

**Summer Training at
Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra
(April 1–May 31, 2014)**

- **Quality Audit of Central Sterile Supply Department of the Facility**
- **Cost Analysis of Sterilization in Unilateral Total Knee Replacement**

**By
Purva Dixit**

**Under the guidance of
Dr. Susmit Jain**

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



**The IIHMR University, Jaipur
2014**

**INSTITUTE OF HEALTH
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CERTIFICATE

This is to certify that **Dr.Purva Dixit** has undergone her summer training in **Kokilaben Dhirubhai Ambani Hospital, Mumbai** from 1st April 2014 to 30th May 2014. The candidate herself carried out all the studies related to her summer training. Her topics of study were :

1. Quality audit of central sterile supply department of the facility.
2. Cost analysis of sterilization in unilateral total knee replacement.

Her approach to the study has been scientific and analytical. This summer training is in the partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Health and Hospital Management with specialisation in Hospital Management.

I wish her success in all her future endeavours.


Col. (Dr.) Ashok Kaushik
Dean (Academic & Student Affairs)
IIHMR Jaipur


Dr. Susmit Jain
Assistant Professor
IIHMR Jaipur

30 May, 2014.

To Whom It May Concern.

Dr Purva Dixit, a First Year student of the Post Graduate Diploma in Hospital Administration at The Institute Of Health Management Research in Jaipur, India did her Summer Internship for 2 months at The Kokilaben Dhirubhai Ambani Hospital, Mumbai, India from 1st April, 2014 to 30th May, 2014.

I found her to be an extremely diligent and hard working student, with an excellent capacity to grasp concepts and apply them to practical scenarios. Besides her assigned projects she contributed a lot to doing research work for me in Business Development Strategies.

Her Presentation Skills are exceptional and she comes across as an extremely confident and knowledgeable student.

She will go a long way in her career in the Hospital Industry and would be an asset to any Organization.

I wish her all the very best in the future.

Yours Sincerely,



Dr Ram Narain,

Executive Director.



ACKNOWLEDGEMENT

I extend my sincere gratitude to **Dr. Ram Narain** for giving me the opportunity to do this study and undergoing the process of learning at KOKILABEN DHIRUBHAI AMBANI HOSPITAL, MUMBAI. I thank him for all the trust and faith he posed in me and I only hope that I have been able to live up to his expectations. His guidance and support was helpful in enhancing my work.

I extend sincere gratitude towards **Dr. Mohammad Faisal Pervez** 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. Nilesh Shinde** manager central sterile supply department, for supporting my work all along. I would also like to extend my thanks to **Mr. Balaji, manager procurement** and Mrs. prachi Bio medical department, Kokilaben Dhirubhai Ambani Hospital for helping me throughout my study.

Last but not the least; I would like to thank the entire **staff of KOKILABEN DHIRUBHAI AMBANI HOSPITAL, MUMBAI** for their support and guidance.

I would like to express my sincere thanks to **Dr. S.D. Gupta**, Director, IHMR, **Dr. Susmit Jain(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 : 24th july 2014

Dr. Purva Dixit

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Acronyms/Abbreviations:

- **A&E - Accident and Emergency**
- **DAMA -Discharge Against Medical Advice**
- **HCA -Health Care Assistant**
- **ALOS -Average Length Of Stay**
- **CMD – Chief Medical Director**
- **COO – Chief Operating Officer**
- **CGHS – central Government Health Scheme**
- **CSSD – Central Sterile and Supply Department**
- **CT – Computerized Tomography**
- **ECG – Electro Cardiogram**
- **TMT – Treadmill Test**
- **EEG – Electro Encephalography**
- **EMG – Electro MyoGraphy**
- **FMO – Front Office Manager**
- **FOE – Front Office Executive**
- **HOD – Head Of Department**
- **HRD – Human Resources Department**
- **ICU – Intensive Care Unit**
- **IPD – In-patient Department**
- **KDAH – Kokilaben Dhirubhai Ambani Hospital**
- **MRD – Medical Records Department**
- **MLC – Medico Legal Case**
- **NICU – Neonatal Intensive Care Unit**
- **OPD – Out Patient Department**
- **CSSD- Central sterile supply department**
- **TKR- total knee replacement**
- **OR – operating room**

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 studies on **„quality audit of central sterile supply department’, ‘cost analysis of sterilization for unilateral total knee replacement’**.

About Summer Training:

The Post Graduate Diploma in Health and Hospital Management (PGDHM) program of Institute of Health management Research (IIHMR) aims at preparing professionally trained managers of health care organizations and hospitals to meet the increasing need for managerial skill. It involves a eight week summer placement for the first year students to provide them with a firsthand experience of the hospital system or environment. As a part of the program I had the privilege to undergo my practical training at Kokilaben Dhirubhai Ambani Hospital, Mumbai to get a firsthand knowledge and experience about the functioning of the hospital. I worked all through under the operations team there from 1st April 2014 to 31st May 2014. The main aim of the summer training was to get exposed to operation of all the hospital in general, and an in-depth insight of the Third Party Administrator, Pharmacy, medical Record Department and Laboratory in the hospital in particular.

Objective:

The summer training program had the following objectives:

- To have a basic orientation of the hospital set up.
- To study the functioning of the hospital as a system and its departments as subsystems of the hospital.
- To observe all the department in terms of their location,work plan and staffing pattern.
- To study about the staffing pattern and job responsibility of staff.
- Doing a project which is helpful to me in understanding hospital working in a better way and to the organization.

METHOD OF DATA COLLECTION:

The data collected was primary and secondary data.

Primary data was collected by:

- Personal observation during the summer training and department visits.
- Further information was gathered by discussion with the department heads and staff on the basis of unstructured interview.

Secondary data was collected from:

- The past records and hospital management information system (HMIS).

Profile of KDAH

The Institution

Kokilaben Dhirubhai Ambani Hospital & medical Research is India's newest, most advanced tertiary care facility. As the flagship social initiative of Anil Dhirubhai Ambani group, it is designed to raise India's global standing as a healthcare hub, with emphasis on excellence in clinical services, diagnostic facilities and research.

A vision to strengthen healthcare in the communities we serve and empower patients to make informed choices was at the genesis of Kokilaben Dhirubhai Ambani Hospital & Medical Research Institute.

Inaugurated in January 2009, The Hospital is a significant CSR initiative from Reliance Anil Dhirubhai Ambani Group. It is designed to raise India's global standing as a healthcare hub, with emphasis on excellence in clinical services, diagnostic facilities and research activities.

