st may)




As per staff regular training was conducted till February.

Out of 54 people,

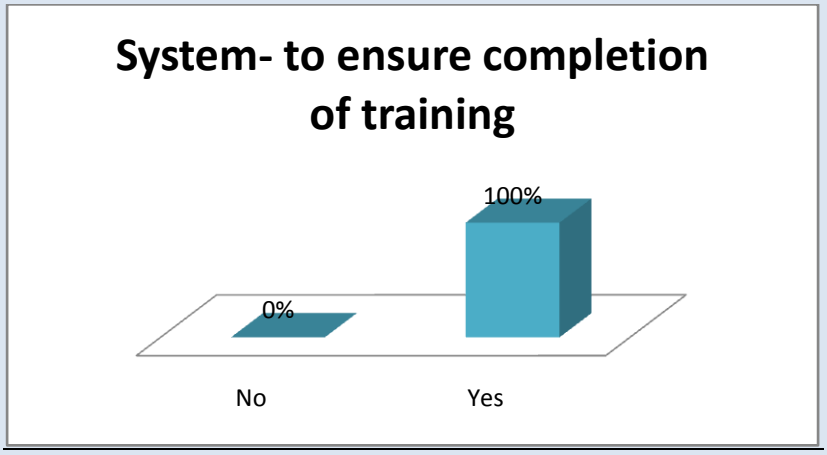
Never – 22%

At least once-43%

Mandatory training for all professional categories at commencement of employment, then ongoing regular training (at least annually) - 35%

Regular training for medical and nursing staff, or all professional categories (At least annually)- 0%

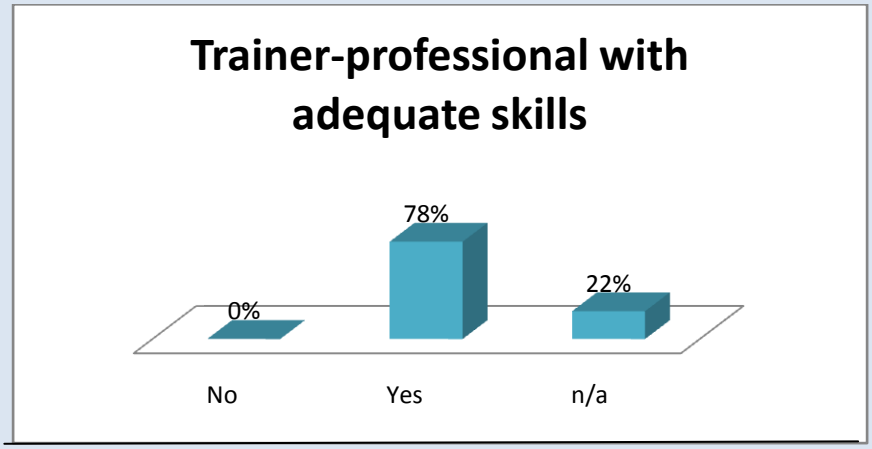
- System in place to ensure that all health-care workers complete this training




100% of health care workers informed that there is a training need assessment sheet that is filled by the department mentioning the name of the people who have undergone training and it is submitted in HR dept.

Also there is a test conducted post training to ensure that trainee is trained or not.

Professional with adequate skills to serve as trainer for hand hygiene educational programs

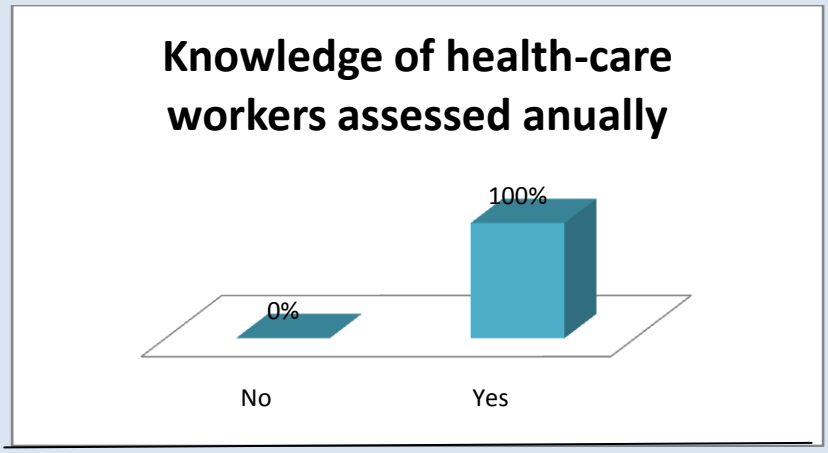



Out of 54 persons,

78% informed that there are professionals to provide them training.

22% were not applicable – those who have not gone under training.

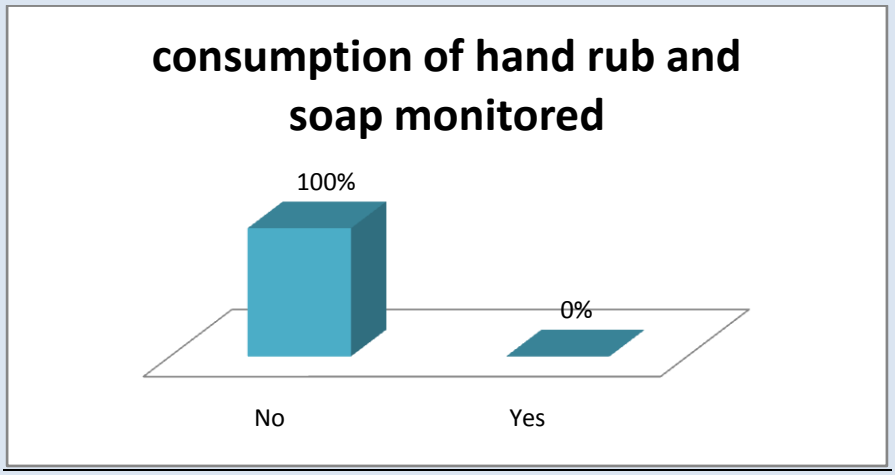
- Health-care worker knowledge regarding indications and technique for hand hygiene assessed at least annually




100% of staff (i.e. interviewed) undergoes an assessment annually by appearing for a written examination which is also submitted to HR dept to test effectiveness.

And regular observation by HIC team assures practical knowledge

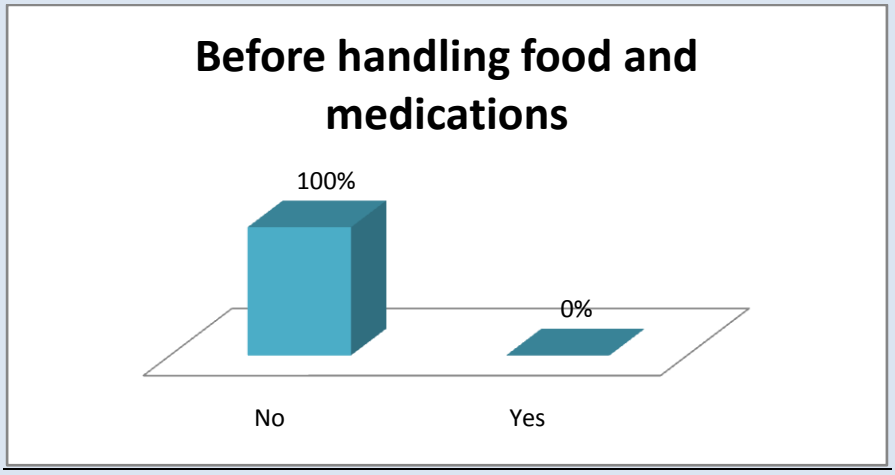
- Consumption of alcohol-based hand rub and soap monitored monthly (or at least every 3-5 months)



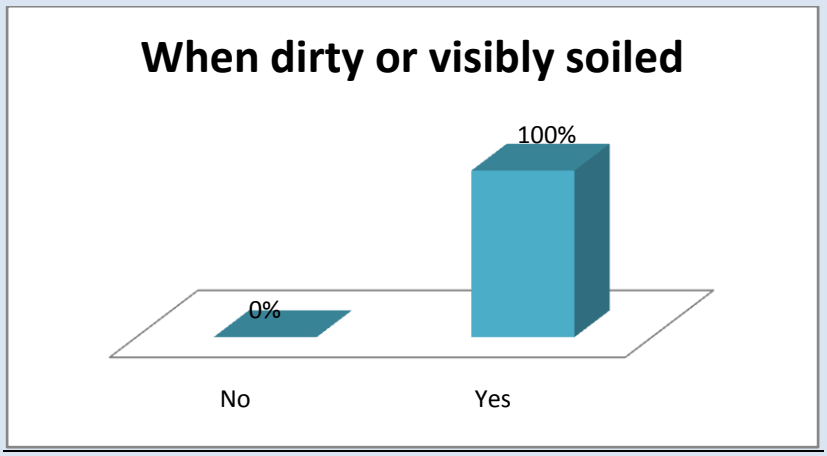

There is no monitoring of consumption of soap and alcohol – based hand rub

## INDICATIONS OF HAND HYGIENE-

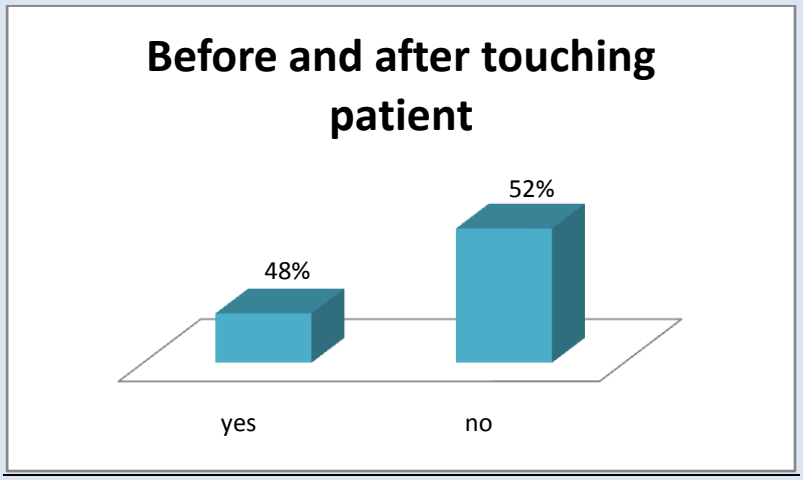
- Before handling medication or preparing food-



- Wash hands when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet-



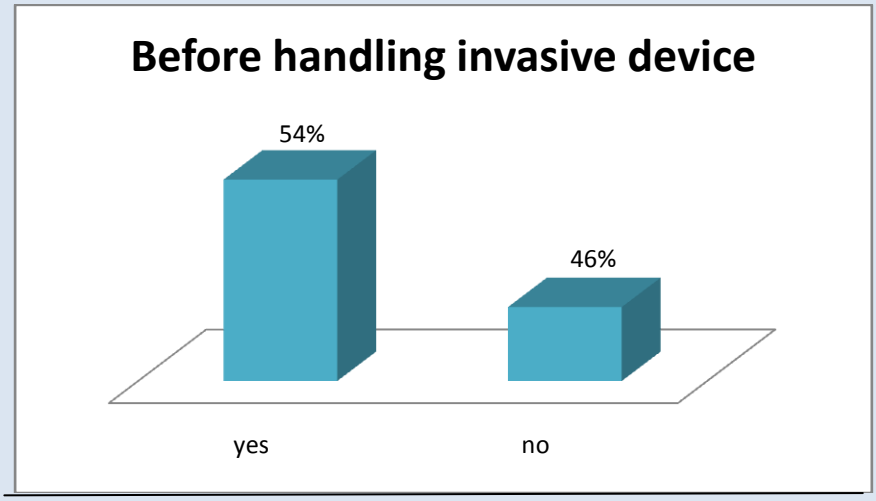

- Before and after touching the patient-




52% staff does not perform hand hygiene both before and after touching patient

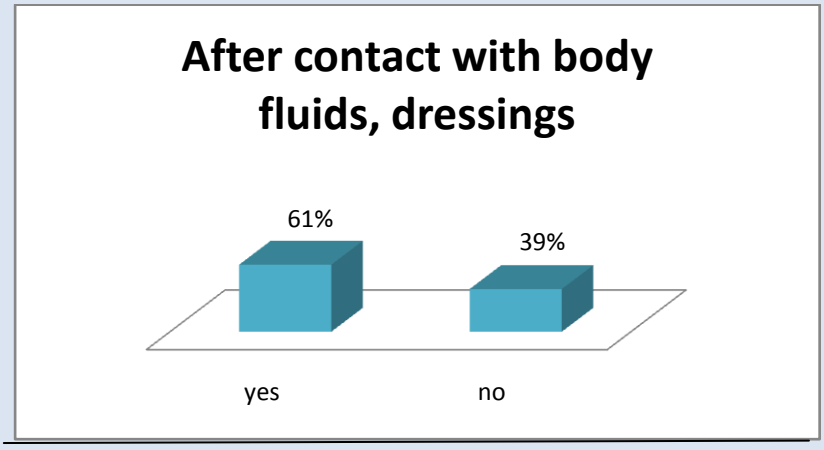
48% perform either before or after touching patient.

- Before handling an invasive device for patient care, regardless of whether or not gloves are used




54% of staff performs hand hygiene before handling invasive device.
46% of staff does not perform hand hygiene before handling invasive device.

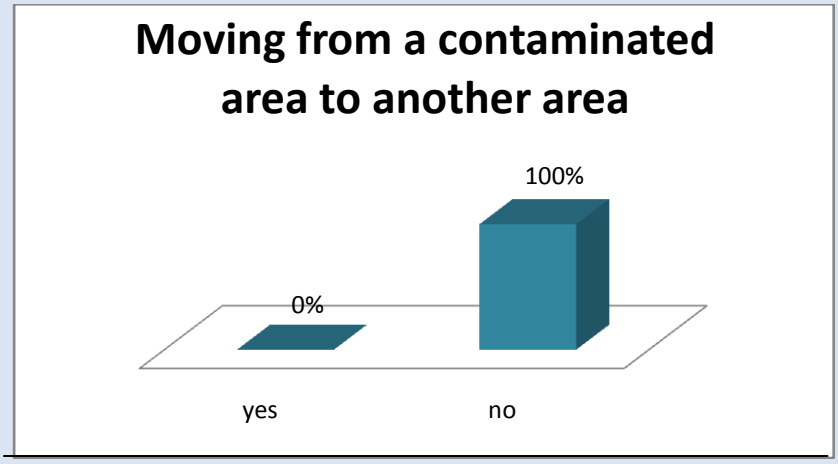
- After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings



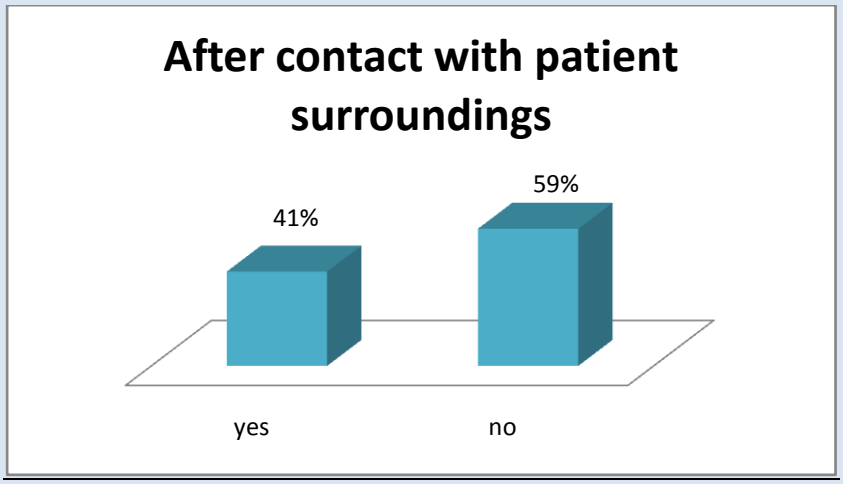

61% perform hand hygiene after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings.

39% do not perform hand hygiene after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings.

- If moving from a contaminated body site to another body site during care of the same patient



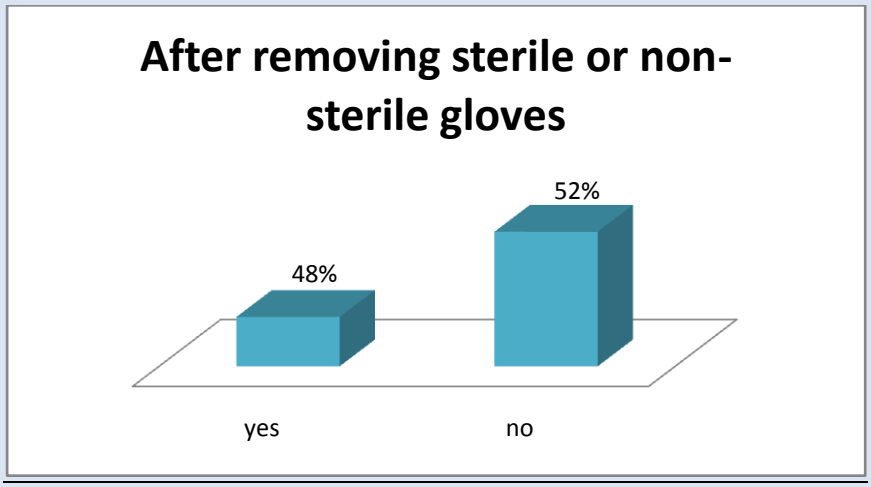

- After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient-




41% staffs perform hand hygiene after contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient.

59% staffs do not perform hand hygiene after contact with inanimate surfaces and objects (Including medical equipment) in the immediate vicinity of the patient.

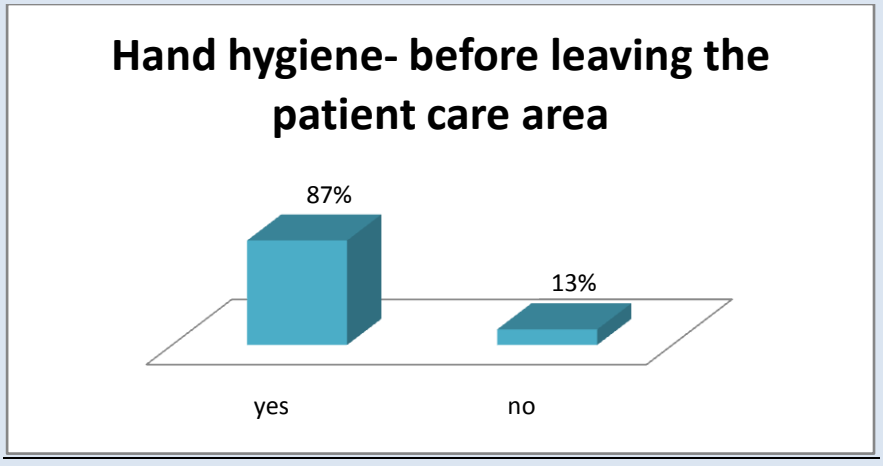
- <u>After removing sterile or non-sterile gloves-</u>




48% staff performs hand hygiene after removing sterile or non-sterile gloves.

52% staff does not perform hygiene after removing sterile or non-sterile gloves.

- <u>Before leaving the patient care area-</u>

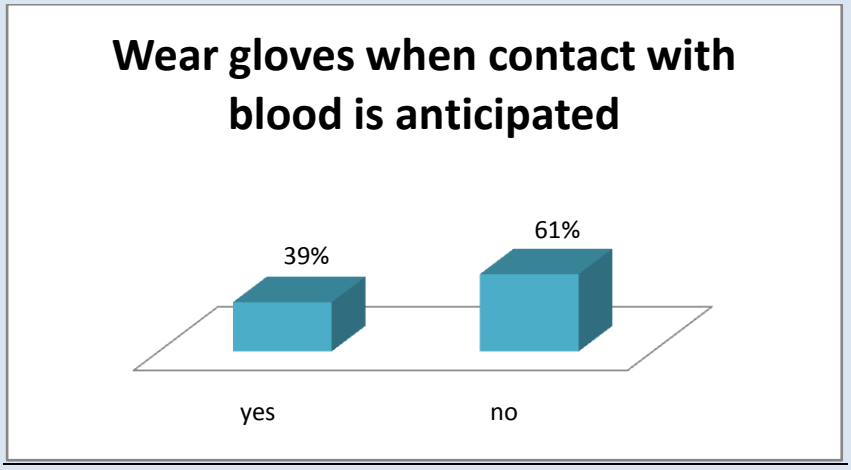



87% staff performs hand hygiene before leaving the patient care area.

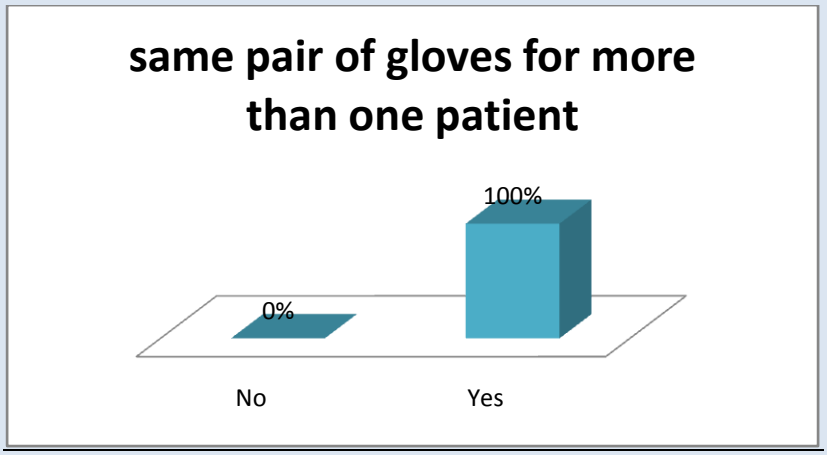
13% staff does not perform hand hygiene before leaving the patient care area.

## USE OF GLOVES:-

- Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes or non-intact skin will occur-

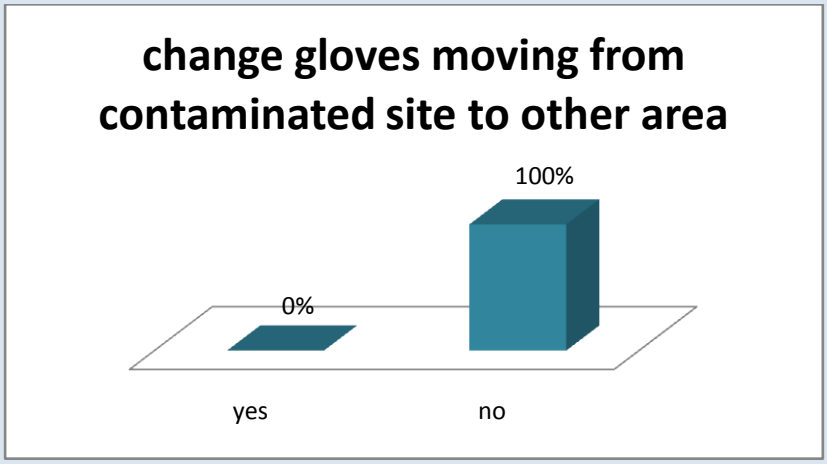



- Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient-




100% staff removes gloves after use and do not wear same for other patient.

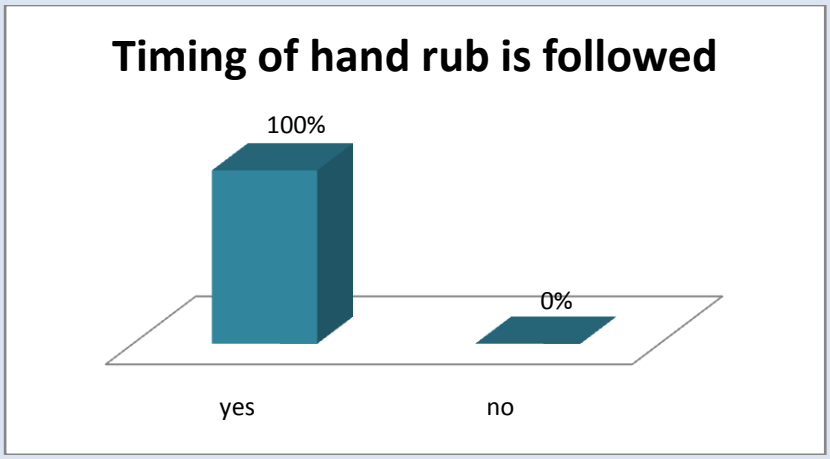
- When wearing gloves, change or remove gloves during patient care if moving from a contaminated body site to either another body site within the same patient or the environment-




100% staff does not follow and thus do not change or remove gloves when moving from a contaminated body site to another body site of same patient.

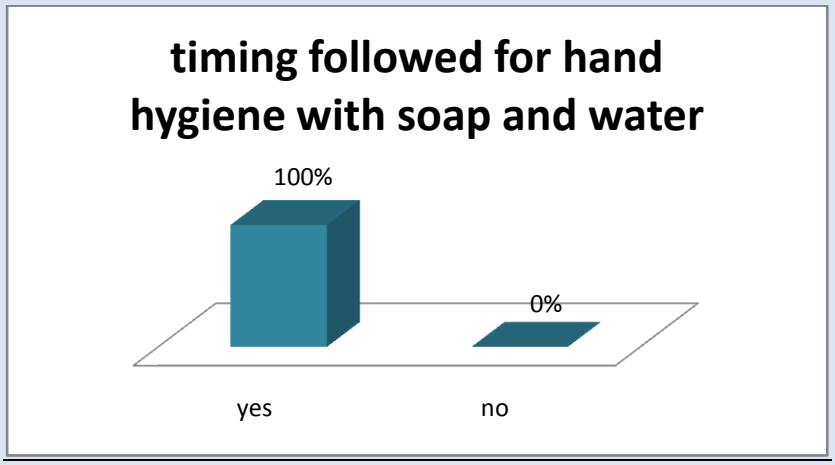
- Hand Hygiene Technique with Alcohol-Based Formulation-

100% staff follows the standard timing of hand rub that is 20-30 secs.



- Hand Hygiene Technique with Soap and Water-

100% staff follows the standard timing of hand rub that is 40-60 secs.

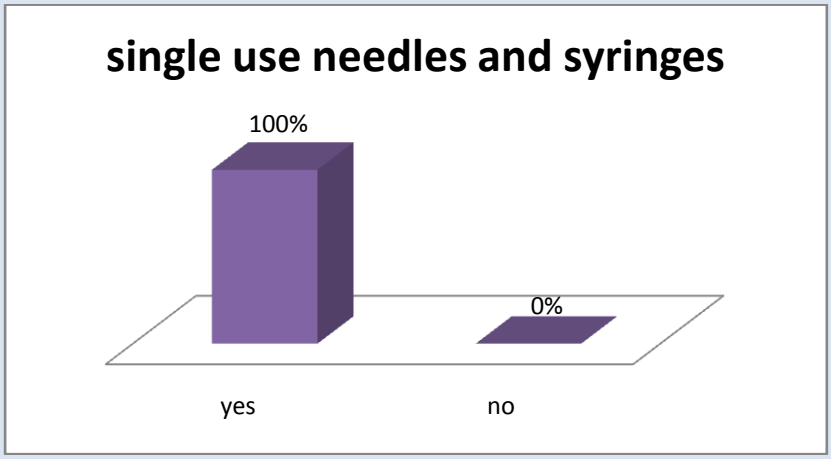



## II. SAFE INJECTION AND INFUSION PROCESS

# Safe injection and infusion process

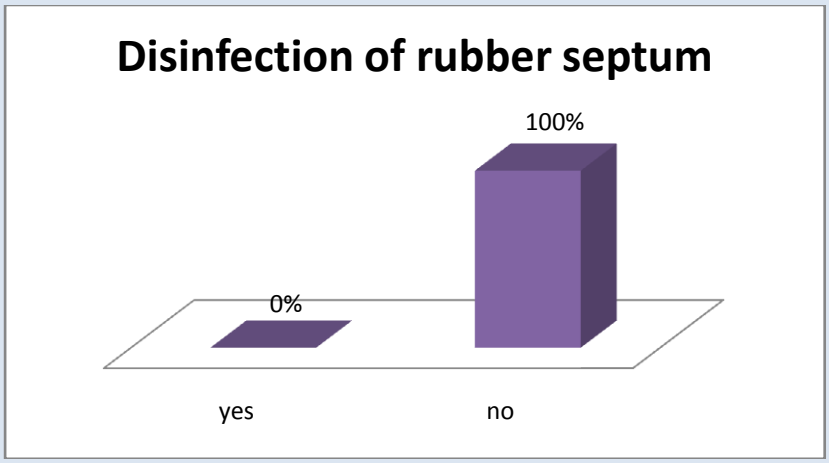
- Needles and syringes are used for only one patient-

Disposable needles are used for each patient.




(To avoid transfer of infection and diseases)

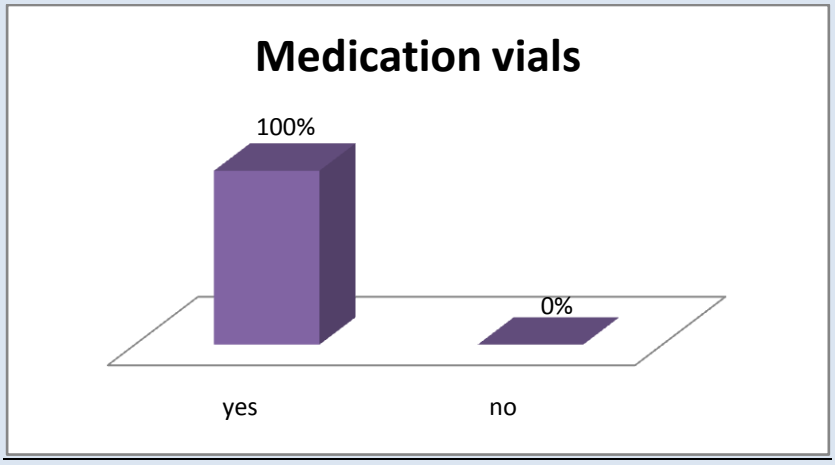
- Rubber septum on a medication vial-




Rubber septum on a medication vial is not disinfected with alcohol prior to piercing

***Purpose-*** the infection from the surface is not transferred.

- Medication vials-



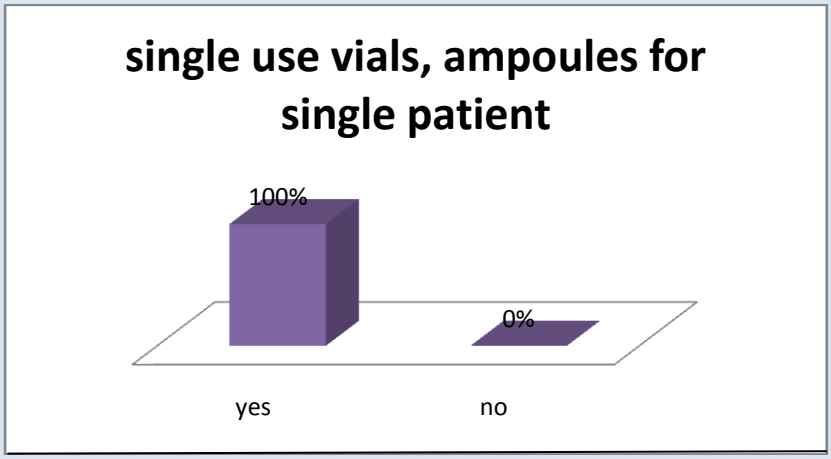

Medication vials are entered with new needle and a new syringe, even when obtaining additional doses for the same patient.

- Medication vials, ampoules, and bags or bottles of IV solutions-

Single use medication vials, ampoules, and bags or bottles of IV solutions are used for only one patient

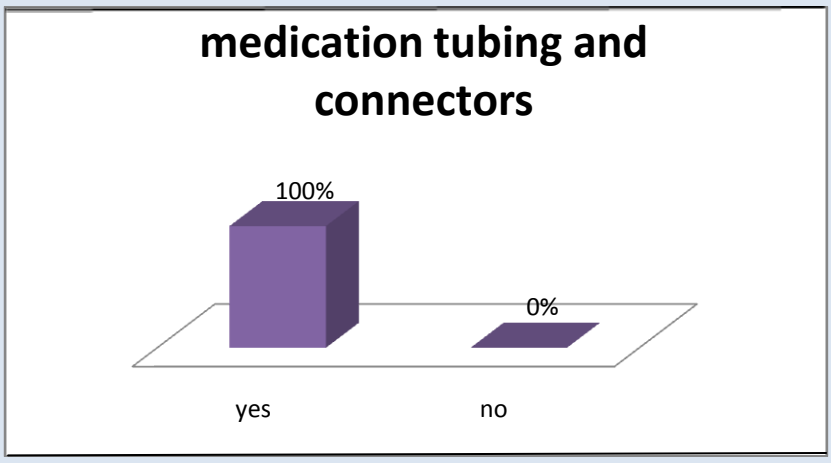
100% followed

They are then disposed according to the BMW- in white containers and red respectively.




- Medication administration tubing and connectors-

Medication administration tubing and connectors are used for only one patient

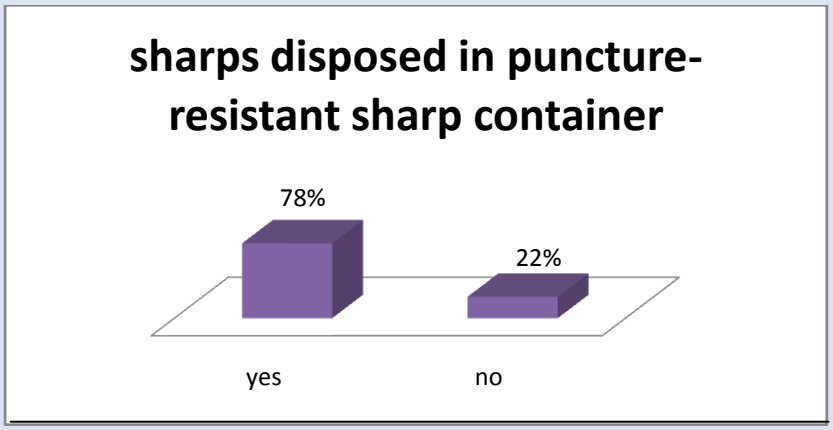


- Disposal of sharps-

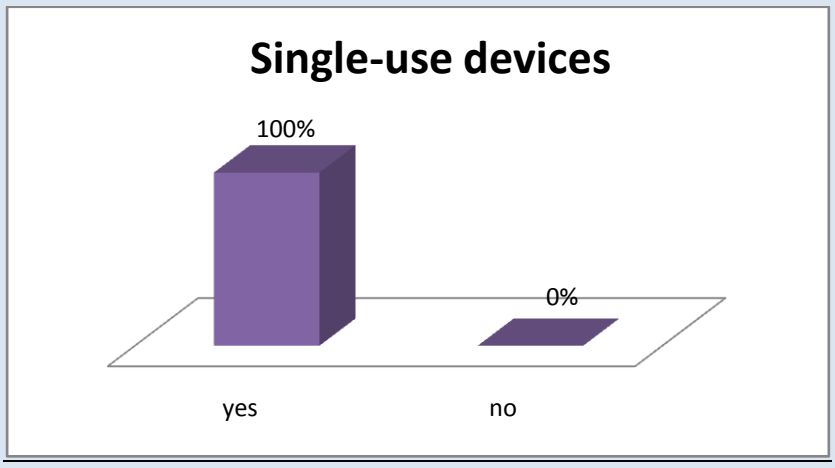
Not all sharps are disposed off in a puncture - resistant sharp container

There is availability of white containers in all wards and ICUs to dispose sharps.

78% is followed

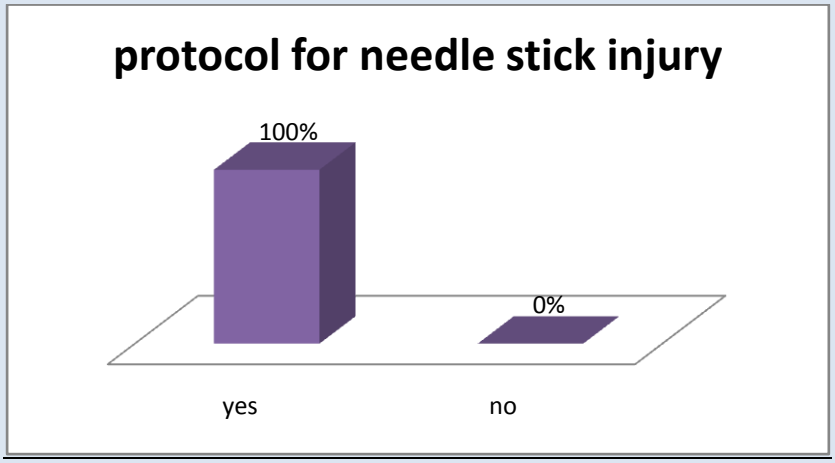



- Single - use devices-




Single - use devices are discarded after use and not used for more than one patient

- Protocols for needle stick injury-




100% staff is aware of needle stick injury protocol and is followed, and even the posters are displayed in few patient care areas.

But the reporting is not done by the staff, when checked there were only 1-2 reporting every month in last few months.