It is the only hospital in Mumbai to function with a FULL TIME SPECIALIST SYSTEM that ensures the availability and access to the best medical talent around-the-clock. The 750-bed hospital has over 103 full-time doctors, 520 nurses and about 200 paramedical and growing.

It represents a confluence of top-notch talent, cutting edge technology, state of art infrastructure and most important, commitment. KDAH offers doctors and patients cutting edge diagnostic and surgical solutions as well as the latest in IT systems. In many cases, they represent the first of their kind in the region.

KDAH is fully geared in terms of talent, technology, structure and spirit to reshape perceptions regarding hospitals and redefine the concept of caring. Indeed, this globally benchmarked institution marks the beginning of a new era in Indian healthcare.

History

The hospital project was initiated in 1999 by Dr. Nitu Mandke as a large scale heart hospital. Dr. Nitu Mandke was born in 1948 in a middle class family. He was first in the family to choose medicine as a profession with a determination to become a heart surgeon.

He joined B.J. Medical College; Pune from where he passed his M.B.B.S in 1970 came to Mumbai for further studies and completed his super specialty course in Cardiovascular Surgery. He spent close to 8 years working with world renowned figures in cardiac surgery like Dr. MagdiYacoub in England and Dr. Kirklin and Dr. Pacifico at the University of Alabama in the United states. He was an all-rounder with exemplary proficiency in sports , arts, languages , mathematics and so on.

In his lifetime he won the heart of many and repaired many more through unerring surgery. He won various social awards like : “ The Rajiv Gandhi Gold Medal of merit “ 1992 , “ Indira Gandhi sadhbhawna Award “ 1999, “ Outstanding Man of the 20th Century “ 2000 , “ Pride of India”2001, “ Sarvashri “ Gold Medal 2000 and “ Maharashtra Gaurav Award to name a few.

With great passion Dr. Mundke built a substantial portion of the hospital building. Sadly his dream was cut short by fate when he succumbed to a massive heart attack in May 2003 ; leaving adream unfulfilled and unfinished.

The Management of Mandke Foundation approached Reliance ADA Group, who graciously took over this project and developed it into one of the most modern and state –of-the-art multispecialty tertiary care hospital; naming the institution as – Kokilaben Dhirubhai Ambani Hospital & Medical Research institute.

In honor of initiator, the hospital’s Medical Convention Centre has been aptly dedicated to the memory of Dr. Nitu Mandke.

VISION

We aim to be a global healthcare institution that combines the best in medical treatment with strong ethical principles and a culture of care and compassion.

VALUES

Integrity: To deal with all stakeholders – patients, partners, employees, vendors and the community – in a spirit of fairness and integrity

Transparency: To respect the patient's right to know at every touch point by providing information that is clear, concise relevant and easy to understand.

Maximum Care: To re- evaluate every hospital system, Process and procedure to ensure that patients and their loved ones receive maximum care and comfort.

Self – Improvement: To instil a process of learning and self – improvement at every level through continuous training, focused research and peer review.

Patient Dignity: To safeguard the dignity of patients by protecting their individuality and privacy at all times.

KEY STATISTICS

Encompassing 10 lakh Sq.Ft.of space spread over 17 floors and two basements. Its intelligent framework allows for hospital staff to optimize utilization of space and resources.

Accommodates over 750 in – patient beds, allows optimal utilization of resources and ensures privacy, dignity, comfort, comfort, convenience and the best healthcare to every patient. However the smooth and seamless movement of people & staff guaranteed.

Critical care unit is the largest number of critical care beds in Mumbai, with 130 ICU beds. Special technical features in ICU including ceiling mounted, dual arm pendants which ensure that the space around the patient is not cluttered. Another unique feature is dedicated air supply that keeps the critical care free of any kind of contamination and infection.

It has a total of over 140 Full time consulting clinics, with the capacity to handle over 6000 outpatient consulting every day.

Movements in the hospital is managed by 30 elevators – the largest elevator bank for any hospital in India capable of transporting 7500 persons per hour, with different elevators for inpatients , outpatients, staff and catering.

Two dedicated elevators ensure quick transfer of patients to operation Rooms and ICUs.

The hospital's laboratory is housed on a single floor spread over an area of over 40,000 sqft offers over 3000 routine and highly advanced diagnostics, genetic and molecular biology test and will serve as a referral Centre for second opinions.

UNIQUE IN MUMBAI

Mumbai's first slice PET CT Scanner that combines computed tomography and positron emission tomography technologies into a single machine.

140 ICU beds, Largest number of critical care beds in Mumbai.

Hospital's laboratory housed on single floors spread over an area of over 40,000 sq ft. It offers over 3,000 routine and highly advanced diagnostics, genetic and molecular biology tests.

Hospital is having Mumbai's Largest OT complex with 22 operating theatre.

Largest dialysis Centre in Mumbai.

Full – time Specialist System: All doctors are attached and available only at Kokilaben Hospital.

Level I Accident and Emergency Center.

UNIQUE IN INDIA

Encompassing 10 lakh sqft of space spread over 17 floors and two basements. Its “intelligent framework” allows for hospital staff to optimize utilization of space and resources.

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HOSPITAL INFRASTRUCTURE

1. Lower basement

- Biomedical Engineering
- CSSD
- MRD
- Nuclear medicine
- PET CT
- Radiation Oncology
- SRS

2. Upper basement

- Car Parking
- Central security office
- Mortuary

3. Ground floor

- Main Reception
- Admission counter
- Discharge and billing
- Pharmacy & Medical mall
- Gift shop
- Prayer hall
- Business centre
- Fine dining
- Food court
- ATM
- Central report collection centre
- Beauty Salon
- Accident and emergency

4. Mezzanine Floor

- Administration
- Library
- Staff dining

5. First Floor

- Clinical administration
- Radiology & Imaging (X-Ray, MRI , Ultrasound, CT scan)
- Health check up program
- Sample collection
- Centre for cardiac sciences
- Centre for bone and joint
- Centre for pulmonary and lung medicine
- Multi-specialty OPD

6. Second floor

- Centre for children
- Centre for brain and nervous centre
- Dental clinic
- Centre for cancer
- Ophthalmology clinic
- E.N.T clinic
- Gastroenterology clinic
- Dialysis centre
- Blood bank
- Urology clinic
- Nephrology clinic

7. Third floor

- OT complex 1 (8 theatres)
- Catheterization lab
- ICU (Neuro and surgical)
- Interventional radiology

8. Fourth floor

9. Fifth floor

- Ambulatory surgery
- Day surgery
- ICU (cardiac)
- OT complex 2 (7 theatre)
- Refuge Area

10. Sixth floor

- Rehabilitation centre
- Convention and exhibition centre

11. Seventh floor

- IVF centre
- Cosmetology and aesthetic surgery
- Laboratory medicine and pathology
- Nursing College
- Tissue and bone bank

12. Eighth floor

- Birthing complex (labour and delivery)
- ICU (pediatric and neonatal)
- Birthing Suites
- OT (obstetric)
- Wards

13. Ninth floor

- Inpatients (pediatric)

14. Tenth floor

- High dependency unit
- ICU (Medical)
- Refuge area

15. Eleventh floor

- General ward
- Nursing College

16. Twelfth to sixteenth floor

- Inpatient

DEPARTMENT IN THE HOSPITAL

The following departments function in the hospital

Clinical Services	Clinical	support	Clinical	Administrative
			Administrative	

	services	Services	services
Accident Emergency	& LABORATORY MEDICINE	Ambulance services	Human resources
OPD	Imaging	Nursing department	Materials
Anesthesia	CSSD	Food & beverages	Marketing
Critical Care	Biomedical waste	Security	Finance
OT	Housekeeping	Mortuary	Engineering
IPD	Pharmacy	Laundry	IT

CLINICAL SERVICES

ACCIDENT AND EMERGENCY

An Emergency Department (ED) is also known as Accident & Emergency (A & E), Emergency Room (ER), Emergency Ward (EW), or Casualty Department is a medical treatment facility, specializing in acute care of patients who present without prior appointment, either by their own means or by ambulance. Due to the unplanned nature of patient attendance, the department must provide initial treatment for a broad spectrum of illnesses and injuries, some of which may be life threatening and require immediate attention.

Layout

- 11 bedded (6+3 triage + 2 isolation)
- Each bed is separated with curtains to maintain patient privacy and is equipped with the following:
 - ✓ Oxygen supply
 - ✓ Suction Pump
 - ✓ Syringe pump
 - ✓ Cardiac monitor

Minor Operation theatre

- Machines in minor OT are as follows:
 - ✓ Anaesthesia machine
 - ✓ ETCO2 machine
 - ✓ Cautery machine
 - ✓ OT table
- Procedures done in minor OT
 - ✓ Lumbar puncture
 - ✓ Biopsy
 - ✓ Bone marrow aspiration
 - ✓ Suturing

This department has got its own billing and discharge counter.

Staff

HOD



9 Junior Medical Doctor (2/shift)



1 Head Nurse



24 Staff nurse (6/shift)



6 HCA (2/shift)

Equipment:

- Defibrillator-2
- Portable ECG – 2
- Nebulisation machine -2
- Portable sonography machine-1
- Trolleys :
 - ✓ Procedure trolley
 - ✓ Induction trolley
 - ✓ Adult crash cart
 - ✓ Dressing trolley

Ambulance:

There are 2 types of ambulance:

- a) Non-cardiac ambulance
- b) Cardiac Ambulance

Equipment in the ambulance are as follows:

- Ambulance cot
- Portable Ventilator (cardiac ambulance)

- Portable oxygen unit
 - Portable suction unit
 - First aid kits
 - Traction splint
 - Auxiliary Stretcher
 - Transfer sheet
 - Airways (nasal, oropharyngeal)
 - Obstetrical Kit
 - Sphygmomanometer
 - Stethoscope
 - Fire Extinguishers
 - Burn Kit
 - Others
 - ✓ Sterile and non-sterile gloves
 - ✓ Face mask
 - ✓ Blankets
 - ✓ Towels
 - ✓ Bed pan
 - ✓ Tongue depressors
 - ✓ Cold packs instant chemical type
-
- 1 HCA in non-cardiac ambulance
 - 1 HCA + 1 nurse + 1 cardiac consultant in cardiac ambulance

OUTPATIENT DEPARTMENT

Kokilaben Dhirubhai Ambani Hospital has 140 independent consultant clinics with a capacity to handle over 6000 outpatient consultations every day. These clinics are organised as “functional clusters” representing a specialty, with each cluster containing its own examination room, phlebotomy room, and in instances, rooms for specialized medical equipment unique to the cluster. A day care dialysis unit, an endoscopy theatre complex,

radiology suites and a blood bank support outpatient service are co-located on the same floors as the self-contained outpatient area. The hospital outpatient services offer specialist consultation services across 42 different specialities including six centres of excellence.

The six centre of excellence are as follows:

- Centre for neurosciences
- Centre for cancer
- Centre for physical medicine and rehabilitation
- Centre for cardiac sciences
- Centre for bone and joint
- Centre for children

The specialists included are Anaesthesiology, Critical Care Medicine, accident and emergency, gynaecology and obstetrics, imaging, laboratory medicine and pathology including biochemistry, molecular biology, haematology, histopathology, microbiology, clinical pathology, transfusion medicine and blood bank, genetics, tissue and bone bank, dermatology, endocrinology, gastroenterology, clinical nutrition, internal medicine, nephrology, psychiatry, pulmonary medicine, rheumatology, geriatric medicine, surgery including dentistry, ENT, general surgery, ophthalmology, plastic and reconstructive surgery, urology, surgical oncology, cosmetology.

a) Access to OPD services:

All patients who visit KDAH or free OPD for the first time for consultation/ other services are issued a card which gives each patient a UHID number. This UHID card is attached to the registration form. With the help of this number, medical records of patients can be assessed. Allotment and control of UHID number is the responsibility of the admission staff desk.

b) OPD Appointment:

Appointments can be fixed over telephone to all from the call centre or personally across the reception counter. Fax and e-mail facilities are also available.

Following services are offered in the OPD

- Medical / Surgical consultations
- Preventive Health check-up packages
- Laboratory investigations

- Imaging services
- Cardiology investigations
- Neurology investigations
- Pulmonary investigations
- Pain management
- AKD
- Gamma knife
- Endoscopy
- Bronchoscopy
- Urodynamic study
- Physiotherapy
- CDC
- ENT
- Ophthalmology
- Dental procedures
- Oncology
- Radiation oncology

HEALTH CHECK UP

- The executive check-up department, a part of OPD services, is a wing of this multispecialty hospital dedicated to the diagnostic and preventive side of patient care. It is a place where healthy patients come for prognosis of disease or to know about the preventive and curative aspect of conditions they may already have.
- This system facilitates the patient to get all the required investigations/consultations done without having to pay for either consultation and/or for each individual item of pathological or imaging investigation. It is the centre point where the potential customers come directly in contact with hospital services. This department can therefore be a point to draw in patients to become in-patients or for them to come even for follow up OPD consultation.
- The packages in the program have been developed by a team of highly qualified and experienced medical personnel and are designed to offer a complete medical checkup and within their limitations detect any latent health problems. In addition, these

packages are offered at special discounted rates that make them truly worthwhile. At the end of the day, candidates leave the hospital with all their reports.