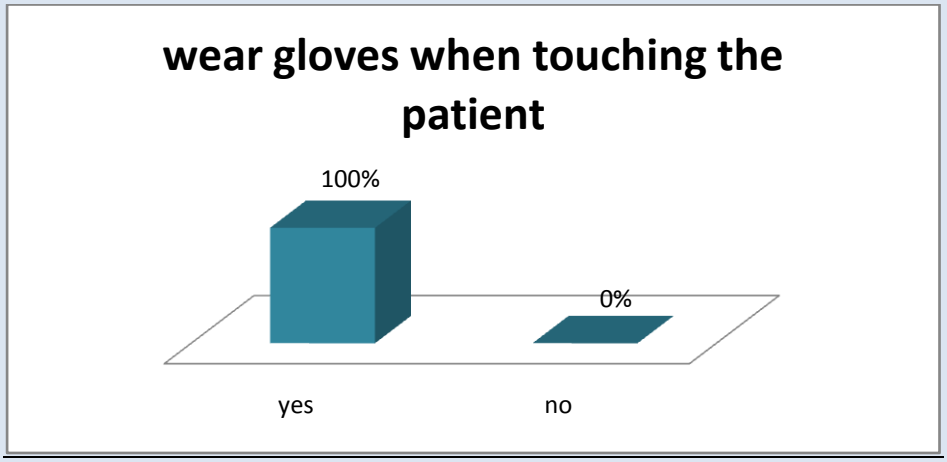
## III. TRANSMISSION – BASED PRECAUTIONS

(According to CDC)

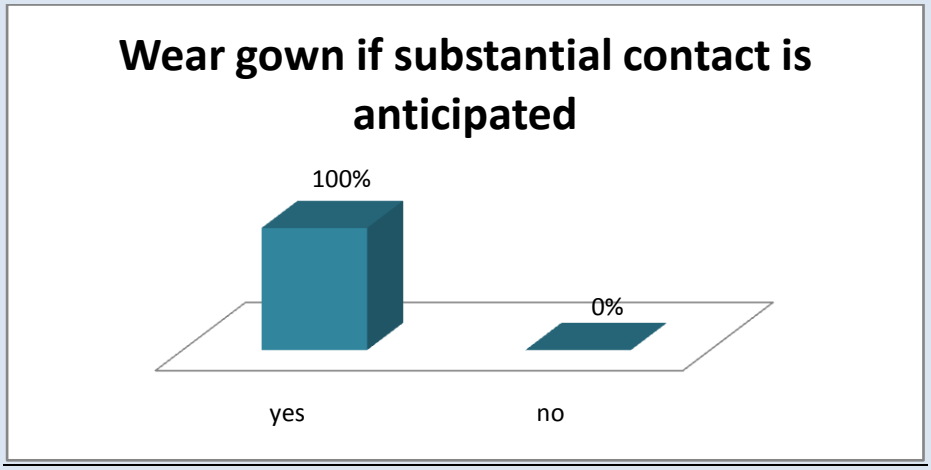
# Potentially infectious patient

***CONTACT, DROPLET AND AIR BORNE PRECAUTIONS***

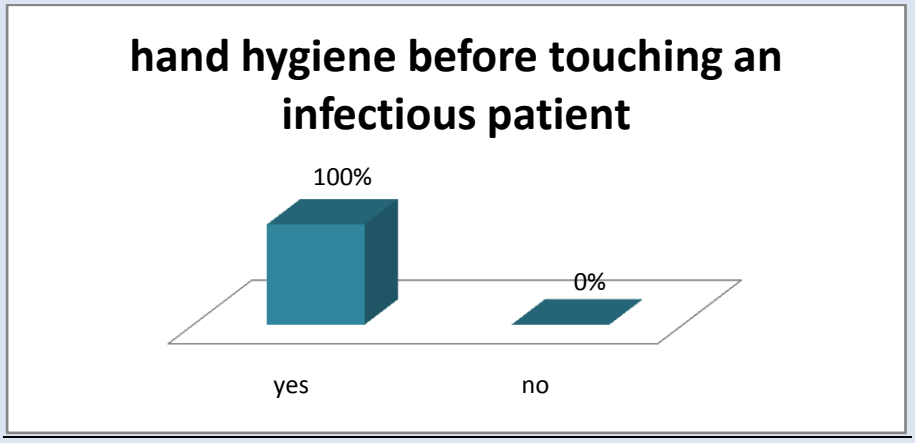
- Wear gloves when touching the patient and the patient's immediate environment or belongings-




- Wear a gown if substantial contact with the patient or their environment is anticipated-

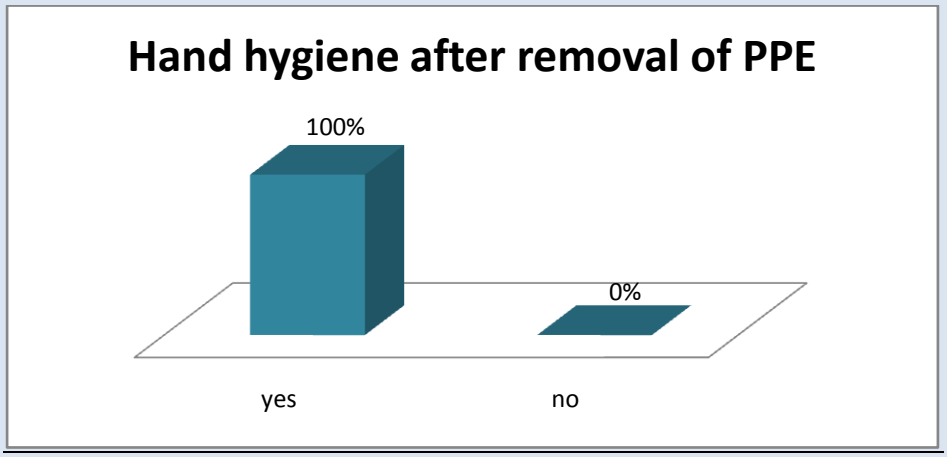



- Perform hand hygiene before touching patient and prior to wearing gloves-



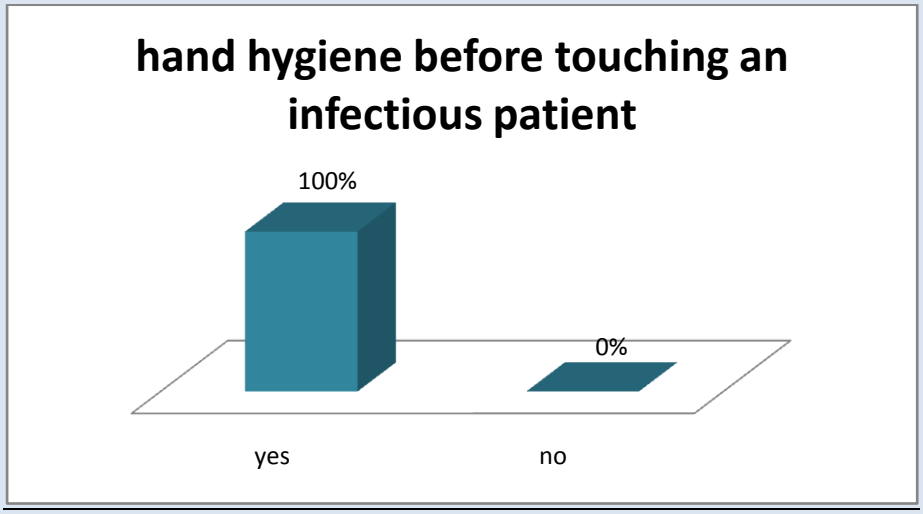

100% staff is aware that they have to perform hand hygiene before touching an infectious patient.

- Perform hand hygiene after removal of PPE; note: use soap and water when hands are visibly soiled-



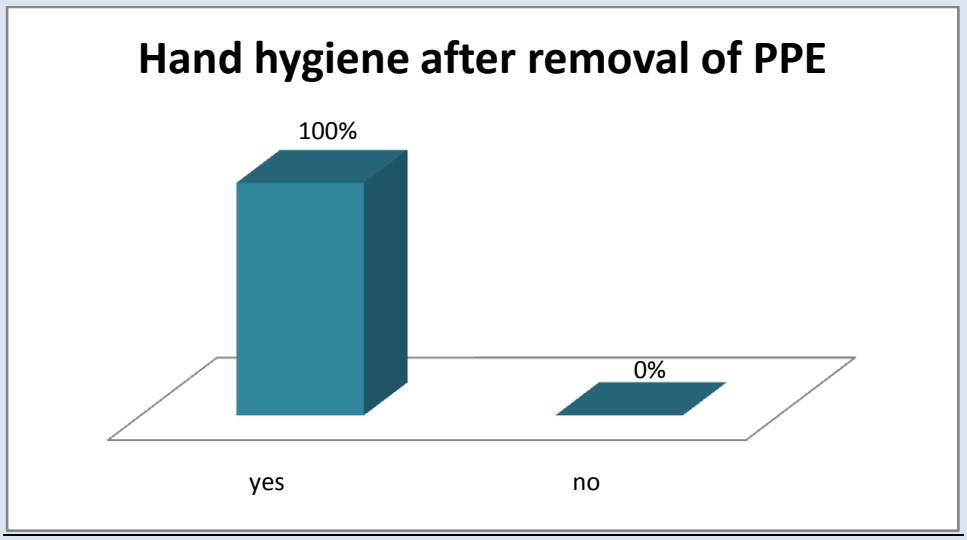

100% staff is aware that they have to perform hand hygiene after removal of PPE.

- Perform hand hygiene before touching patient and prior to wearing gloves-



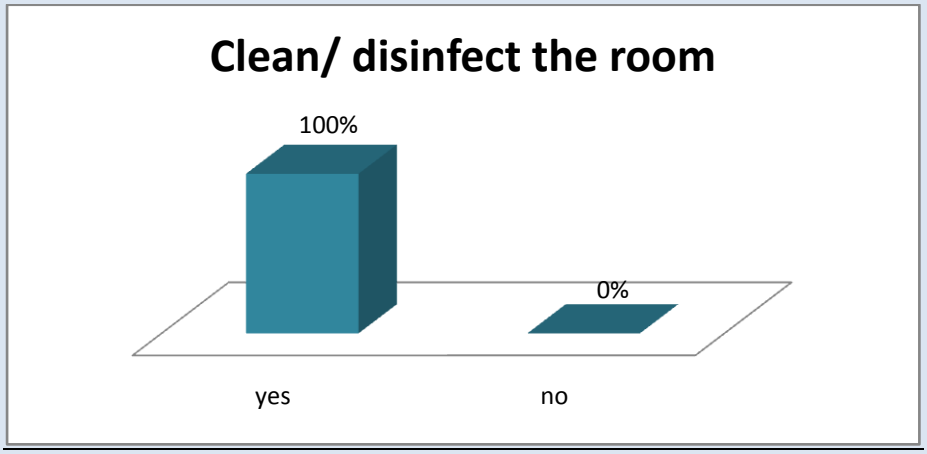

100% staff is aware that they have to perform hand hygiene before touching an infectious patient.

- Perform hand hygiene after removal of PPE; note: use soap and water when hands are visibly soiled-




100% staff is aware that they have to perform hand hygiene after removal of PPE.

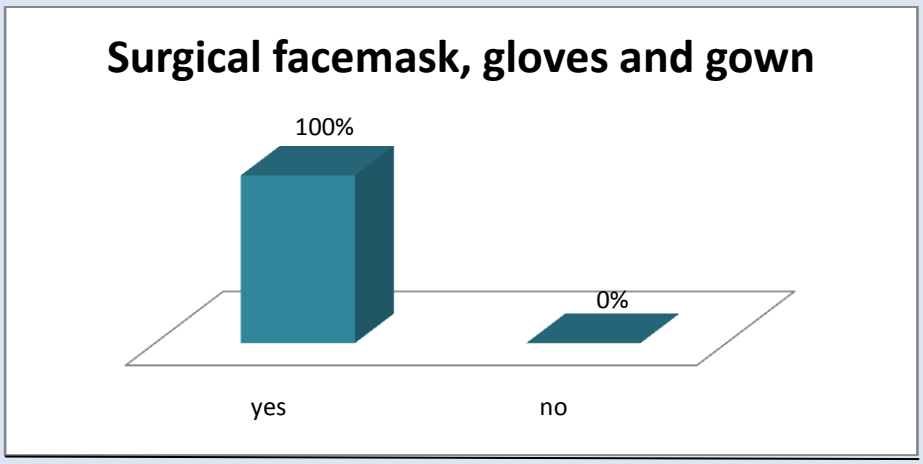
- Clean/disinfect the room accordingly-




100% staff is aware that the room is deep cleaned or fumigated after the patient is discharged.

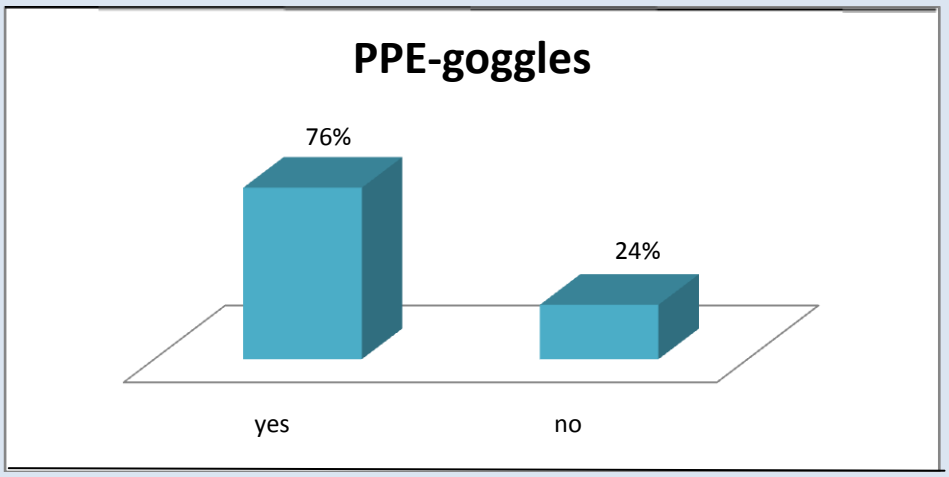
- PPE use-

Surgical facemask, gloves and gown-




100% staff is aware about the PPE used- surgical facemask, gloves and gown.

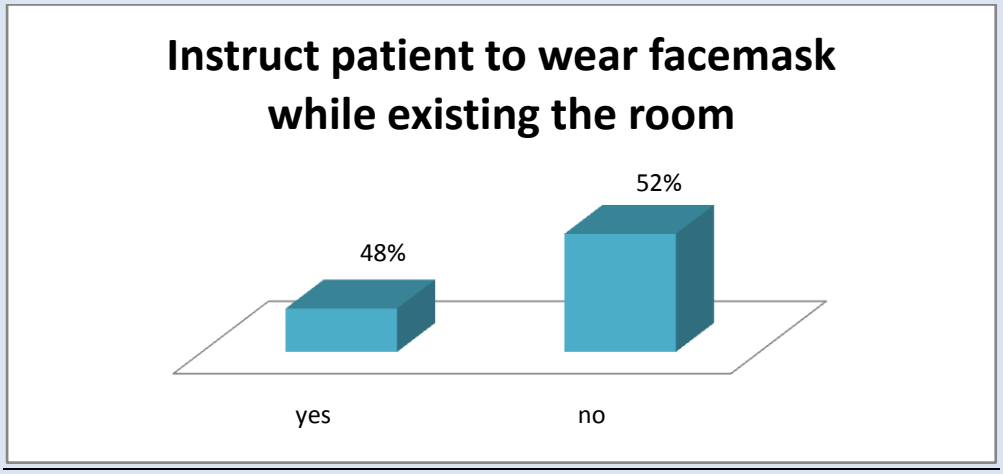
**Goggles**




Only 76%staff is aware that goggle is also used for infectious patients

And 24% staff is not aware that goggle can be used as PPE.

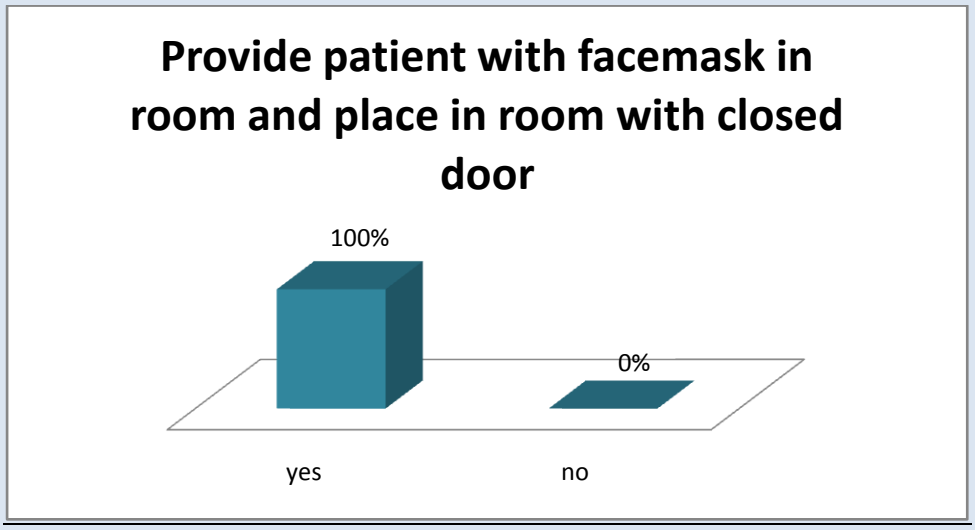
- Instruct patient to wear a facemask when exiting the room, avoid coming into close contact with other patients-



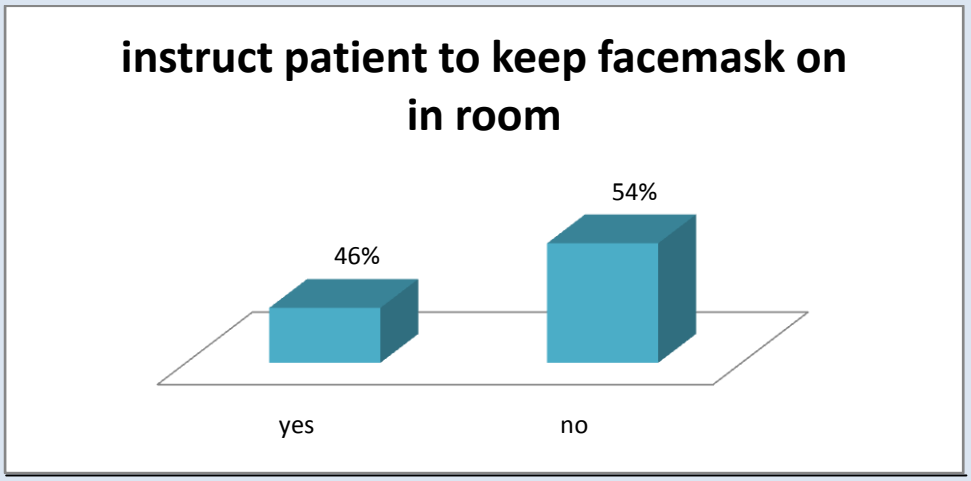

48% staff is aware to instruct patient to wear a facemask when exiting the room

52% staff is not aware to instruct patient to wear a facemask when exiting the room

- Provide a facemask (e.g., procedure or surgical mask) to the patient and place the patient in room with a closed door



- Instruct the patient to keep the facemask on in room, if possible, and to change the mask if it becomes wet-




46% staff is aware that they have to instruct the patient to keep the facemask on in room, if possible, and to change the mask if it becomes wet

54% staff is not aware that they have to instruct the patient to keep the facemask on in room, if possible, and to change the mask if it becomes wet

## IV. CAUTI (catheter associated urinary tract infection)

(According to CDC)

## CAUTI

(Interviewed the staff and observed patients)

- Catheter insertion-

It is indicated in-

Acute urinary retention

Measurement of urinary output (critical pts)

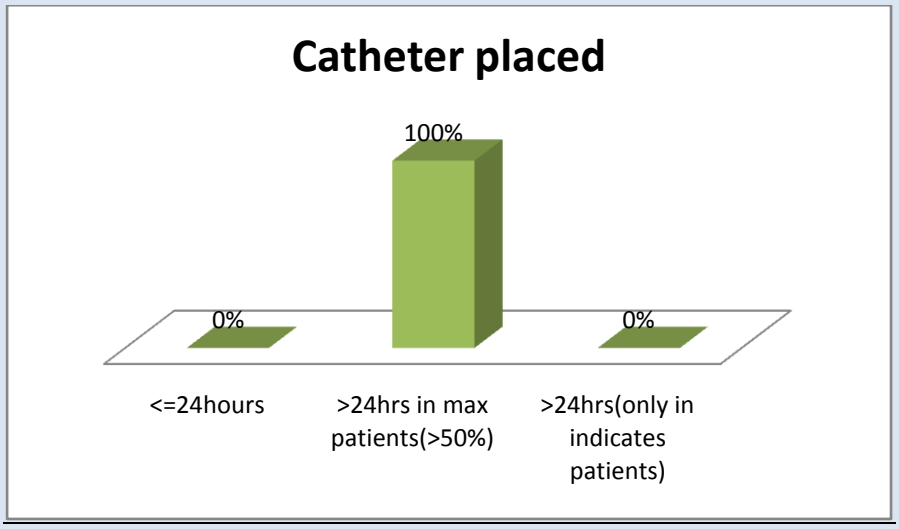
Preoperative

Pts with prolonged immobilization

End life care comfort

100% followed.