- This department is dependent on various other hospital departments and consultants to ensure a smooth process flow. Therefore co-ordination is a key factor in smoothly running the department. The departments in co-ordination are: pathology, radiology, cardiology, ENT, ophthalmology, dental etc. the visiting consultants are from following department; medicine, surgery and gynecology.

OPERATION THEATRE:

The aim of department of anaesthesiology and OT facility is to provide the highest quality of care to patients undergoing various types of surgeries. The OT facility is positioned as a tertiary care centre of excellence providing complete services for various surgical specialties. The department is staffed with highly experienced and trained anaesthesiologist, surgeons, technicians, nurses and other support staff. Their services have state-of- the-art technology and equipment with highest level environment and quality controls. For each OT there are two scrub nurses and one circulating nurse. Protocols based on approach for quality pre-operative, intra-operative and post-operative and follow up care of the patients. The complex is divided into three zones: sterile, semi sterile and non-sterile zones. Complete services to the following surgical specialties are provided.

- Cardiac surgery
- Neuro surgery
- Onco surgery
- Orthopaedic surgery
- General surgery
- Gynaecology and obstetrics surgery
- Paediatric surgery
- GI surgery
- Uro surgery
- Plastic surgery
- ophthalmic and ENT surgery
- Transplantation surgeries

The OT complex has a pre and post-operative monitoring room for continuous monitoring of patients (recovery rooms). The facility includes 22OTs, 600 square feet area, pendants in all OTs and surgical control panels.

IN PATIENT DEPARTMENT

The IPD provides the detailed pre-procedure needs their completion and coordination with the diagnostic to arrive at the diagnosis and completion of treatment regimens, comprehensive care in the pre-operative and follow up care, rehabilitative, and nutritional regimen and their scientific amalgamation as per the progressive patient care need. IPD wards are located on floor numbers 9,10,11,12,13,14,15 & 16 The IPD rooms are of the following types: single room, twin sharing, deluxe room and suits. Each floor has three zones, east, west and central and each wing has a separate nursing station. The various types of rooms with their features as follows:

- **GENERAL WARDS**
 - 5beds/room
 - Air conditioned
 - Bed head panels with medical gasses
 - Nurse call systems with 2 way communication

- **SINGLE ROOMS**
 - Area of 320 sqft
 - Separate patient zone and attendant zone
 - Nurse call system with two way communication

- **Twin Sharing**
 - Bed head panels with medical gasses
 - Television sets
 - Couch for each patient relative
 - Nurse call system with two way communication

- **Suits**
 - Area of 750 sq. ft.
 - Terrace garden

- Exclusive visitor area and guest rooms
- Nurse call system with two way communication

The nurse: bed ratio is 1:5 for general ward, 1:2 for single rooms, 1:3 for twin sharing, 1:1 for suits. The various other rooms are clean utility, dirty utility, janitor room, AHU (air handling unit), sluice room, I.T. room, and service elevator.

INTENSIVE CARE UNIT

The ICU cater to patients with most severe and life-threatening illnesses and injuries requiring constant close monitoring and support from specialist equipment and medication to ensure normal bodily functions. There is Adult ICU consisting of SICU & MICU, Paediatric ICU, Neonatal ICU, Transplant ICU and Paediatric Cardiac ICU. The nurse patient ratio for critical patients is 1:1 and for stable patients is 1:2. The ICU co-ordinates with CSSD, Laboratory and the Radiology department. Strict aseptic techniques are used. Pressure zones are created to control infection rate.

The ICU has highly dedicated and trained medical, nursing and allied staff. There is a system of closed ICU in KDAH .The space per bed is 320 sq feet in the patient care area

Bed Capacity in each ICU

<i>ICU</i>	<i>BED CAPACITY</i>
<i>SICU 1</i>	11
<i>SICU 2</i>	10
<i>PCICU</i>	11
<i>PCICU-HDU</i>	2
<i>PICU</i>	7
<i>TRANSPLANT ICU</i>	7
<i>NICU</i>	8

<i>NICU-HDU</i>	5
<i>MICU</i>	28
<i>MICU</i>	25

Human resource of the ICU

- Intensive care doctors
 - ✓ 1 Chief Intensivist for all ICU
 - ✓ Junior consultants (12 hour shift)
 - ✓ Clinical registrars (8 hours shift)

- Intensive care nursing staff
 - ✓ 1 Director General Manager for ICU
 - ✓ Nurse in charge (8 hours shift)
 - ✓ Team leader (8 hours shift)
 - ✓ Senior nurse officers
 - ✓ Junior nurse officers

- Allied staff
 - ✓ Physiotherapists
 - ✓ Dieticians
 - ✓ Biomedical Engineers
 - ✓ Health Care Assistants

Shift timings:

For doctors

- ✓ Morning : 8 am - 4 pm
- ✓ Afternoon : 2 pm - 10 pm
- ✓ Evening : 10 pm - 8 am
- ✓ Overlapping hours : 2 pm - 4 pm

For nurses, HCA and housekeeping staff

- ✓ Morning : 7 am - 3 pm
- ✓ Evening : 3 pm - 11 pm
- ✓ Afternoon : 11 pm - 7 am

Visiting hours: 11 am – 1 pm

5 pm – 7 pm

- ✓ Only 1 relative at a time is allowed

Records and Registers

- Admission and discharge register
- Handing and Taking over/Team leader sheet
- Assignment book
- Leave book
- O.T booking register
- Critical care flow sheet
- Narcotic drug register.

Equipment's:

MONITORING EQUIPMENT	CARDIOVASCULAR THERAPHY	RESPIRATORY THERAPY	LABORATORY EQUIPMENT
Bed side and Central Monitors	CPR Trolley	Ventilators	Blood gas Analyser
ECG Recorder	Defibrillators	Intubation/ Trolley	Electrolyte Analyser
Pulse Oximeter	Infusion Pumps and Syringes	Nebulisers	
Spirometer			
ECG Monitor			
Temperature Monitors			

Blood Glucose Meter

Miscellaneous Equipment

- Crash Cart
- Dressing trolley
- Procedure trolley

Management Information System

<i>ICU</i>	<i>LOS (days)</i>
Adult ICU	4
PCICU	6.5
PICU	5.6
NICU	6.4

PAEDIATRIC INTENSIVE CARE UNIT

The PICU looks after all critical pediatric patients. It is located on 8th floor. The ICU is split into 2 zones for outpatients and inpatients. The various other rooms include Ante room, equipment room, clean utility and dirty utility room. The average length of stay of each patient is approximately 1 week.

NEONATAL INTENSIVE CARE UNIT

The NICU is 18 bedded and located on the 8th floor. The department is divided into 2 zones – outpatients and inpatients. There are 2 isolation rooms. The nurse ratio is 1:1

DEPARTMENT OF RADIATION ONCOLOGY

The department of radiation oncology at KDH is a state of the art unit having the latest technology and equipped personnel, delivering services of international quality. The department has the first installed TRIOLGY and NOVALIS Tx in the country. It is capable of performing all the high end treatment like IMRT, IGRT intracranial stereotactic radio surgery and radiotherapy, extra cranial sterotaxy, total body radiation, total skin electron treatment. There is a facility of brachytherapy for all sites in the form of remote afterloadingHDR brachytherapy system with 3D planning facility. The department works in close coordination with surgical oncology and neurosurgical subspecialties" (e.g. head and neck, thoracic, breast, urology and gynae oncology, neuro-oncology) maintaining a high quality evidence based practice for the particular sub suite.

CENTRE FOR REHABILITATION

- The centre is located on a dedicated floor with 30,000 square feet area and exclusive inpatient service, first of its kind.
- The department is located on 7th and 8th floor of hospital.\
- It has got its own billing desk.
- It also consists of a daycare centre for those patients who need 4-5 sessions in a day.
- **Staff of the department consist of**

HOD



40 physiotherapists



1 Asst. nurse



3 Nurses



5 HCA

- **Following therapy services are available :**

1. Neurological Rehabilitation
2. Musculoskeletal rehabilitation
3. Cardiac Rehabilitation services
4. Pulmonary Rehabilitation
5. Paediatric Rehabilitation
6. Cancer Rehabilitation
7. Pain management
8. Women's health
9. Geriatric Rehabilitation

The therapy services offered in the department :

- 1) Physical therapy
- 2) Occupational therapy
- 3) Electrotherapy
- 4) Speech and language pathology
- 5) Exercise physiology
- 6) Psychology
- 7) Rehabilitation nursing
- 8) Orthosis and prosthesis

IVF CENTRE

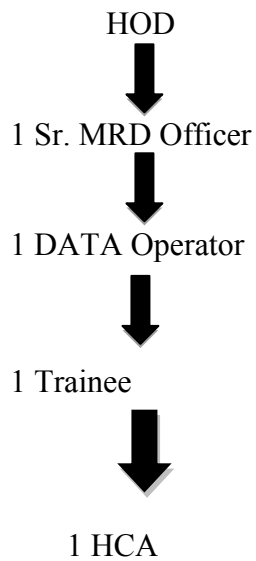
- Centre for reproductive endocrinology and fertility (CREF) is located on the 7th floor of the hospital and has dedicated space for out-patient care and day care of patients with infertility and reproductive endocrine problems, and for medical acupuncture and mind body program.
- CREF is staffed by a full time consultant reproductive endocrinologist and infertility specialist, embryologist and infertility issues and a health care assistant.
- A full-fledged laboratory and radiology department offering a comprehensive range of tests including some newer cutting edge tests under one roof only compliments our services at CREF, but is also extremely convenient for patients.
- Medical conditions addressed at CREF:
 - ✓ **Reproductive endocrinology**

- ✓ **Midlife health care**
- ✓ **Bone health**
- ✓ **Adolescent gynaecology**
- ✓ **Infertility treatment**
 - ❖ Fertility drugs to induce / enhance ovulation (pills or injections)
 - ❖ Intrauterine insemination
 - ❖ Assisted reproductive therapy (ART) procedures:
 - In vitro fertilization (IVF)
 - Intracytoplasmic sperm injection (ICSI)
 - Assisted hatching(AH)
 - Blastocyst transfer
 - Pre-implantation genetic diagnosis (PGD)
 - Embryo cryopreservation
 - Sperm cryopreservation
 - Testicular tissue cryopreservation
 - Third party reproduction
 - Donor oocytes
 - Donor sperm
 - Gestational surrogacy
 - Donated embryos
- Other facility:
 - ✓ Diagnostic tests
 - ✓ Billing and registration
 - ✓ Phlebotomy services
 - ✓ Ultrasound facilities
 - ✓ Andrology and embryology laboratories
 - ✓ Operating room, pre-op and recovery room facilities
 - ✓ Counselling and support services

CLINICAL SUPPORT SERVICES

MEDICAL RECORD DEPARTMENT

- The main functions of the department are :
 - 1) Storing file for future reference.
 - 2) Research.
- Staff:



- Open and close audit is done of all files before keeping them storage.
- The arrangement of files is done in following ways-
 - ✓ Year wise and UHID wise.
 - ✓ Also on the basis of their type :
 - a) Regular files
 - b) DAMA files
 - c) MLC files
 - d) OT recovery files
 - e) Chemotherapy files
 - f) Dialysis files
- Apart from files few forms and records are also store in this department:
 - ✓ Consent form
 - ✓ OT papers
 - ✓ A&E papers
- Certificates issued from the department :

- ✓ Patient fitness certificate
- ✓ Fit to fly certificate
- ✓ Leave certificate
- All files are stored in the department for the following time period:
 - ✓ Reports -1.5years
 - ✓ Death, DAMA & MLC files 20 years
 - ✓ Regular files-5years
- ICD-10 coding is done for storing files:
 - ✓ Red-Death, DAMA & MLC
 - ✓ Black-Oncology
 - ✓ Yellow-Gynecology& obstetrics, IVF files
 - ✓ Dark blue-General medicine, critical care, Nephrology, Endocrinology, Gastroenterology, Pulmonary medicine, Dermatology, Dental, Psychiatry, rehabilitation, Rheumatology.
 - ✓ Light blue- Pediatrics
 - ✓ Orange- Neurology, CVTS, Cardiology, orthopedics
 - ✓ Green-ENT, general surgery, ophthalmology, Urology, Cosmetology, Interventional radiology.
- This department has to notify Bombay Municipal Corporation(BMC) about following things on regular basis:
 - ✓ Birth and death report (once in a week).
 - ✓ Notifiable disease which includes cholera, dengue, plague, yellow fever, TB, polio, meningococcal meningitis, leptospirosis, viral encephalitis (once in a week).
 - ✓ Maternal mortality (once in a month)
 - ✓ MTP &PNDT (once in a month)
- Retrieval- for easy retrieval of files tracer cards are used when files are given to patients or sent outside the department.