- Leave catheter in place-

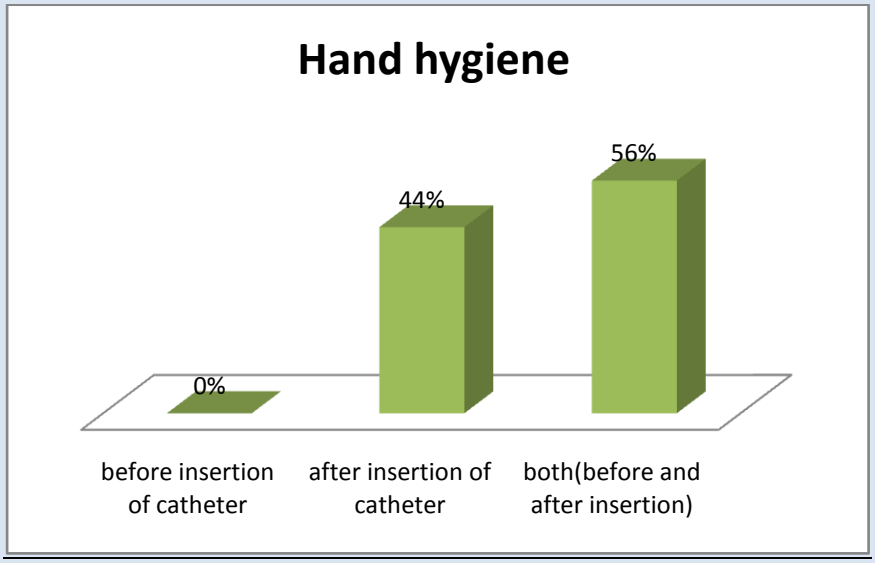



Catheter is placed for 48-72 hours

But the catheter should be placed for 24 hours and should only be placed in recommended patients for more than 24 hours. This *increases the chances of CAUTI.*

It can be considered as the infection rate reported is 1-2 in last 3 months.

- Hand hygiene-

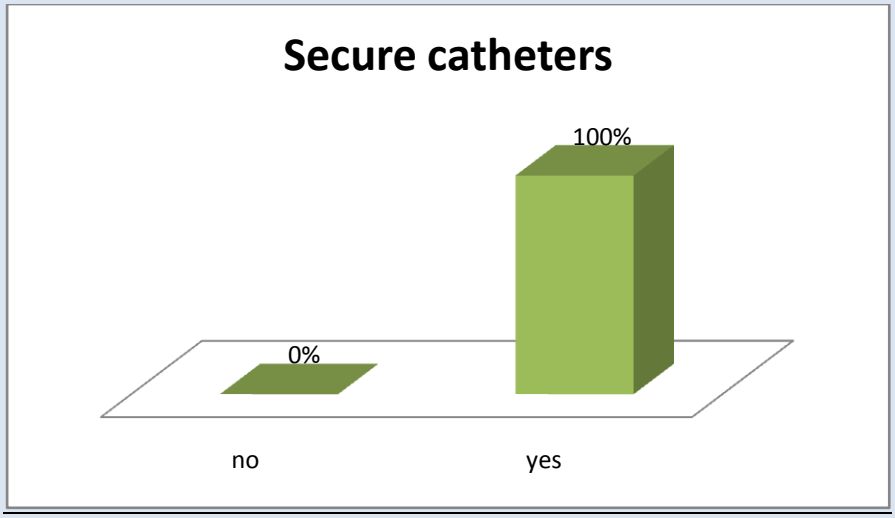



(Hand hygiene should be done both before and after insertion, to avoid spread of infection.)

But only 56% are aware about hand hygiene is to be done both before and after insertion though

100% people are aware about PPE to be used.

- Secure catheters-




100% followed.

They are inserted by the professionals and are secured.

- Replace catheter-

Catheters are replaced when

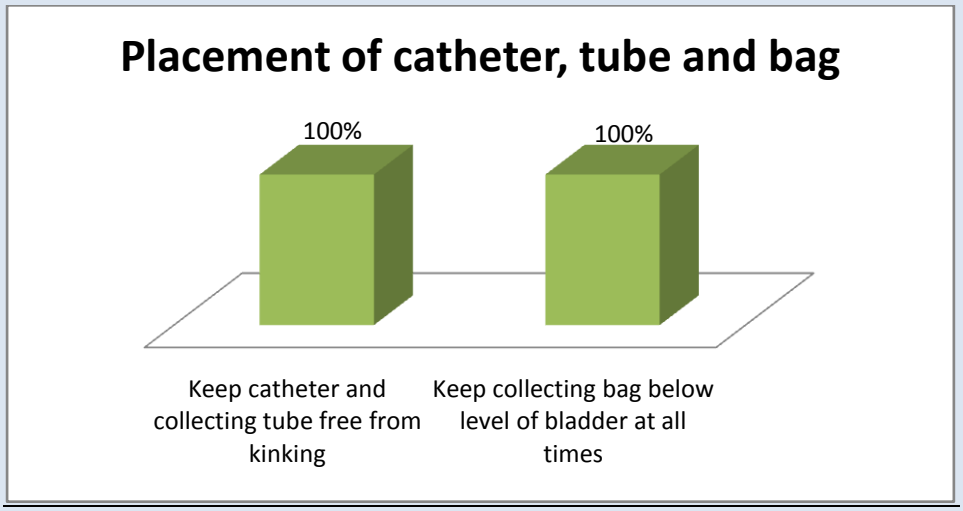
Leakage

Disconnection

Advised by doctors (if patient need prolong catheterization)

***Purpose*** – to avoid infection

- Placement of catheter, collecting tube and urinary bag-




***Purpose-*** to maintain unobstructed urine flow

Avoid CAUTI

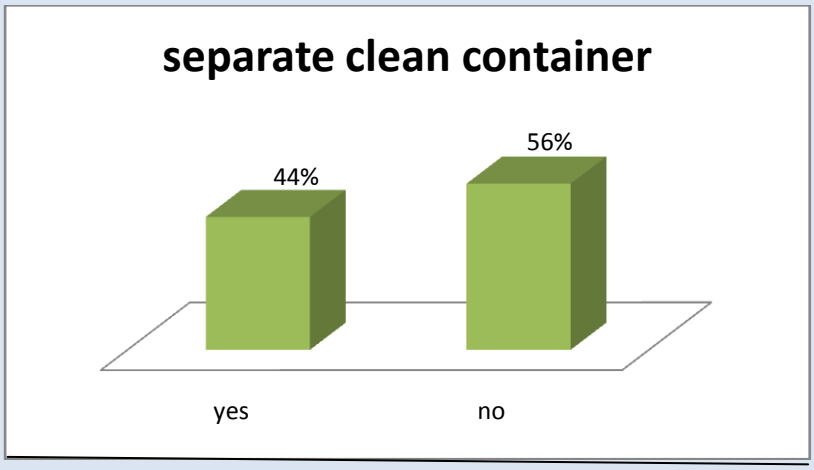
***Recommendations-*** Catheter and collecting tubes are kept free from kinking and

Collecting bag is kept below level of bladder.

- Empty collecting bag-

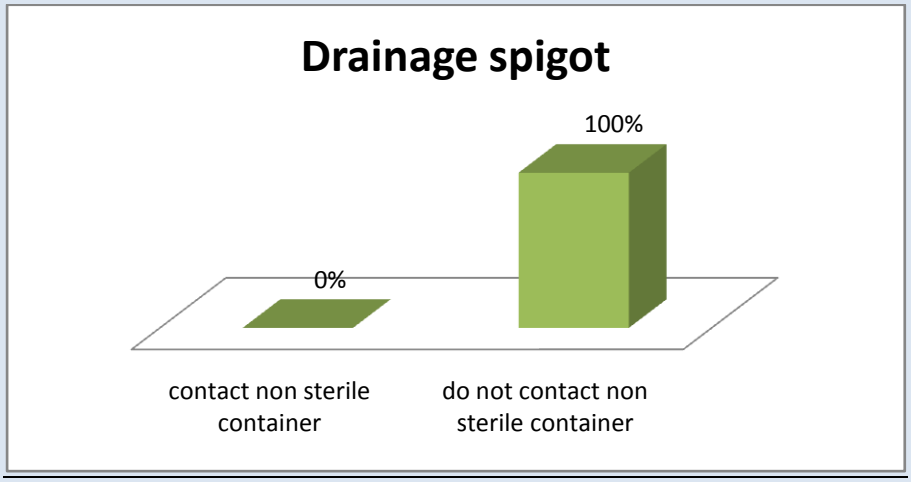
It is emptied regularly when filled

But there are not separate urine pots for each patient and all staff is not aware for the same.




(Only 56% staff was not aware about separate and clean containers)

- Drainage spigot-




(When emptied the drainage spigot do not contact the non sterile container)

## V. CENTRAL LINE INFECTION

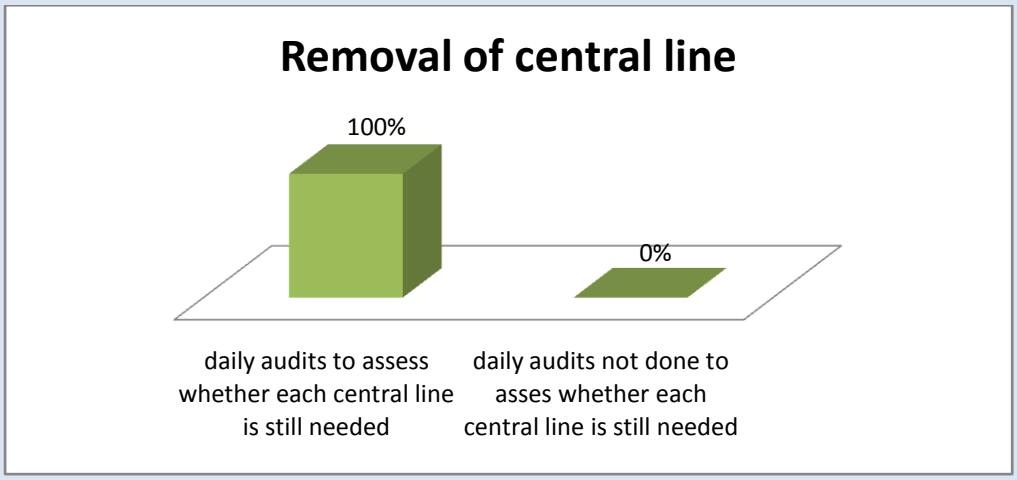
# Central line infection

(Based on interview)

(According to CDC)

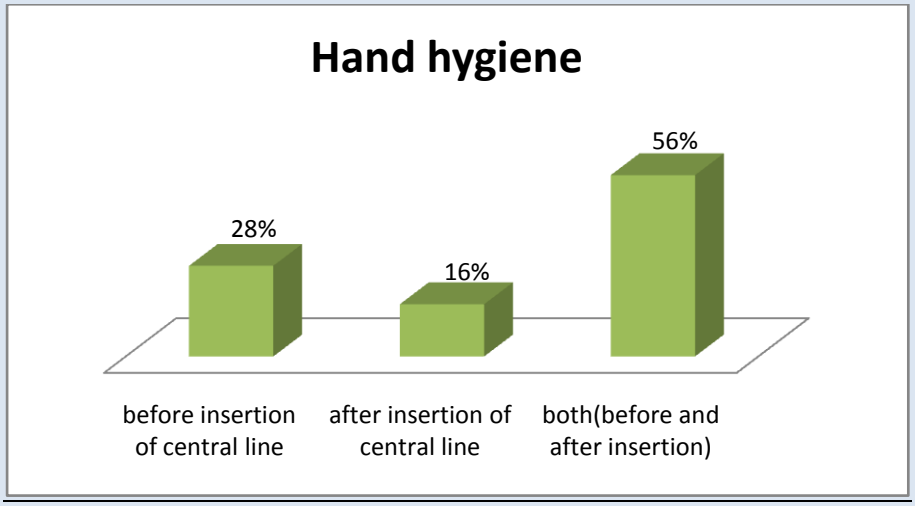
- Removal of central lines-

  Unnecessary central lines are removed when indicated by the professionals after the daily audits (doctor's visit).



- Hand hygiene-

It should be performed both before and after the insertion of central line.




(But only 56% of staff in ICU is aware)

- Sterile barrier precautions-

Mask

Head cap

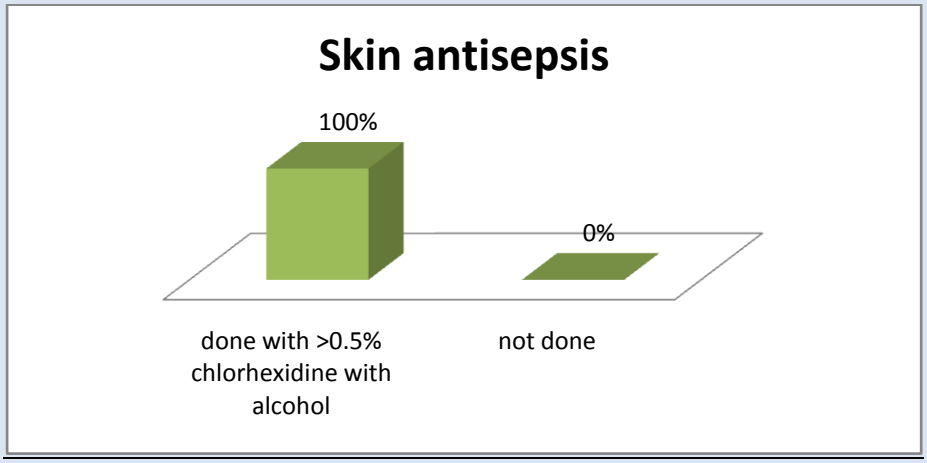
Gown

Sterile gloves

Sterile full body drape

Staff is aware of all the PPP to be used and uses mask head cap and gloves on regular basis and gown and drape if they suspect a highly infected patient.

- Skin antisepsis –




(Skin antisepsis is done with chlorhexidine to avoid infection)

***Site is covered by*** sterile gauze.

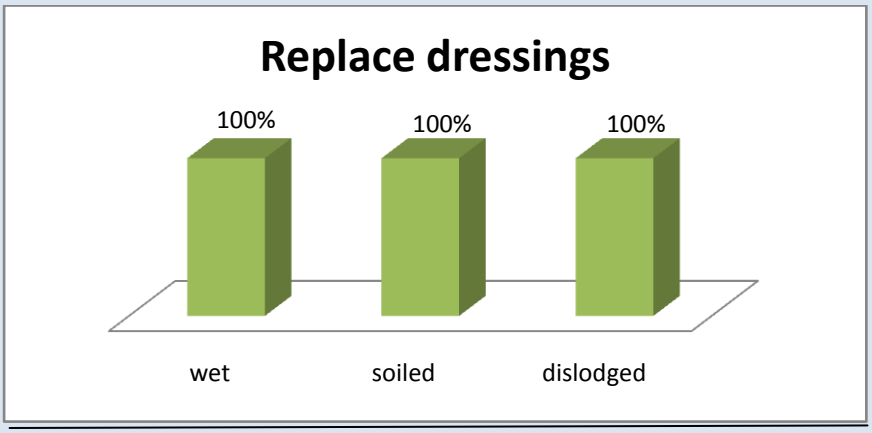
- Replace dressings-

  Dressings are replaced when

  Wet

  Soiled

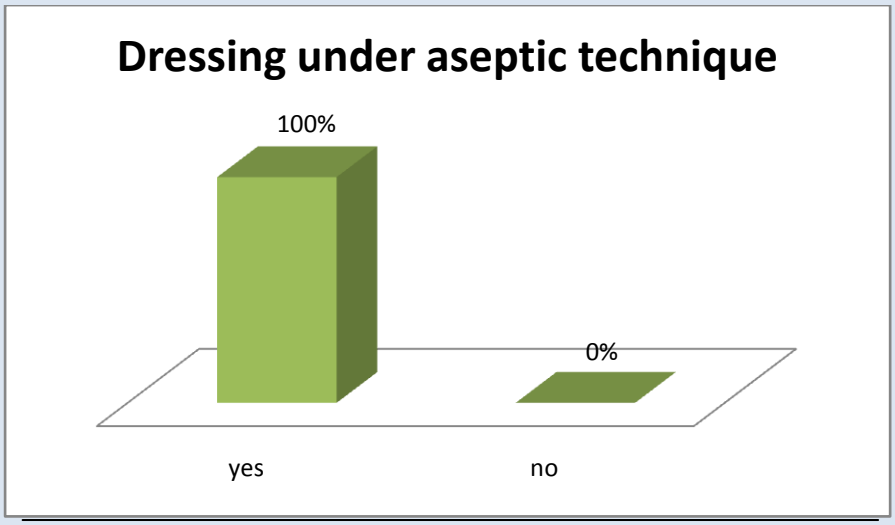
  Dislodged




(100% followed)

- Dressing-

Dressing is performed under aseptic precautions using sterile gloves.