LABORATORY

The salient features of the department are as follows-

- CAP (College of American Pathology) accreditation

- Central processing laboratory is spread over 40,000sq. Ft. which follows strict internal quality compliance for all analyzer.
- Exhaustive menu of tests from routine to esoteric.
- Excellent laboratory management system which handles both pre-analytical and post-analytical aspects.
- Dedicated courier and logistic services
- 24 hrs. sample collection facility
- Stringent quality control monitoring which satisfy the quality assurance elements elaborated by GLP and GCP and readily available documented evidence of quality assurance and quality proficiency schemes.
- Constant improvisation and technology innovation using over 150 state of the art equipment.
- Quality control and quality assurance executive that monitors pre-analytical and post-analytical processing of the samples.
- Customized management report (MIS-management information system)
- An active IRB and ethics committee which oversees clinical trials proposed when required.

BLOOD BANK

Transfusion medicine is a multi-disciplinary area concerned with the appropriate use of blood and blood components in the treatment of human disease. The mission of KDAH is to make available appropriate adequate quantity and high quality of safe blood and blood component to “anyone, anytime, anywhere” in medical community. KDAH adheres to quality norms and focus on the donor satisfaction standards and technique and quality control are precisely and meticulously maintained as per norms given in the drugs and cosmetics acts, by the regulatory authority, director drug controller (India), ministry of health and family welfare, Govt. of India, and also internationally recommended methods. The department runs round the clock and blood and its products are supplied as and when requested. Blood donation is accepted from voluntary blood donors and relatives and friends of the patient. Autologous blood donation (blood donation for one’s own use) is also accepted. The blood donors are informed and educated about the infections transmitted by transfusion of blood components 100% of collected blood is processed into component like red cells concentrate, platelet concentrate, fresh frozen

plasma (FFP) and cryoprecipitate. The use of the components is better and cost effective. The blood bank at KDAH is equipped with state of art equipment, which enables use of advanced techniques for processing/screening of blood and its components. All the mandatory screening for the transfusion transmissible disease like HIV, HBV, and HCV is done with the more sensitive and specific CMLIA and ELISA methods. All units are screened for VDRL and malaria parasite. Red cells in an additive solution (RCA) like, SAGM or ADSOL is a product which is used in variety of indication like surgeries, anemia, trauma, child birth etc. as a thumb rule one unit would increase the hemoglobin by 1 gm.%.

IMAGING

The imaging department consists of radiology services. The investigations performed in these departments include:

- CT Scan
- MRI
- X-Ray
- Ultrasonography
- Mammography

The HIS has a system for appointment scheduling for each of these investigations. The appointments are given by Call Centre. There are 4 X-ray machines, 5 ultrasonography machines, 1 mammography machine, 1 CT Scan machine, and 2 MRI machine of which one is 3 Tesla located in the radiology department and the other is 1.5 Tesla IMRIS (intraoperative magnetic resonance imaging suit) is a movable machine attached to the ceiling that is located in the OT. It is basically used for MRI scanning during a surgery. They are working on its complete utilization.

CENTRAL STERILE SUPPLY DEPARTMENT

The central sterile supply department (CSSD) plays a key role in providing the items required to deliver quality patient care. Centralizing the reprocessing of reusable devices helps ensure uniform standards of practice, while also providing for improved workflow (soiled, to clean, to sterile). This also facilitates the training and education of skilled technicians who must be aware about the standards, complexities, challenges, risks and

technicians associated with the CSSD function. Every CSSD task must be performed for the welfare and safety of patients, co-workers and the community.

CSSD is the heart of hospital infection control and the most important unit of clinical support services. CSSD's main functions are cleaning and drying, assembly, packing, sterilizing, storing and distributing instruments (both multi use and single use devices), as per well delineated protocols and standardized procedures.

INFRASTRUCTURE

It is divided into 3 zones

1. Decontamination area
2. Assembly area
3. Sterile storage area

STAFF

1 manager / department head

1 executive

1 senior technical officer

4 technical officers

6 junior technical officers

10 trainees

16 health care attendants

MAJOR TECHNOLOGIES

Ultrasonic cleaner

Washer disinfectant

Dryer

Steam sterilizers

Plasma sterilizer

ETO(ethylene oxide gas sterilizer)

Dry heat sterilizer.

RECORD MAINTAINED:

- Manual issue and receiving OT
- Manual issue and receiving all departments
- Sterilization records

PHARMACY

Central pharmacy indents to IP, OP and LB. it is of 2 categories: capital and consumables.

SCOPE OF INVENTORY MANAGEMENT:

- INDENTATION
- RECEIVING
- STORING
- DISTRIBUTION

The staff consists of:

- 5 manager
- 1 executive
- 8 senior officers
- 24 officers
- 7 junior officers
- 6 trainee assistants
- 1 trainee HCA
- 16 attendants
- 21 HCA

HOUSE KEEPING:

The objective of housekeeping is exceptional standards of cleanliness, sanitation and hygiene of the entire hospital. Housekeeping services are outsourced to ARA MARK services.

The staffs include:

- Housekeeping manager
- Assistant manager
- Housekeeping executives
- Supervisors
- Houseboys & house girls

Functions of housekeeping department are:

- General facility cleaning
 - ✓ Routine cleaning of patient's rooms
 - ✓ Patient's common areas
 - ✓ Washrooms
 - ✓ OT
 - ✓ Laboratory
 - ✓ Consultant's office
 - ✓ Glass windows and doors
 - ✓ Ceiling etc.
- Handling of biomedical waste.
- Pest control-It includes spraying every 24 hours for mosquitoes, cockroaches, flies, rats, lizards and termites.
- Garbage disposal- The housekeeping staff collects garbage collected in specified color coded bags from all garbage bins existing inside the hospital premises and disposes the garbage at the designated area within the hospital, which is the biomedical waste room. The general waste is sold to the junk dealer and healthcare waste is handed over to government approved vendor "synergy waste management".
- Horticulture- It is responsible for maintenance of in house plants & terrace gardens, flower arrangement during hospital functions.

The performance indicators are B.M.W. color code compliance, B.M.W. collection, pest control efficiency and sanitization of the hospital premises.