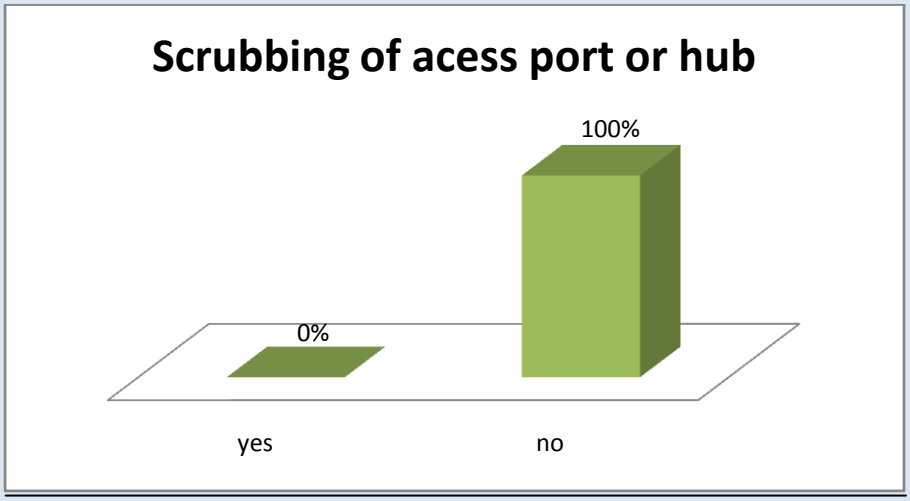



(100% followed)

- Scrubbing of the access port or hub-

***Standard practice***- Scrubbing of the access port or hub immediately prior to each use with an appropriate antiseptic (e.g., chlorhexidine, povidone iodine, an iodophor, or 70% alcohol).

But it is not performed.

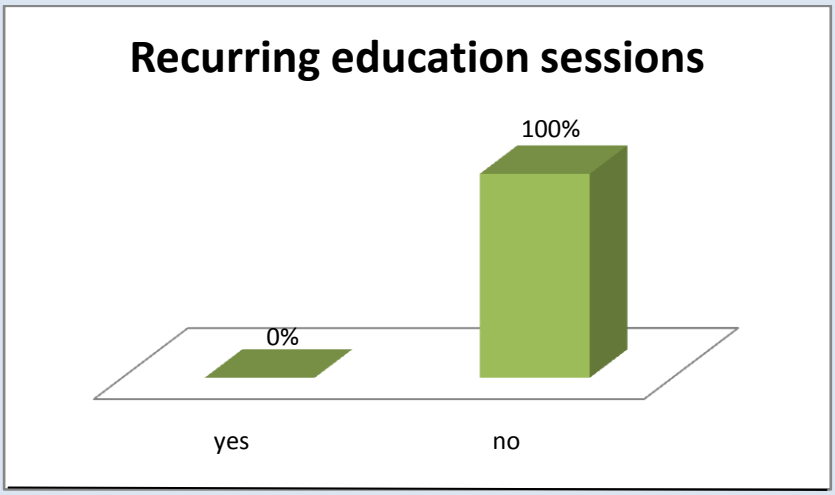


- Education sessions-

Provide recurring education sessions on central line insertion, handling and maintenance.

Staff should be provided with recurring sessions regarding central line.

*But they are given training only at the time of employment.*



# SUPPORTING SERVICES

It includes:-

CSSD

House Keeping

Kitchen

Laundry

Operation theatre

Biomedical waste management

## VI. CSSD

### CSSD

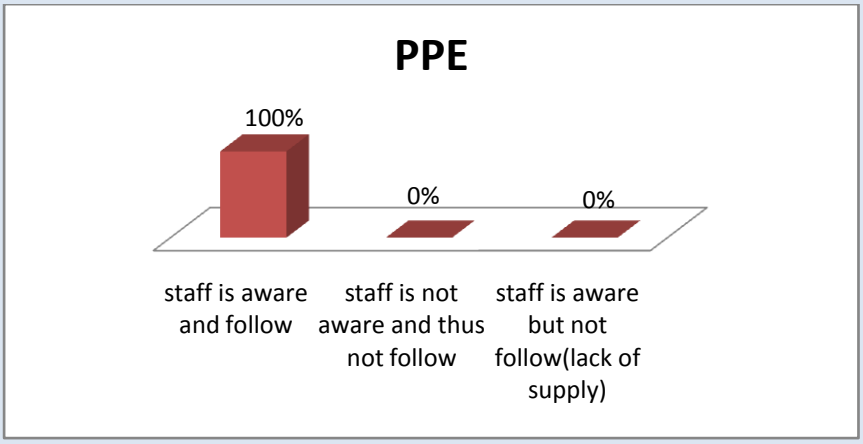
(15 days observation)

(According to CDC)

- PPE (personal protective equipments)

It includes gloves, mouth masks, head caps and gowns if required

100% staff is aware of it and follows it regularly

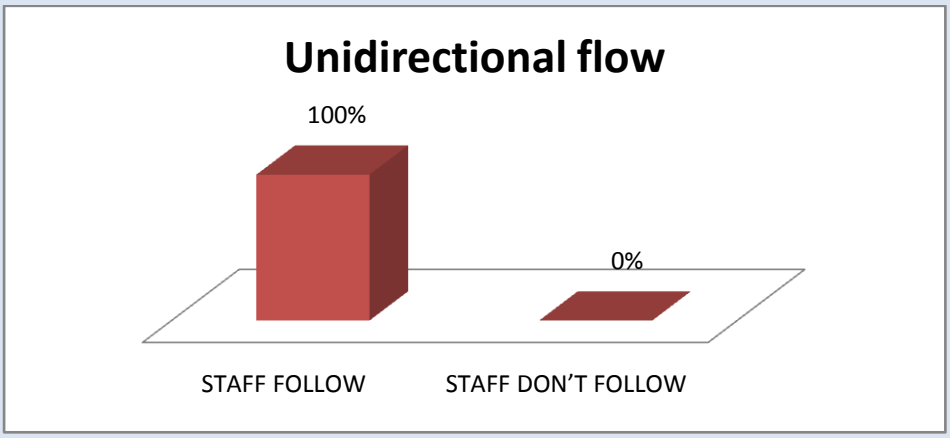


Before entering into CSSD staff wears slippers and before entering clean area staff change their clothes in changing room and wear their uniform.

- Unidirectional flow-

  There is a different receiving area and dispatch area to avoid infection of the sterilized equipment and material.

  100% followed by staff.




- Clean patient care items-

  Before high-level disinfection and sterilization process patient care items are cleaned-

  Manually
  Mechanically-ultrasonic cleaners
  Washer-disinfector
  Washer-sterilizer

  100%followed

  *Purpose*- It is done to remove any blood stains, body fluids, body parts from the instrument before undergoing the process of high-level disinfectant and sterilization.

- Discard or repair instrument-

It is done when

No longer functions as intended

Cannot be properly cleaned, and disinfected or sterilized

On observation, it was found that it is done by the maintenance department and the professionals of the patient care areas.

Instruments are also discarded according to the manufacturer instructions.

- Flash sterilization-

It is not done on a regular basis for convenience, alternative to purchasing additional instrument sets, to save time.

It is done when patient-care items that will be used immediately, patient-care items that cannot be packaged, sterilized, and stored before use.

It is mainly carried out in operation theatre if any instrument falls and is needed urgently and we don't have any alternative option.

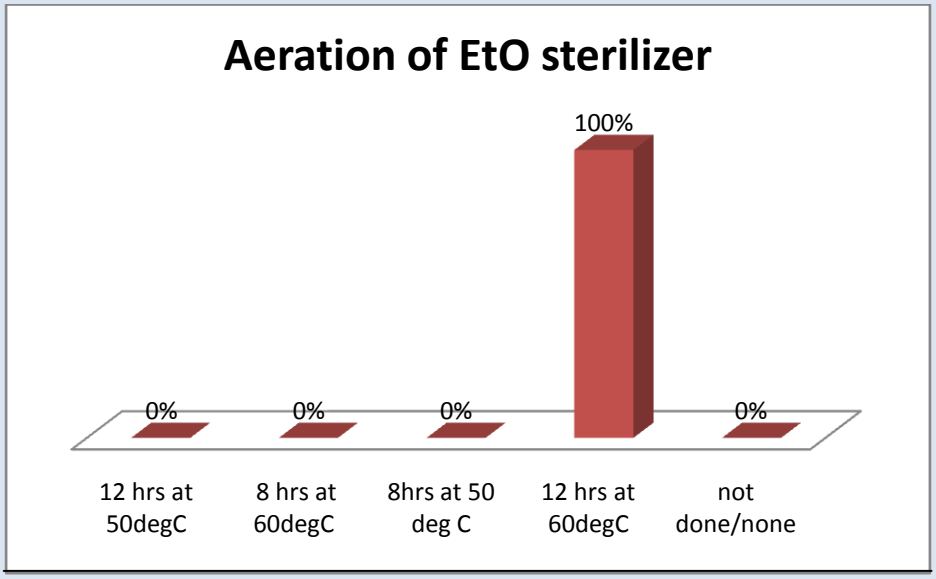
- Aeration of EtO sterilizer-

EtO sterilization is used for heat and moisture sensitive critical equipments.

***Importance***- as the gas is carcinogenic in nature thus the aeration time and temperature is very important to be followed.

Actual time and temperature- 12hrs, 50-60 deg C

100% followed




On observation, it was seen that aeration was done at 60 deg C for 12 hours.

- Packaging material

The packaging material used here is

Puncture resistant

Not tear resistant

It has a plastic cover and a paper cover, so sometimes paper cover is torn if not packed correctly.

- Monitoring of sterilizer

It is done to check the efficiency of the sterilizer and can be done by

Mechanical monitors

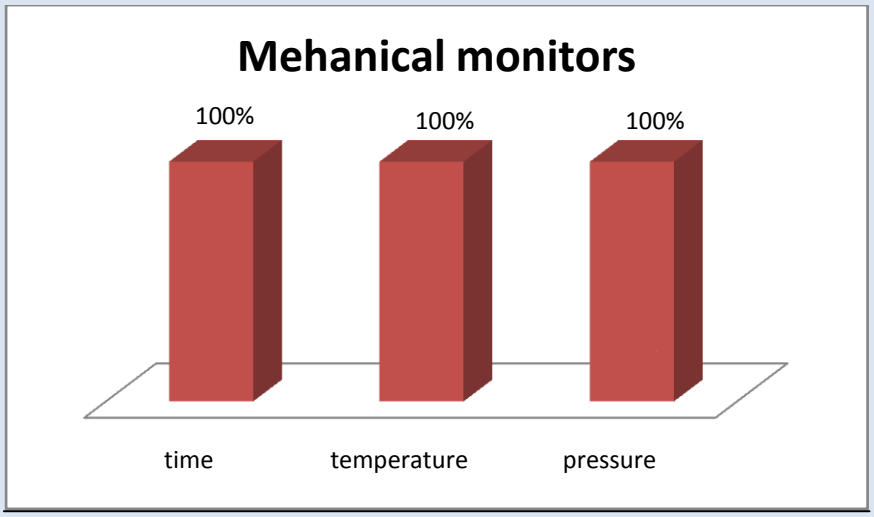
Chemical monitors

Biological monitors

Mechanical monitors and chemical monitors are used daily with each cycle and the records are maintained.

Biological monitors are used weekly for steam sterilizer and for each cycle of EtO. 100% followed, cross checked with the records.

- Mechanical monitors-




Time, temperature and pressure are monitored for each cycle and for every sterilizer.

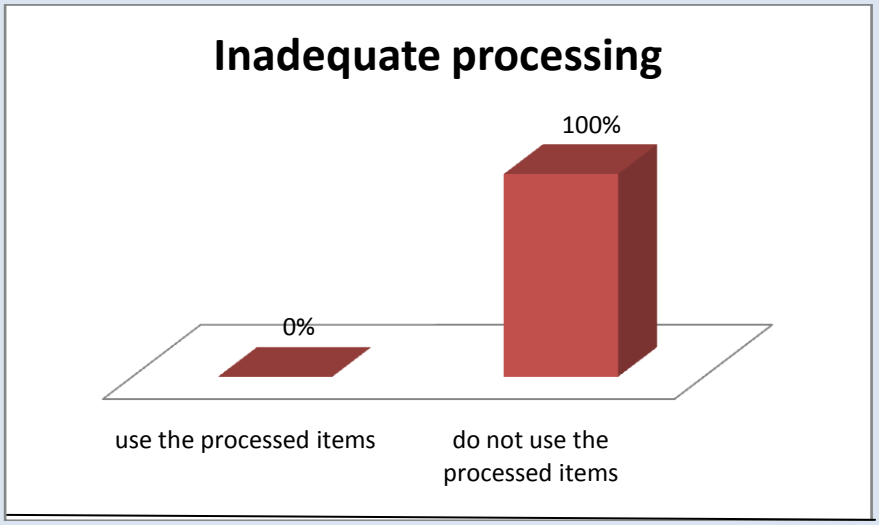
And records are maintained for the same.

100% followed

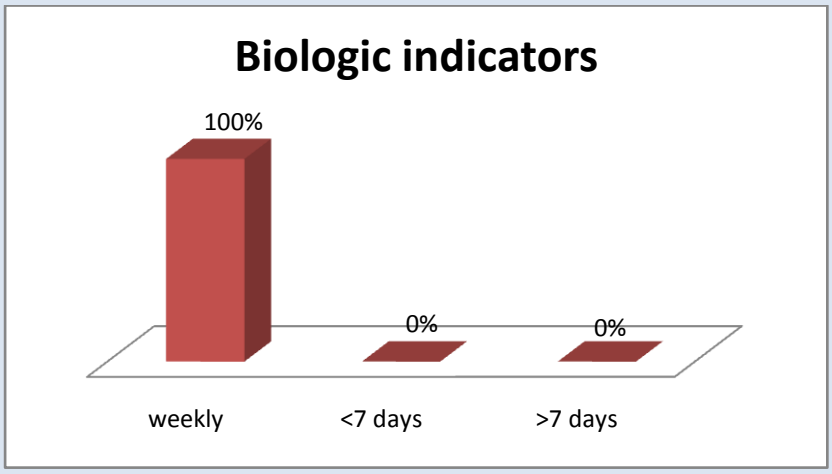
- Inadequate processing-

  If any of the above monitors show an error-inadequate processing, then the material and equipments of that load number should not be used and should be reprocessed.

  100% followed.




- Biologic indicators-




***Used***- weekly for steam sterilization

In each EtO cycle

These are expensive indicators and as per recommendations they should be used weekly only.

100% followed.

When observed,

| Date when indicator used | sterilizer type (for which is biological indicator) |
|---|---|
| 5-06-14 | Autoclave –natsteel |
| 5-06-14 | EtO |
| 7-06-14 | EtO |
| 9-06-14 | Autoclave –natsteel |
| 9-06-14 | EtO |
| 12-06-14 | Autoclave –natseel<br>Autoclave –steris |
| 12-06-14 | EtO |
| 17-06-14 | EtO |
| 19-06-14 | EtO |
| 19-06-14 | Autoclave –steris |
| 22-06-14 | EtO |

- Items to be sterilized-

When placed in cart/ basket/ shelf- ***loosely and correctly*** placed

Importance- easy penetration of steam
Effectiveness of steam increases
Increase in exposure area
Effective sterilization

100% followed.

- Storage-

The sterilized items are stored in

Sterile area
Protected against dust, moisture, insects, temperature and humidity extremes.
Well ventilated area

- Labeling of the sterilized items

Each sterilized item is labeled with

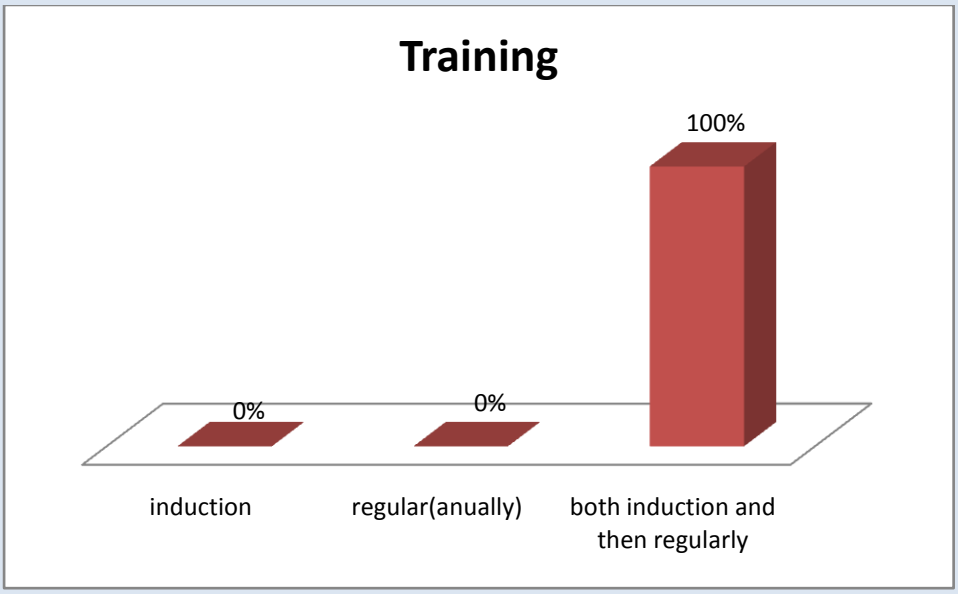
Sterilizer used
Cycle or load number
The date of sterilization
The expiration date

***Purpose-*** if any of the monitors give an indication of inadequate processing then the items of that load number can be collected back and reprocessed.

Unused items after passing of expiry date is sent back for re sterilization

100% followed.

- Training of staff-




Comprehensive and intensive training is provided to all the staff.

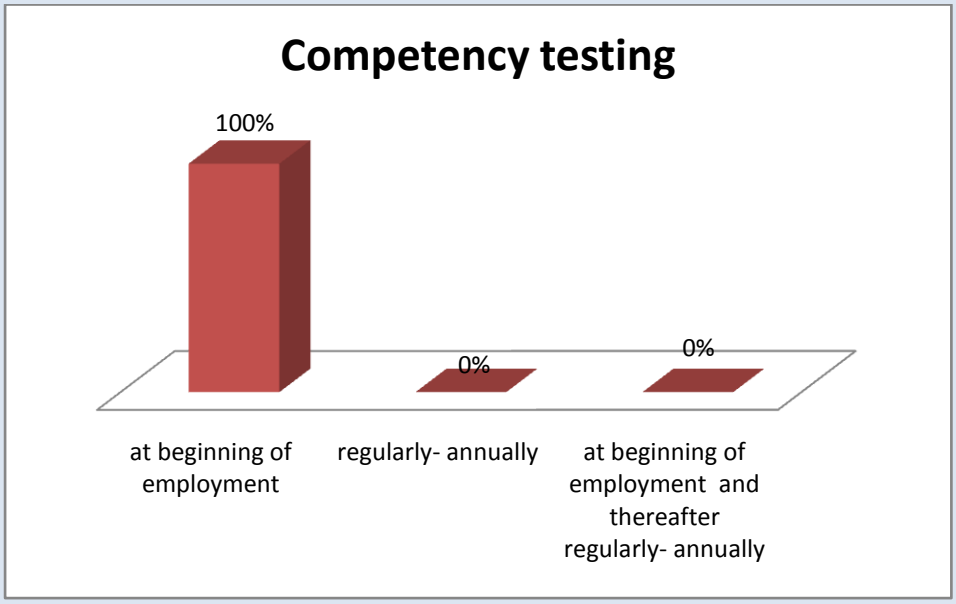
Trainees are ***supervised*** during the training period unless and until the supervisor is confident that the trainee can function independently.

- Competency testing-

It should be performed at beginning of employment and thereafter regularly (at least annually).

Purpose- to check staff knowledge and its implementation by them.

But there is *no regular testing* is done.




- Records-

***For each sterilization cycle-***

Type of sterilizer and cycle used
Load identification number
The load contents
Exposure parameters (e.g., time and temperature)
Operator's name or initials
Results of mechanical, chemical, and biological monitoring

***Purpose***- to avoid infection, by reprocessing the items of a particular load number if any of above monitors shows inadequate processing.

100% followed.

The above records are available ***for 2 years.***

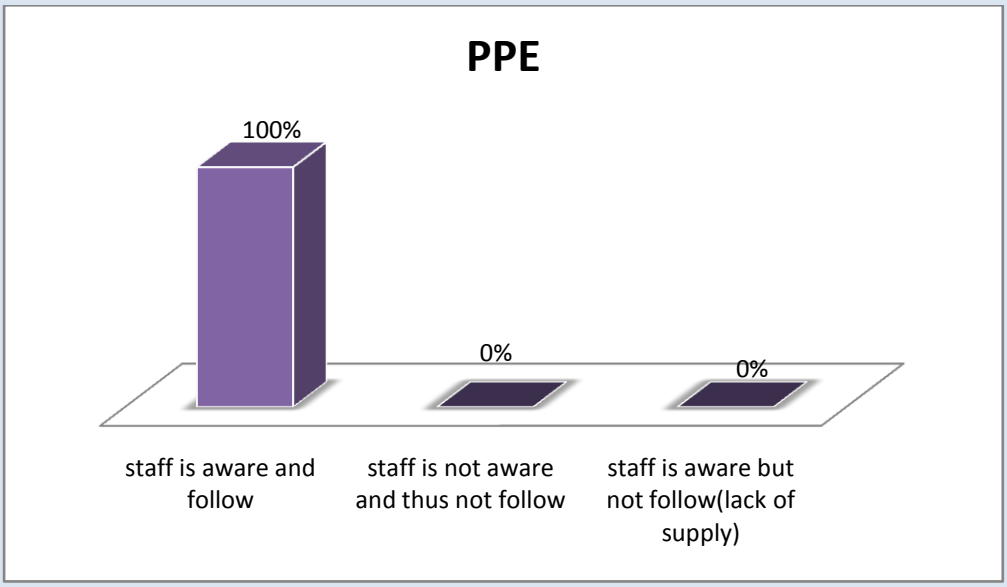
## VII. HOUSEKEEPING

# Housekeeping

- PPE-

During observation, it was seen that staff is well aware about the PPE to be used and use them regularly.

PPE are easily available to them.




- Clean housekeeping surfaces-

***Includes-*** Table tops

Floor

***Cleaning protocol-***

Regular basis (3 times in each shift)

Shifts- 6am-2pm

2pm-10pm

9pm-7am

When spills occur

Housekeeping surface is visibly soiled.

These records are maintained with the housekeeping department-

Room check list

Toilet check list

Floor cleaning checklist

***Cleaning protocol for walls, windows curtains, blinds-***

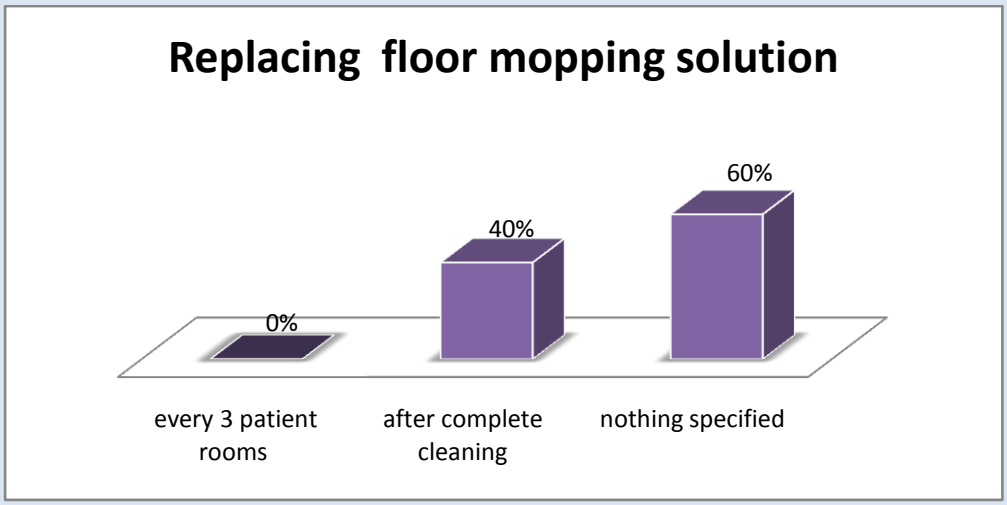
When visibly contaminated or soiled

When patient is discharged from the room

- <u>Floor mopping solution-</u>

Though there is a policy to change the solution after 3 rooms or if visibly dirty before that. But it is not followed by the staff.

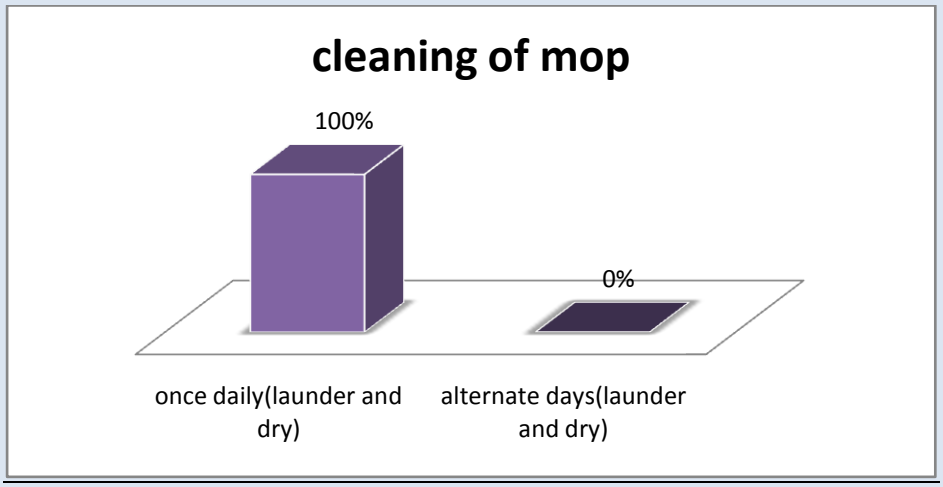
During observation, it was seen that the solution and the water was changed either after finishing the whole area under the staff or when visibly it's dirty (not specified).




60% of staff is changing whenever they see that the solution is visibly dirty.

40% staff is changing the solution when they finish their area of cleaning.

- Decontaminate mop heads and cleaning cloths-

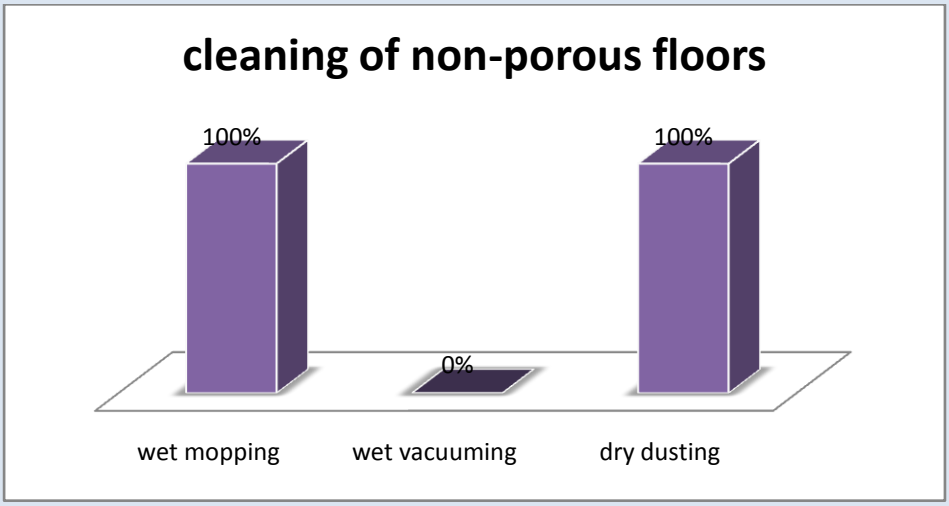



Mop heads are daily washed after the cleaning and are kept dry at the respective housekeeping station.

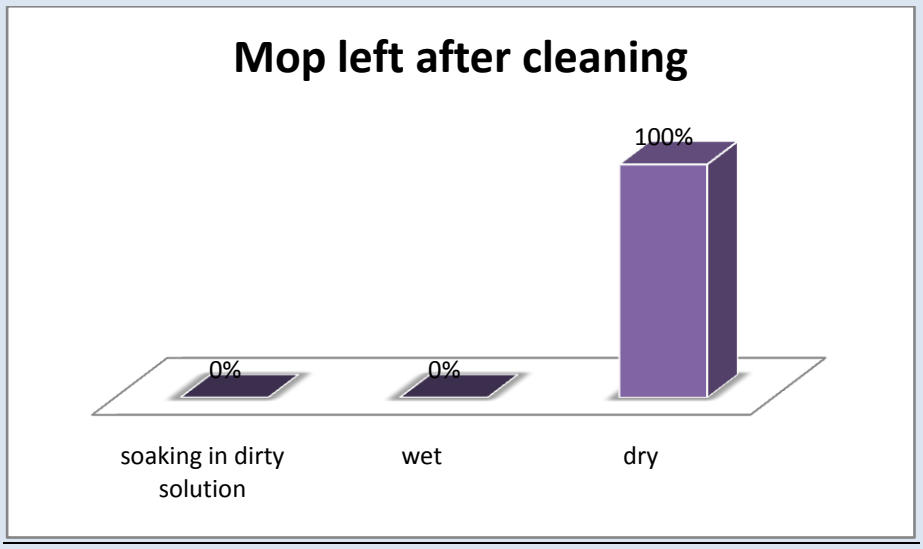
Separate mops are used from different areas and are not interchanged or used in other areas (i.e. specific mops for specific areas.)

- Cleaning of non - porous floors

On regular basis, dry mopping/ dry dusting followed by wet mobbing are done.



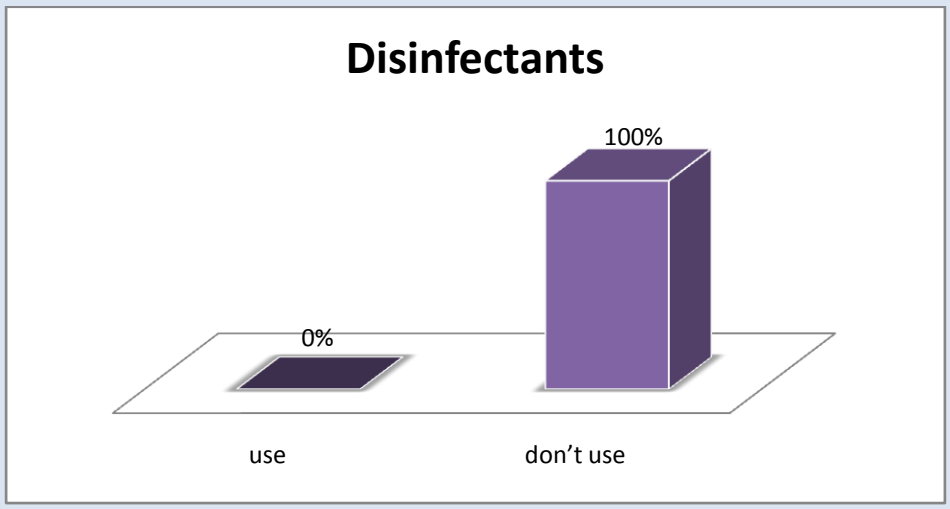
- Mop left after cleaning




Mop is always kept in the housekeeping station after the complete cleaning and laundry of mop head.

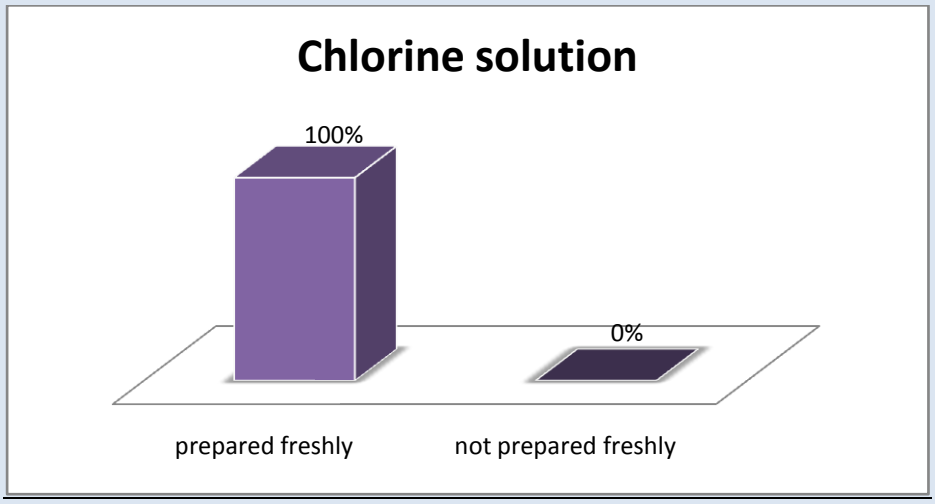
It is then kept dry with the mop head facing upwards.

- Disinfectants to clean infant bassinets and incubators while these items are occupied-




As recommended, it should not be used and thus it is 100% followed.

- Chlorine solution-



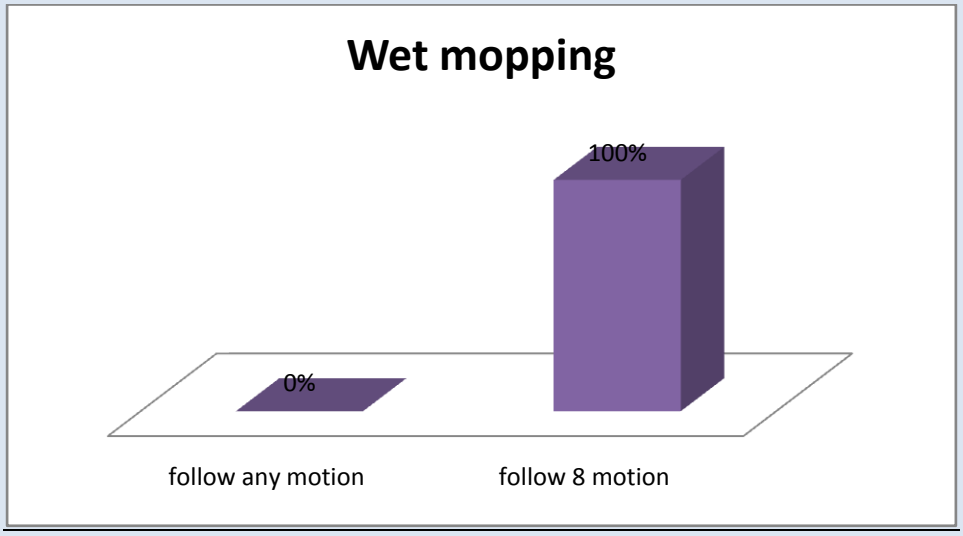

Chlorine solution is always prepared freshly in the ratio of 200:800 ml Chlorine: water

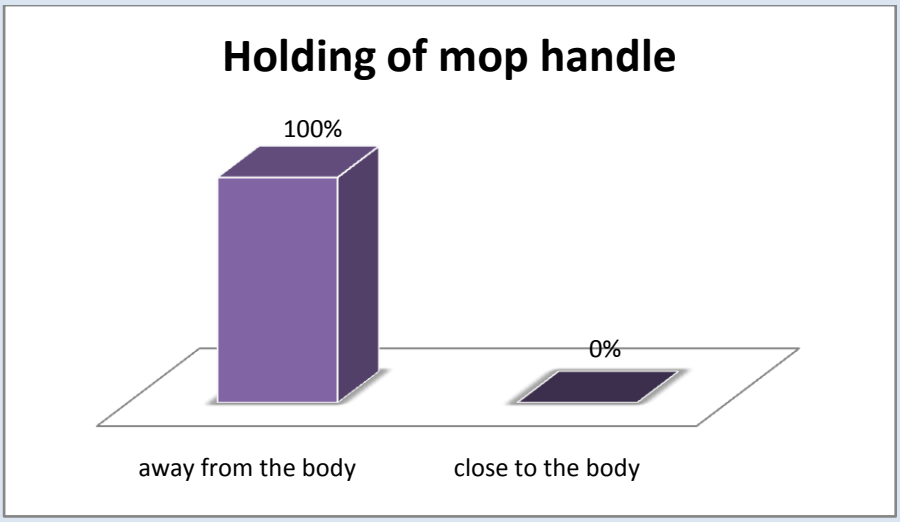
- Wet mopping-

During observation it was seen that all the staff follows motion 8 during wet mopping

***Importance-*** To carry out all the dirt and waste, collect it at a point
Avoid dirt to move back to the clean area.

It was also seen that 100% staff hold the handle away from the body as recommended.




# VIII. KITCHEN

## Kitchen

(15 days observation)

- PPE (personal protective equipments)-

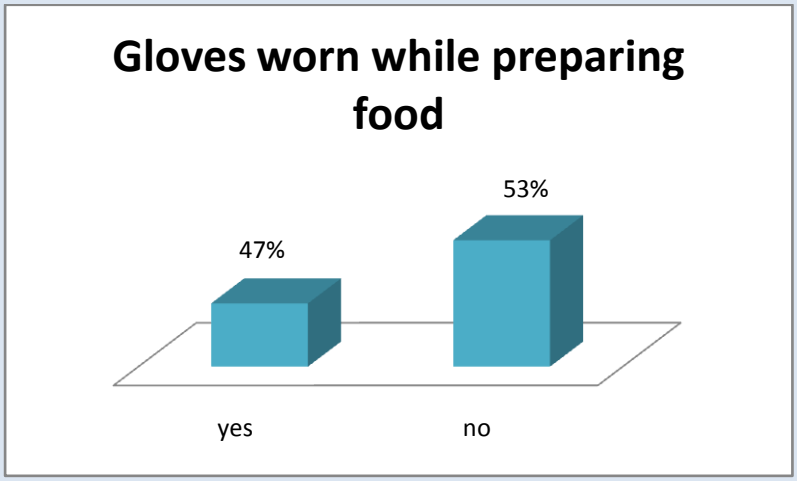
  Staff is well aware of the PPE to be used and regularly uses head caps.

But use of gloves-

100% followed while serving food

47% followed while making food.

This can lead to infection from the staff to patients.




- Jewelry-

Staff should try avoiding wearing jewelry as it is the source of infection from outside and thus there can be transfer of infection from staff to patient.

On observation, it was seen that maximum staff was male staff and only 1 staff was female. Where the male staffs were not wearing jewelry except few rings and female staff was wearing a bangle.