CLINICAL ADMINISTRATIVE SERVICES

STORES

Material stores functions in order to supply the right material in right quintiles at the right time at the right price. The IP departments put up requests for the required materials by uploading indents in the HIS. The store manager raises a purchase order to be sent at the central procurement stores. The supplies received are inspected on the basis of quantity and expiry in the incoming material inspection area. The items are stored as per the storage norms. Departmental issues are made for non – medical consumables as per requirement. Stock is reviewed periodically for non-moving items and short expiry items. Stock audits are carried out twice/year. Any variance is reported to the higher management. For inventory control, ABC and VED analysis is carried out. FEFO (first expiry first out) is followed. The staff includes:

- Assistant Manager
- Executive store
- Assistants
- 2 Health care assistants

The key performance indicators are no stock outs, zero errors in maintenance of accounts, zero error in billing processing, maintain minimum inventory maximum efficiency, maintaining stores as per the NABH = ISO standards, submission of bills accounts within 4 working days, expired items on the shelves should be zero, minimize emergency purchase, TAT suture and lab kits (19 days), instruments (8 weeks) and other items (2 days)

LINEN AND LAUNDRY

The objective linen and laundry is the availability of clean uniforms for patients and staff. Soiled linen when collected is kept in the dirt utility room in a hamper trolley. Infected linen are collected and put in a red bag at the source⁴ of generation. The red bag is sealed and labeled for infection. At the end of each shift, the dirty utility linen is carried in the hamper trolley to the collection room. At the collection point, it is segregated, counted, and sent to the laundry for washing. The performance indicators are laundry pending, turnaround time for laundry cleaning, percentage discarded linen.

BIOMEDICAL ENGINEERING DEPARTMENT

The main objective of the department is to facilitate the usage of latest technologies in the diagnosis, treatment and care of patients. It is also responsible for proper usage and quality performance of these costly equipment and tools inside the hospital

The department maintains an updated asset register of the hospital equipment, conduct daily rounds to ensure that the equipment is functioning smoothly, responsible for facilitation and identification of equipment requirements, planning technical comparison, ordering installation and deployment units and new projects, conduct regular preventive maintenance servicing for all the equipment at regular intervals, facilitating equipment replacements and condemnation, whenever required, conducting regular training programs for hospital staff, on usage of hospital equipments. The staff consists of HOD, 5 biomedical engineers and 2 biomedical technicians and 4 medical gas technicians.

FOOD AND BEVERAGES

The objectives of food and beverages department are to deliver healthy and nutritious meals coupled with a wonderful experience of hospitality services to all IP, OP and staff. The cafeteria is outsourced to Java Green. The main functions of the department are as follows:

- Inpatient meal management
- Purchase of fruits, vegetables, milk, pulses, whole grain and other dietary consumables
- FIFO is followed

The purchased items are unloaded in the receiving area, where they are inspected and then washed with water and anti-bacterial liquid before bringing it in the kitchen premises. It is followed by storage of perishable and non-perishable items in refrigerator and dry storage area respectively. Diet planning and counselling is done by the dietician according to the patient's condition, food allergy and taste and general preference. The diet summary is handed over to the supervisor in the form of meal sheet cum ticket. According to this, the food is prepared and laid out on trays. The meals are served in the patients' rooms and clearance is carried out after 2 hours. Food/meal/diet for a patient admitted in the hospital is decided by the doctor admitting the patient depending on his/her medical condition. On

doctor's recommendations, the dieticians plan the meal that is best for the patient's speedy recovery. The staff includes:

- Regional head of support function
- F&B manager cum chef
- Assistant manager F&B
- Executives
- Senior Dietician
- Other F&B staff

SECURITY

Services rendered by security department are surveillance and patrolling of the infrastructure and material, access control (in restricted areas like IT, MRD, LSS, Mortuary, Pharmacy, Electric control panels), control of movement of traffic in premises, reception and conduct of visitors and attendants, assistance in fire control and emergency plan, vigilance and intelligence, liaison with sensitive areas, carry out verification, hold records, issue passes, and generate reports on security matters. It is equipped with modern equipment like CCTV's metal and explosive detectors, alarms, security, lighting and walkie-talkies, etc. The staff members are:

- HOD
- Senior officer
- Security supervisor
- Sr. security assistant
- Security guards

The performance indicators are TAT, theft percent, code related incidents.

EDUCATION AND TRAINING FACILITIES FOR NURSES

In line with the vision of continued commitment toward education and training in the field of healthcare, particularly the preparation of highly competent nursing professionals dedicated to patient care, the board of management has upgraded its School of Nursing to a full KDA College of Nursing.

ADMINISTRATIVE SERVICES

ADMISSION AND BILLING:

The admission and billing staff includes 1 H.O.D. and 12 employees. The services offered by the department are registration of a new patient, booking/reservation-bed and O.T, admission, billing, discharge work.

Front office:

The front office is the first point of contact at KDAH. It is manned by duty manager, deputy duty manager, and patient care executive and patient care coordination. There are total 7 front offices in KDAH and there are 2 help desks.

Functions:

- Respond and answer telephone calls from patients and clients (call center).
- Registration of outpatients, in patients and executive health checkup patients for various investigations (registration counter).
- Admission, billing and discharge of in patients.
- Direct the patients and their relatives to the outpatient services and the inpatient wards (helpdesk and welcome desk).
- Report receiving and handling over to the patient (dispatch counter).

Third Party Administrator Desk:

T.P.A. staff includes one executive clinical administrator and 4 Customer care officer.

Functions:

- Counselling.
- Pre-Authorization.
- Cashless admission.
- Query handling.
- Final approval.
- Maintain privacy and confidentiality.

INFORMATION TECHNOLOGY DEPARTMENT:

It is implied that there is central database for entire hospital. Services rendered by the IT department are as follows:

- IT support to location users for hardware and software as per SLA (service level agreement).
- Installation of new IT equipment.
- Helping biomedical department in configuring the medical equipment with HIS.
- Installation of appointment scheduling programs.

The IT staffs include:

- Chief information officer
- Manager IT
- Executive IT engineers.

The performance indicators are calls resolutions within a time limit, strict data security, zero percent variance, in hardware and software variance, minimal occupational hazard and proper e-waste disposal.

ENGINEERING DAPARTMENT:

Engineering and maintenance department is manned for 24 hours for keeping round the clock vigil on proper functioning of plant engineering equipment coming under the purview of department. This covers maintenance of major supplies to the hospital such as power, water, which form the life line to the hospital's activities. The responsibilities of the department include operation and maintenance of plant equipment installed in the basement of main building and various other areas to support the normal functioning of the hospital and repair work of equipment related to the department's responsibility. The policy of the department is to serve well with safety and it time, continuous improvement, cost saving, optimum utilization of manpower and equipment, optimum utilization of inventory and teamwork.

The major engineering services are:

- Electrical power supply- normal and emergency
- Air conditioning, ventilation and refrigeration.
- Steam and hot water supply.
- Water stations and cold water supplies- filtration system.