So jewelry to minimum was followed 100%

- Nails-

These are the source of infection from outside and are not easily cleaned as the dirt collects deep inside the nails, so it is advised to keep the nails short and clean.

On observation, it was seen that it is followed 100% and nails of all staff is checked on a regular basis in the beginning of shift by the supervisor.

- Milk and milk products-

They are stored at a right temperature and are labeled to ensure that they are used within the time limit.

100% followed.

- Food items-

Food items are also labeled – time of preparation and time till which it can be consumed.

It is packed and stored at a right temperature.

On observation,

E.g. - after chopping of vegetables they are packed, labeled and stored, so that before consumption it can be cross checked

And it is 100% followed.

- Preparation of food -

The vegetables are purchased one day before in evening according to the menu and the strength of the hospital. And chopping of vegetables is done in night for the next day morning

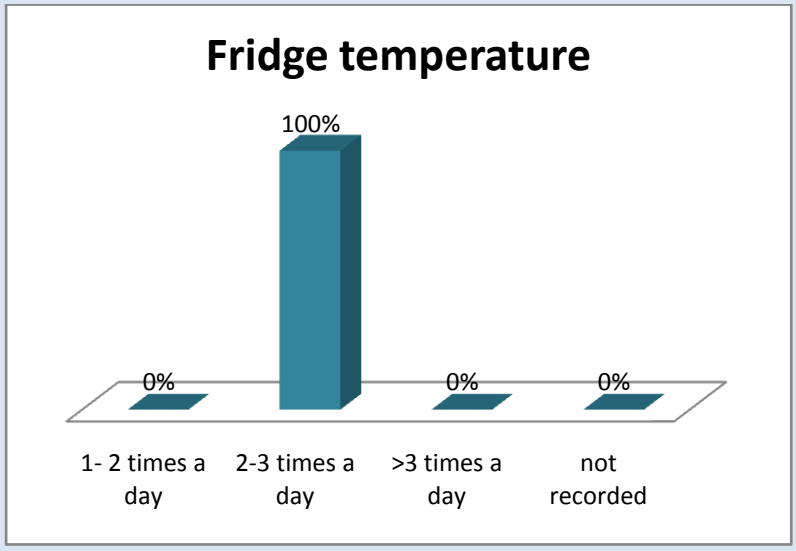
And preparations for lunch and dinner are done on the same day.

This is followed regularly.

- Fridge temperature-

It is recorded daily and maintained.

Temperature is recorded 2-3 times a day on a regular basis.




This helps in proper functioning of fridge and thus avoids any contamination of food.

- Food temperature-

Actual temperature for hot and cold food during serving is to be maintained should be

63 deg C for hot food

5 deg C for cold food

On observation, it was seen that the temperature was maintained for hot food but the staff is not aware about the temperature.

- Dispatch

Taste- daily food is tasted by the dietician before serving and packing of food.

This is done to cross check whether any contaminated food is not served to the patient.

- Packing-

Regularly, every meal of the patient is packed and then transferred. Even the mid meals and the drinks for the patient are packed and served daily.

100% it is followed

There are slips with the name, ward of the patient and also if any specific instructions (changes in food) are mentioned and is placed above the packed plates.

- Infected patients-

This category of patients include

HIV
Skin diseases
Boils
Burns

Yes, 100% special precautions are taken.

The food is packed in disposables and then served. And the stewards are given special instructions regarding them – to take precautions while serving, and to cross check before serving for the disposable plates.

- Patient identity-

Patient identity must be checked by asking the patient or its relatives or the staff for the patient's name to avoid any exchange of food (as food is served according to patient's requirements).

On observation it was seen that,

***In ICU***- patient identity is cross checked with the help of files on the medication table kept near the bed. This can lead to medical errors, if the files of the patients are exchanged and patient gets different food and not as prescribed by doctors and dieticians.

***In WARDS***- patients are given food according to the room numbers and cross checking of files which may also lead to medication error if the files are changed or patient is transferred on different bed or room.

- Visitors in kitchen-

As visitors are the source of infection from external environment and thus they should not be allowed in kitchen.

100% followed and patient relatives and visitors are not allowed inside the kitchen and if the staff enters then it is compulsory to wear head cap.

# IX. LAUNDRY

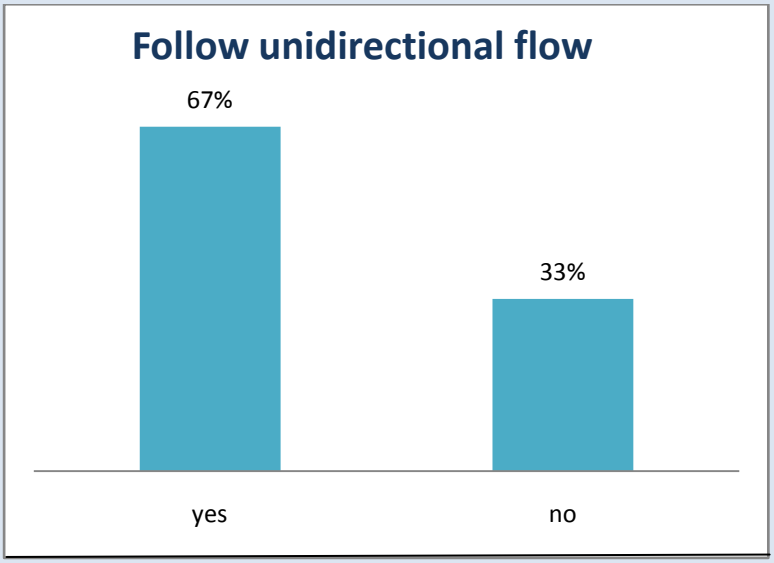
## LAUNDRY

(15 days observation)

- Unidirectional flow-

There is a separate area for dirty laundry collection and a different area for fresh laundry dispatch. This helps in avoiding recontamination of washed clothes.

But when observed it is not followed regularly, and the clean linen is also collected from the dirty area. It was seen that 67% time it is followed and 33% it is not followed.



- Segregation of clothes

Linen can be dirty linen and soiled linen which have different washing procedures. It should be segregated in laundry and not work place.

On observation, when linen is collected in laundry then it is segregated into soiled and dirty and sometimes it is brought differently as soiled and dirty linen(soiled in different carrier or in yellow colored polythene bag.)

It is then processed in different sluicing machine after dipping it in solution for 15-30 minutes and then washing it as dirty laundry.

- Temperature-

Actual temperature- 65-70deg C

This temperature is reached and maintained regularly with the help of machine and also availability of hot water through pipe, temperature maintained is 70-80 deg C.

- Pressure-

Negative pressure is not exactly maintained in the receiving area but the laundry is isolated from the patient care area to avoid the spread of infection.

- Sorting laundry

Laundry should be sorted out in dirty area for needles, syringes and patient property, to avoid recontamination of laundry by infected needles and syringes and thus avoid spread of infection. It is also done to avoid any damage to the machine.

On observation, it was seen that there was a different area for sorting laundry and also the staff was aware about it, but it was not followed at all.

100% it was not followed.

- Textiles-

If the textiles are wet then it should not be kept wet overnight. This provides bacteria a favorable environment for its growth.

On observation, it was seen that the textiles were always stored after it was dried,
And then all the machines are washed after the last laundry of the day.

100% of laundry when kept overnight is dry

- Packing- (according to CDC & HICPAC guidelines)

Clean linen should always be packed and then dispatched and transferred.

This avoids the recontamination of the linen during transfer and thus avoids the transfer of infection from patients and staff.

On observation, it was seen that this is not followed, packing of clean linen was not done and it was transferred openly.

100% it is not followed

- Drainage-

It is the source of infection in the laundry for the clean linen and also for the staff.
Thus the drainage should be either

Open pit, then should be covered

Or

Closed pipe

On observation,

It was seen that there is an open pit where the dirty infected water from all machines is collected and then it is taken out with the help of closed pipe.

The open pit where dirty infected water is being collected is also covered.

The drainage is also cleared very month by the maintenance department.

- Linen change policy-

There is linen change policy of 120 washes. But the staff is unaware about the policy.

- Washing protocols-

There are different washing protocols for different clothes like-

Soiled linen
Infected linen
Blankets
OT dresses

This avoids transfer of infections and also avoids damage of clothes.

On observation it was seen that,

It is followed 100% for soiled linen, infected linen and blankets.

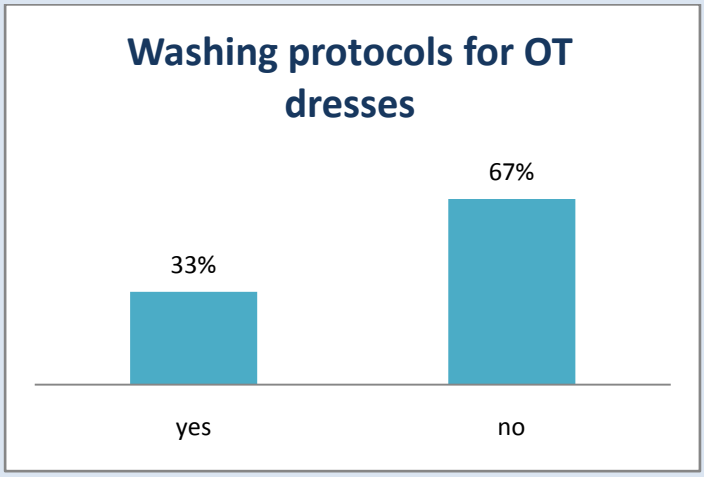
*Soiled linen and infected linen*- they are segregated at the point of collection in laundry and washed separately in sluicing machine after dipping in solution followed by normal wash and washing machine respectively.

*Blankets*- they are separated and washed in the end, after the wash of all dirty linens have been finished.

***OT dresses*-**

Besides complete awareness and knowledge, protocol to wash OT dresses separately is not always followed

33% it is followed and 67% not followed.




- Storage-

Clean linen should be stored in a dry clean area and above the floor level.

On observation,

It was seen that the clean linen is stored in cupboards (clean and dry area and above the floor level).

It was seen that it is 100% followed that it is daily stored in cupboards.

# X. OPERATION THEATRE

(According to NABH)

## OPERATION THEATRE

The OT is so spaced that it can be occupied by *5-8 persons at any given point of time* depending on the surgery (general or super specialty).

- Air changes in OT-

  Weekly, air changes are measured by *anemometers* with help of engineers and are maintained in records in the maintenance department.

  When the records were cross checked it was seen that the air changes in OT were

  25-30 in super specialty OT (normal 30 air changes)
  20-25 in general OT (normal 25 air changes)

- Air components-

There is accurate number of fresh air components of the air change

05- super specialty OT
04- general OT

- Air velocity-

  Velocity of air is also checked weekly and is maintained in records.

*Direction*- air is directed such that it *unidirectional and downwards* towards the OT table.

It is directed so that the air coming out of the diffusers should be able to Carry bacteria carrying particle load away from the operating table.

- Pressure-

There is a requirement to maintain *positive pressure* differential between OT and adjoining areas to prevent outside air entry into OT and thus avoid infection.

Pressure is also checked on a *weekly basis* by the maintenance department and records are maintained.

0.*001-0.003 kilopascals* positive pressures is maintained (normal-15 pas)

- HEPA filters

These are fitted in the *ceiling of the OT* and the air is passed through HEPA filters before entering in OT.

The size of HEPA filters are planned such as they *cover the OT table and the surgical team* to avoid the bacterial infection.

8' * 6' (super specialty)
6' * 4' (general)
(According to NABH standard)

- Exhaust grille (return air)

These are fitted at *the floor level – approx 6 inches above the floor level* so that the air passes downward from the OT table and moves out via exhaust grille and thus unidirectional flow is maintained

- Temperature and Humidity

  Both temperature and humidity is monitored regularly

  OT display panel are installed inside OT to display and monitor the temperature and humidity.

  These are recorded daily in files by the engineers and are submitted weekly in the maintenance department.

  And if there is any problem then it is corrected accordingly.

  20-24 deg C is maintained (21+/-3 deg C –normal)
  45-60% humidity is maintained (40-60% - normal)

- Rh

  Ideal Rh is maintained that is 55%

- AHU blower

  *For air filtration* AHU blower are there in OT which are *dedicated one* for each OT and also these are *operational round the clock* even in non functional hours.

- Air conditioner (ac)

  There *is neither any window air conditioner nor split air conditioner* in OT because they are pure re circulating units and have convenient pockets for microbial growth which cannot be sealed.

- Flooring, walls and ceiling

Non porous

Smooth

Seamless without corners

This is essential to avoid infection by repeatedly cleaning it easily.

- Maintenance

  There is scheduled weekly preventive maintenance done and the records are maintained in the maintenance department.

  *Cleaning of pre-filters is done in 30 days* which should be done in 15 days according to the NABH guidelines

## XI. BIOMEDICAL WASTE MANAGEMENT

# Biomedical Waste Management

- Authorization-

  Biomedical waste disposal is outsourced for the hospital. The authority is authorized by the state govt.

Pt of generation (wards, ICU, patient care areas)

↓

Collection of waste

↓

Transferred

↓

Weighted

↓

Stored

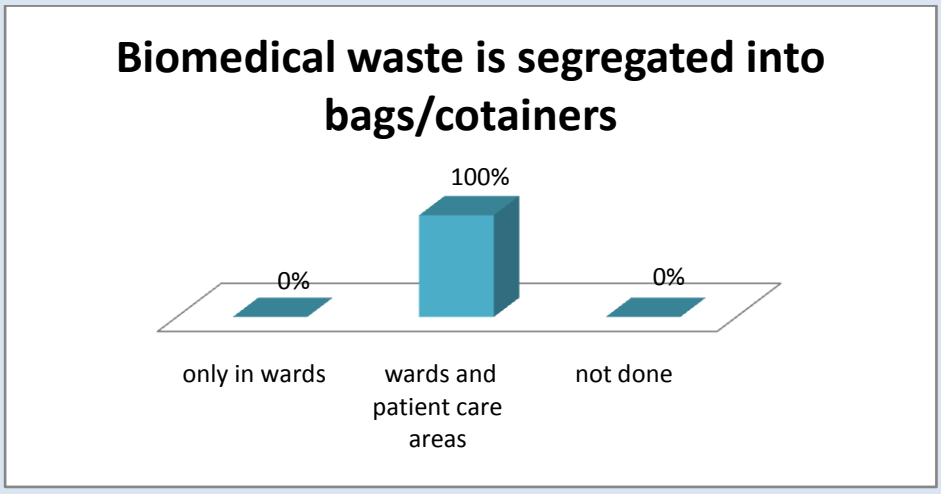
↓

Disposed off via a vehicle that comes for collection (ETEC)

## POINT OF GENERATION-

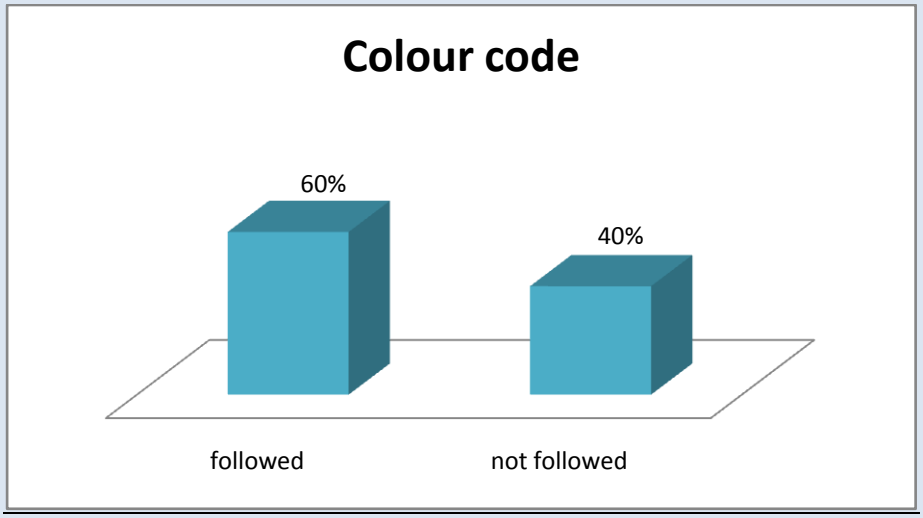
- Shall be segregated into containers / bags-

On observation it was seen that there are different color coded bags and container (for sharps) available in all patient care areas and wards.




(So it is 100% followed in all wards and patient care area)

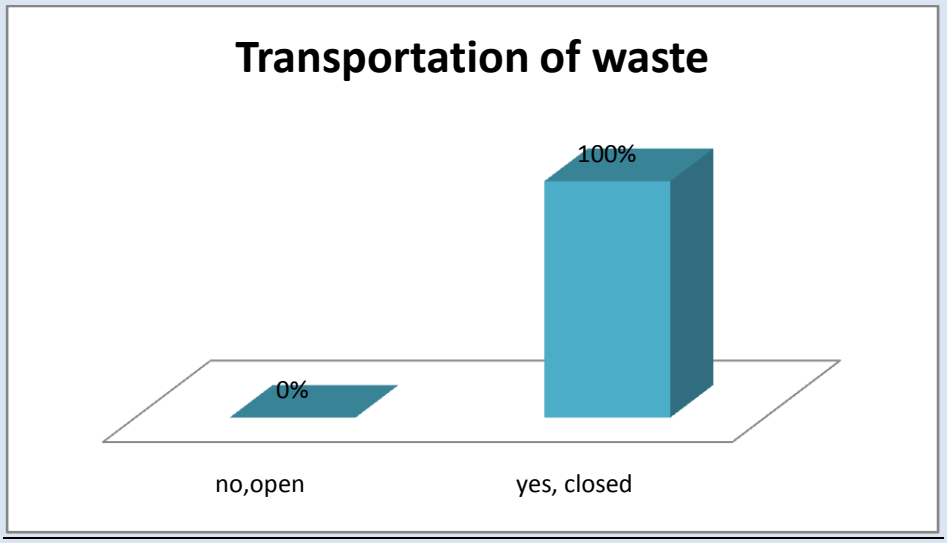
- Color coding followed-




Under 15 days observation, it was seen that 60% times color code was followed but 40 % times it was not followed. And it was observed more commonly in ICU.

TRANSPORTATION

- Is the waste transported in closed 4-wheel trolley?



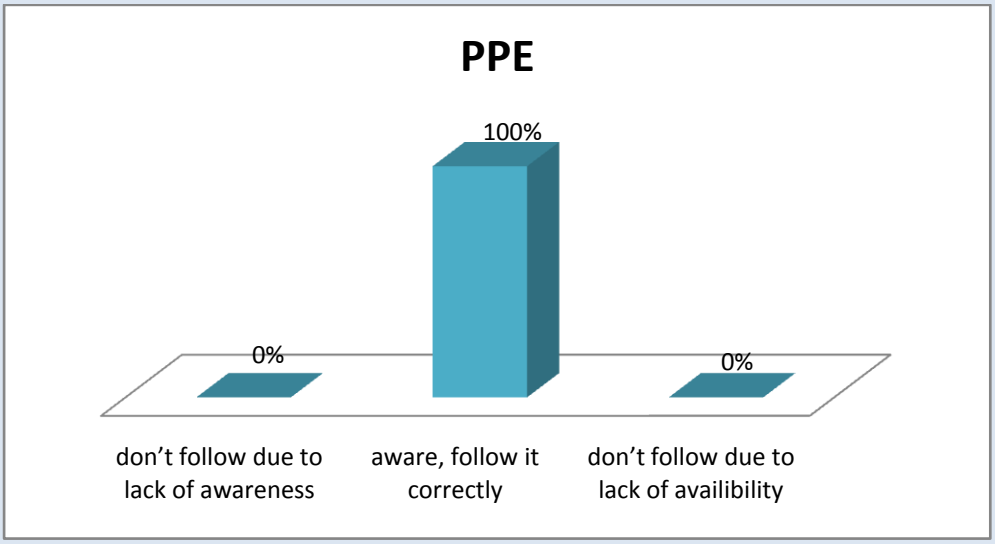

During observation, it was seen that the waste is transported in close dustbins placed over 4- wheel trolley, which is also covered by a cloth.

It is followed regularly-100% followed by all staff

- Is staff aware of correct PPE and is following it accordingly?

Yes all staff is aware of the PPE to be used.

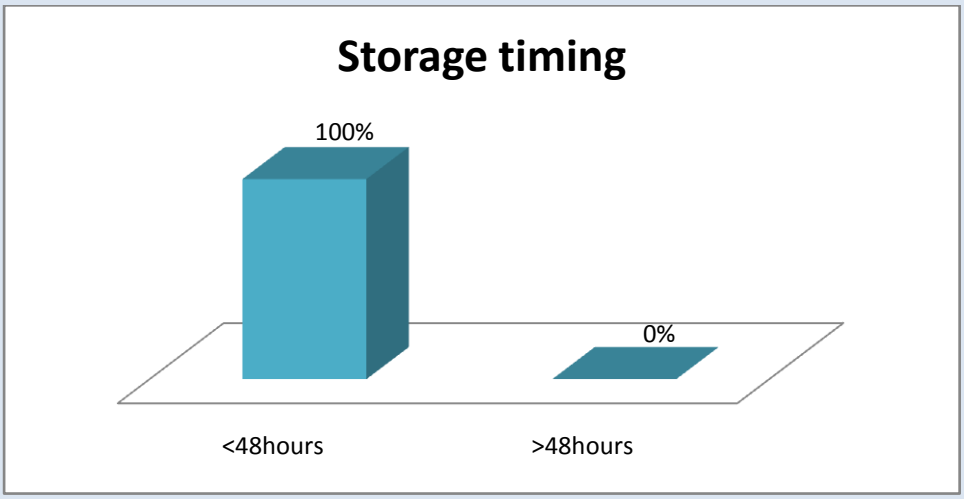
It is daily followed by staff but not *followed by* all staff mainly the *newly recruited staff.*




STORAGE-

- Waste is stored for?

It is not stored more than 48 hours and the area is cleaned daily.



Area- where the biomedical waste is stored is washed regularly with the help of hypochlorite solution.

- Containers and bags should be labeled(biohazard symbol)-

Yes, the bags are labeled that is there is symbol of biohazard and the symbol is-

Prominent
Non-washable

- Records-

There is maintenance of record of collection- which shows that from where the waste has been collected, and then it is weighted after the collection and noted as per the color coding.

## CONCLUSION AND RECOMMENDATIONS:

1. It was seen that 100% is completely aware about the infection control measures specially the hand hygiene but they lack in implementing their knowledge- due to lack of motivation, and due to lack of staff (unplanned holidays)
2. Surprise inspections on weekly basis for the practical implementation of hand hygiene and PPE should be done and staff should be made aware of their safety and patient safety during the inspection round.
3. The collected data can be analyzed and can be presented in the meetings before the management and grades can be issued to staff on basis of their knowledge and practical implementation.
4. On the basis of above two points staff can be awarded, titled as staff of month or can be promoted accordingly.
5. Training-

   Few staff does not attend training due to busy schedule, so training can be planned and staff names can be send a week ago so that their duties can be planned accordingly can they can attend their training

   Regular training should be planned which was found that it was not followed 100%.
6. There should be a regular monthly check for the PPE consumed and hand rub and soap so that it can be assessed that staff is using or not.
7. Packing of clean laundry can be done if it's cost effective for the hospital to avoid environmental infection.
8. During biomedical waste collection it can be recorded that which patient care area is not following the color code, which can be presented in meeting.
9. Stewards should be trained to ask the patient identity by asking the patient itself or the nursing staff

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7. WHO Guidelines on Hand Hygiene in Health Care: a Summary,2009

## ANNEXURE

# List of activities carried out in the hospital:

| Date | departments |
|---|---|
| **1/04/2014-25/4/2014** | Observation of various departments of hospital and their working. |
| **26/4/2014-04/5/2014** | Preparation of questionnaire and checklist by studying on various guidelines for different patient care areas and department. |
| **05/5/2014-21/5/2014** | Interview and observation of the staff for the departments selected, and the nursing staff of ICU and wards.<br>Observation of housekeeping and the biomedical waste department staff.<br>Wherever possible cross –checking of records |
| **22/5/2014-31/5/2014** | Data analysis and Interpretations and preparation of report |

## ACRONYMS AND ABBREVIATIONS:

| | |
|---|---|
| OT | Operation Theatre |
| ICU | Intensive Care unit(Medical, Surgical, Cardiac) |
| BMW | Biomedical waste |
| AC | Air conditioner |
| AHU | Air handling unit |
| PPE | Personal Protective Equipments |
| Pas | Pascal |
| NABH | National Accreditation Board for Hospitals and Healthcare |
| E.g. | For example |
| EtO | Ethylene Oxide |
| CSSD | Central Sterile Stores Department |
| CAUTI | Catheter-Associated Urinary Tract Infections |
| IV | Intravenous |
| Secs | Seconds |
| Rh | Relative Humidity |

# Questionnaire and checklists used:

# Hand hygiene (questionnaire and checklist)

| | |
|---|---|
| How easily available is alcohol-based hand rubs in your health care facility? | i. Not available<br>ii. Available only in some wards or in discontinuous supply (with efficacy1 and tolerability2 proven)<br>iii. Available facility-wide with continuous supply (with efficacy1 and tolerability2 proven)<br>iv. Available facility-wide with continuous supply, and at the point of care3 in the majority of wards (with efficacy1 and tolerability2 proven)<br>v. Available facility-wide with continuous supply at each point of care3 (with efficacy1 and tolerability2 proven) |
| What is the sink: bed ratio? | i. Less than 1:10<br>ii. At least 1:10 in most wards<br>iii. At least 1:10 facility-wide and 1:1 in isolation room sand in intensive care units |
| Is there a continuous supply of clean, running water? | i. No<br>ii. yes |
| Is soap available at each sink? | i. No<br>ii. yes |
| Are single-use towels available at each sink? | i. No<br>ii. yes |
| How frequently do health-care workers receive training regarding hand hygiene? | i. Never<br>ii. At least once<br>iii. Regular training for medical and nursing staff, or all professional categories (at least annually)<br>iv. Mandatory training for all professional categories at commencement of employment, then ongoing regular training (at least annually). |
| Is a system in place to ensure that all health-care workers complete this training? | i. No<br>ii. yes |
| Is a professional with adequate skills to serve as trainer for hand hygiene educational programs? | i. No<br>ii. yes |

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| Is health-care worker knowledge regarding indications and technique for hand hygiene assessed at least annually? | i. No<br>ii. yes |
| Is consumption of alcohol-based hand rub monitored monthly (or at least every 3-5 months)? | i. No<br>ii. yes |
| Is consumption of soap monitored monthly (or at least every 3-5 months) | i. No<br>ii. yes |
| Indications for hand hygiene | Before handling medication or preparing food |
| | Wash hands when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet |
| | Before and after touching the patient |
| | Before handling an invasive device for patient care, regardless of whether or not gloves are used |
| | After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings |
| | If moving from a contaminated body site to another body site during care of the same patient |
| | After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient |
| | After removing sterile or non-sterile gloves |
| | Before leaving the patient care area |
| Use of gloves | i. Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes or non-intact skin will occur<br>ii. Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient<br>iii. When wearing gloves, change or remove gloves during patient care if moving from a contaminated body site to either another body site within the same patient or the environment |
| Timing | i. Hand Hygiene Technique with Alcohol-Based Formulation(20-30secs)<br>ii. Hand Hygiene Technique with Soap and Water(40-60secs) |

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| ***SAFE INJECTION AND INFUSION PROCESS*** | i. Needles and syringes are used for only one patient<br>ii. Rubber septum on a medication vial is disinfected with alcohol prior to piercing<br>iii. medication vials are entered with new needle and a new syringe, even when obtaining additional doses for the same patient<br>iv. single use medication vials, ampoules, and bags or bottles of IV solutions are used for only one patient<br>v. medication administration tubing and connectors are used for only one patient<br>vi. all sharps are disposed off in a puncture - resistant sharp container<br>vii. single - use devices are discarded after use and not used for more than one patient<br>viii. protocol for needle stick injury |
| | |
| ***CAUTI*** | |
| 1. Insert catheters only for appropriate indications | i. acute urinary retention<br>ii. measurement of urinary output(critical pts)<br>iii. preoperative<br>iv. pts with prolonged immobilization<br>v. end life care comfort |
| 2. leave catheter in place | i. <=24hours<br>ii. >24hrs in max patients(>50%)<br>iii. >24hrs(only in indicates patients) |
| 3. hand hygiene | i. before insertion of catheter<br>ii. after insertion of catheter<br>iii. both(before and after insertion) |
| 4. secure catheters | i. no<br>ii. yes |
| 5. replace catheter | i. disconnection<br>ii. leakage |

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| 6. Maintain unobstructed urine flow | i. Keep catheter and collecting tube free from kinking<br>ii. Keep collecting bag below level ofbladder |
| 7. Empty collecting bag | i. Regularly<br>ii. Separate, clean container for each patient |
| 8. Rest bag on floor | i. Yes<br>ii. no |
| 9. drainage spigot | i. contact non sterile container<br>ii. do not contact non sterile container |
| | |
| ***CENTRAL LINE INFECTION*** | |
| 1. Promptly remove unnecessary central lines | i. daily audits to assess whether each central line is still needed<br>ii. daily audits not done to assess whether each central line is still needed |
| 2. proper insertion practices | |
| 3. hand hygiene | i. before insertion of catheter<br>ii. after insertion of catheter<br>iii. both(before and after insertion |
| 4. sterile barrier precautions | i. mask<br>ii. head cap<br>iii. gown<br>iv. sterile gloves<br>v. sterile full body drape |
| 5. skin antisepsis | i. done with >0.5% chlorhexidine with alcohol<br>ii. not done |
| 6. Cover the site with | i. sterile gauze<br>ii. transparent, semi permeable dressings |
| 7. Replace dressings that are | i. Wet<br>ii. Soiled<br>iii. dislodged |
| 8. Perform dressing changes under aseptic technique using clean or sterile gloves | i. Yes<br>ii. no |
| 9. Scrubbing of the access port or hub immediately prior to each use with an appropriate antiseptic | i. Yes |

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| (e.g., chlorhexidine, povidone iodine, an iodophor, or 70% alcohol) | ii. no |
| 10. Provide recurring education sessions on central line insertion, handling and maintenance | i. Yes<br>ii. no |
| ***CSSD*** | |
| 1. PPE | i. staff is aware and follow<br>ii. staff is not aware and thus not follow<br>iii. staff is aware but not follow(lack of supply) |
| 2. unidirectional flow | i. yes<br>ii. no |
| It yes, then | i. staff follow<br>ii. staff don't follow |
| 3. clean patient-care items before high-level disinfection or sterilization procedures | i. manual<br>ii. mechanical<br>• ultrasonic cleaners<br>• washer-disinfector<br>• washer-sterilizers |
| 4. Discard or repair equipment | i. no longer functions as intended<br>ii. cannot be properly cleaned, and disinfected or sterilized<br>iii. don't check |
| 5. flash sterilization used for | i. convenience<br>ii. alternative to purchasing additional instrument sets<br>iii. to save time<br>iv. patient-care items that will be used immediately<br>v. Patient-care items that cannot be packaged, sterilized, and stored before use. |
| 6. ETO sterilizer (aeration) | i. 12 hours at 50degC<br>ii. 8 hours at 60degC<br>iii. 8 hours at 50degC<br>iv. 12 hours at 60degC |
| 7. packaging material | i. Puncture resistant<br>ii. Tear resistant |
| 8. Monitoring of sterilizer(efficiency) | i. Mechanical<br>ii. Chemical<br>iii. biological monitors |

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| 9. mechanical monitors | i. time<br>ii. temperature<br>iii. pressure |
| 10.if indicators suggest inadequate processing | i. use the processed items<br>ii. do not use the processed items |
| 11. biologic indicators used | i. weekly<br>ii. <7 days<br>iii. >7 days |
| 12. items placed in basket/ cart/shelf | i. correctly loosely<br>ii. close to each other<br>iii. not specified |
| 13. sterile storage area | i. well-ventilated<br>ii. protection against dust, moisture, insects, and temperature and humidity extremes |
| 14. Label sterilized items with | i. sterilizer used<br>ii. the cycle or load number<br>iii. the date of sterilization<br>iv. the expiration date |
| 15. Provide comprehensive and intensive training for all staff | i. induction<br>ii. regular<br>iii. both induction and then regularly |
| 16.Is trainees supervised? | i. Yes<br>ii. no |
| 17. conduct competency testing | i. at beginning of employment<br>ii. regularly- annually<br>iii. at beginning of employment and thereafter regularly- annually |
| 18. For each sterilization cycle, record the | i. type of sterilizer and cycle used<br>ii. load identification number<br>iii. the load contents<br>iv. exposure parameters (e.g., time and temperature)<br>v. operator's name or initials<br>vi. results of mechanical, chemical, and biological monitoring |
| 19. sterilization records | i. 1-2 years<br>ii. >=3 years |
| | |

| ***BIOMEDICAL WASTE MANAGEMENT*** | |
|---|---|
| authorized by authority specified by govt | i. govt of state<br>ii. union territory |
| shall be segregated into containers / bags | i. only in wards<br>ii. wards and patient care areas |
| color coding followed | i. only in wards<br>ii. wards and patient care areas<br>iii. not followed |
| is the waste transported in closed 4-wheel trolley | i. no, open<br>ii. yes, closed<br>iii. not regularly followed(only 3-4 days followed) |
| Is staff aware of correct PPE and is following it accordingly? | i. don't follow due to lack of awareness<br>ii. follow it correctly<br>iii. don't follow due to lack of availability |
| Waste is stored for? | i. <48hours<br>ii. >48hours<br>iii. no records |
| Is the area cleaned after disposal of waste? | i. yes, daily<br>ii. yes, not daily<br>iii. monthly<br>iv. no |
| vehicle should be authorized by competent authority(specified by govt) | i. yes<br>ii. no |
| containers and bags should be labeled(biohazard symbol) | i. yes(non washable, prominent)<br>ii. yes(washable, prominent)<br>iii. Yes( washable, non prominent)<br>iv. |
| Records | i. Generation<br>ii. collection |
| | |
| ***HOUSEKEEPING*** | |
| PPE- | i. staff is aware and follow<br>ii. staff is not aware and thus not follow<br>iii. staff is aware but not follow(lack of supply) |
| Clean housekeeping surfaces(table tops , floors) | i. regular basis |

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| | ii. when spills occur<br>iii. When these surfaces are visibly soiled. |
| Clean, when visibly contaminated or soiled in patient-care areas | i. walls<br>ii. blinds<br>iii. window curtains |
| replace floor mopping solution | i. every 3 patient rooms<br>ii. every 5 patient rooms<br>iii. after complete cleaning<br>iv. nothing specified |
| Decontaminate mop heads and cleaning cloths | i. once daily(launder and dry)<br>ii. alternate daily(launder and dry) |
| cleaning of non - porous floors | i. wet mopping<br>ii. wet vacuuming<br>iii. dry dusting |
| mop left after cleaning | i. soaking in dirty solution<br>ii. wet<br>iii. dry |
| disinfectants to clean infant bassinets and incubators while these items are occupied | i. use<br>ii. don't use |
| chlorine solution | i. prepared freshly<br>ii. not prepared freshly |
| if not prepared freshly then stored | i. room temp -30 days in opaque bottle<br>ii. room temp> 30 days in opaque bottle<br>iii. room temp-30 days clear bottle<br>iv. nothing specified |
| Wet mopping | i. follow any motion<br>ii. follow 8 motion |
| holding of handle | i. away from the body<br>ii. close to the body |
| | |
| ***OPERATION THEATRE*** | |
| Occupancy- 5-8 persons at any given pt of time | |
| minimum total air changes | i. 30- super specialty OT<br>ii. 25- general OT |
| fresh air component of the air change | i. 05- super specialty OT<br>ii. 04- general OT |

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| air velocity | i. Unidirectional<br>ii. downwards on the OT table |
| positive pressure(15 Pas) | |
| HEPA filters | i. 8' * 6' (super specialty OT)<br>ii. 6' * 4' (general OT) |
| exhaust grille (return air) | Located – approx. 6 inches above the floor level |
| temperature - 21 +/- 3 deg c | |
| humidity 40% - 60% | |
| ideal Rh - 55% | |
| Non functional hours, AHU blower will be operational round the clock | |
| window and split A/c should not be used | |
| flooring, walls and ceiling | i. Non-porous<br>ii. Smooth<br>iii. seamless without corners<br>iv. easily cleanable repeadly |
| periodic preventive maintenance | |
| cleaning of pre-filters in 15 days | |
| | |
| ***LAUNDRY*** | i. unidirectional<br>ii. Segregation of clothes into spoiled and infected clothes at laundry and not at work place<br>iii. Maintenance of right temperature (65 $^{0}$c)<br>iv. Receiving area- negative air pressure<br>v. sorting laundry at dirty area-needles, syringes, and patients property<br>vi. Damn textiles should not be kept overnight<br>vii. Packing is done before transferring<br>viii. drainage- open pit then should be covered / closed pipe<br>ix. linen change policy<br>x. different washing protocols<br>soiled linen<br>infected linen<br>blankets<br>OT clothes |

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| | xi. Clean linen should be stored in a dry area above the floor level. |
| | |
| ***F&B(KITCHEN)*** | 1. Is gloves worn while making food and serving food?<br>2. jewelry to minimum<br>3. nails short and clean<br>4. Does milk n milk products and all open products stored at right temp and used within time?<br>5. Is labeling of food item-time of preparation and time till it can be used is done?<br>6. food brought<br>on same day cooked and served<br>one day before ,cooked and served<br>> 1 day<br>7. fridge temp<br>1-2 times a day<br>2-3 times a day<br>>3 times a day<br>Not recorded<br>8. food temp maintained<br>63deg c - hot food<br>5 deg c or less - cold food<br>9. Is food tasted before dispatch?<br>10. Is food packed before dispatch?<br>11. Is special precautions taken for infected patients (HIV, skin diseases, boils, burns)?<br>12. Is patient identity checked before serving the food?<br>13. visitors not allowed |

# Thank you