- Medical gases supplies
- Fire detection alarms and fighting system.
- Internal and external plumbing system.
- Civil works-Masonry, carpentry, glasswork, upholstery, painting, etc.
- PNG and LPG supply.
- Safety assessment of facilities.

MARKETING AND SALES

Marketing and sales department is concerned with business development, branding, promotions and advertisement of KDAH healthcare services. Marketing deals with organizing health check-up camps and awareness talks for corporate or PSU's and RWA, designing all the brochures and signage, conducting CME's/seminars. The sales department deals with PSU's and corporate tie-ups, pitching referral sales from nearby general practitioners and nursing homes, liaison with TPAs and managing the international patients (medical tourism).

FINANCE

The scope of services includes the entire hospital cash handling and cash disbursement in the form of salaries and vendor payment for stores, pharmacy and biomedical department. All the cash collected is deposited on daily basis in the bank. The TPA payment is collected through lump sum amount in the form of cheque at the end of the month. The staffs include :

- HOD
- Asst. Manager
- Senior executives
- Junior executives
- 2 cashiers

PURCHASING DEPARTMENT

Purchasing department is responsible for the procurement of function of the hospital the primary functions of the purchasing department are to:

- Procure the rights and services from the right suppliers at the right time for the right place.
- Receive, warehouse, issue & distribute stocks to hospital departments in accordance with KDH procedure.
- Hospital users and clinicians actively participate in product evaluation processes. The purchasing department is actively involved in cost analysis and supplier performance management. It is through all of these activities that the department manages the chain process.

HUMAN RESOURCE DEPARTMENT

The functions of HR department at KDA hospital are:

- Hiring
- Physician and nurse recruitment
- Employee orientation
- Personal management
- Benefits and compensation management
- Counselling
- Claims handling
- Training and performance monitoring
- Professional development programs
- State and federal regulations education
- Work place safety and sanitation
- Administration – employee meetings
- Staff morale and retention

Recruitment /selection:

- Identifying the key requirements areas(KRA)
- Drafting job description
- Recruitment through job portals and internal references
- Selection
- Medical examination of the candidate

- Offering letter to the selected ones

QUALITY CONTROL DEPARTMENT

The Functions of the department are:

- To analyze patient feedback forms.
- To analyze different parameters from different departments and compare them.
- Infection control of the hospital.
- Induction and training of hospital staff.
- Accreditations (NABH, JCI).

This department also maintains few quality indicators for hospital:

- Medication Errors
- Return of patient within 72hours.
- Return of patient to OT within 48hours.
- Return of patient to ICU within 48hours.
- Number of Needle sticks Injuries.
- Number of blood transfusion reaction.
- Number of Adverse Drug reaction.

Staff:

This department consists of one quality manager who reports directly to the director of hospital.

SPECIFIC PROJECT 1

OBJECTIVES

- To find out the standard guidelines for the operation of central sterile supply department of the hospital
- to assess the gaps present
- finding the issues of non compliance with the standard procedure.
- To understand the major concerns of the users.

The areas covered in this project are –

Central sterile supply department of the hospital

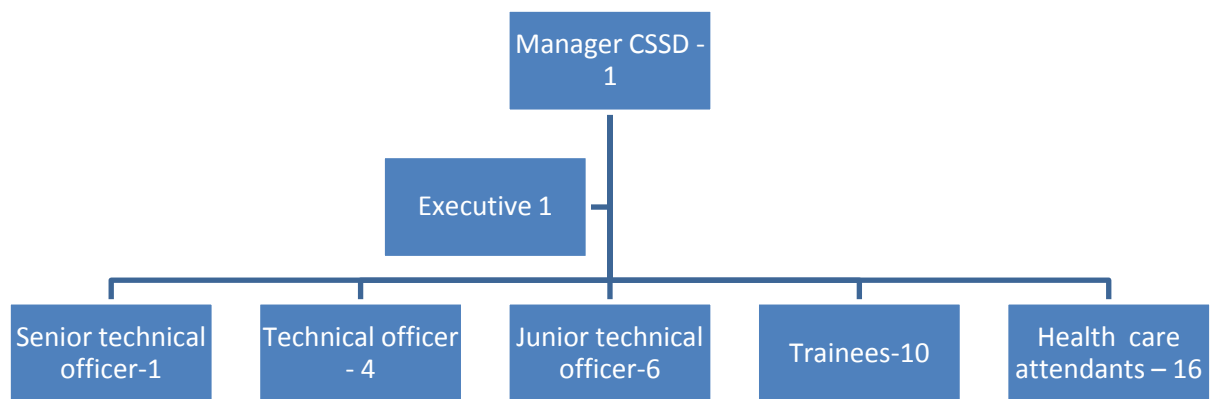
INTRODUCTION

The central sterile supply department within a healthcare facility that processes and control medical supplies, devices, and equipment, sterile and non sterile, for patient care areas of the facility.(1)

The foremost objective of CSSD is to supply reliably sterile articles available at the right time to the right place.

1. To reuse the medical devices they must be thoroughly cleaned and dried prior to disinfection or sterilization.
2. To inspect each item for functionality, defects, breakage and then appropriately assembled.
3. To pack the articles preferably in porous materials (e.SMS) to ensure proper sterilization.
4. To mark each pack with code of the article, initials of the person who packed it, date and initials of the person who carried out the sterilization.
5. The operation of the sterilizer should be entrusted to a responsible and fully trained person
6. An expiry date is written on the wrapped equipment before supplying to the user as a sterile product, if along the route the sealed package got damaged or opened it needs to be returned for re-sterilization.
7. For sterile goods, clean room conditions should be followed. A positive pressure is maintained in the sterile area.
8. Once required these are distributed according to the needs.
9. Apart from these basic functions it is also responsible for procurement, inventory control.

ORGANOGRAM



DATA COLLECTION AND METHODOLOGY

Data collection:

The procedure followed is

- A study of the standard operating procedures referring to the international association of the healthcare central service material manual (IAHCSMM) , association for advancement of the medical instrumentation(AAMI), national accreditation board of hospitals NABH), world health organisation (WHO), Asia pacific society of infection control (APSIC) and standard operating procedure manual of the facility (SOP).
- Formation of checklist with the help of standard guidelines in the standard operating procedure manual of the hospital, discussion with the sterile supply department staff.
- Observation of the operations and interviewing the CSSD personnel for information regarding the same. Records of the information maintained.
- interviewing the users of the CSSD for a feedback and problems faced by them.

Methodology:

Study type – quantitative study (cross –sectional study)

Study area- central sterile supply department of the hospital

Sampling method- purposive sampling method

Study participants – staff of the respective departments

Study tool- checklist and interview.

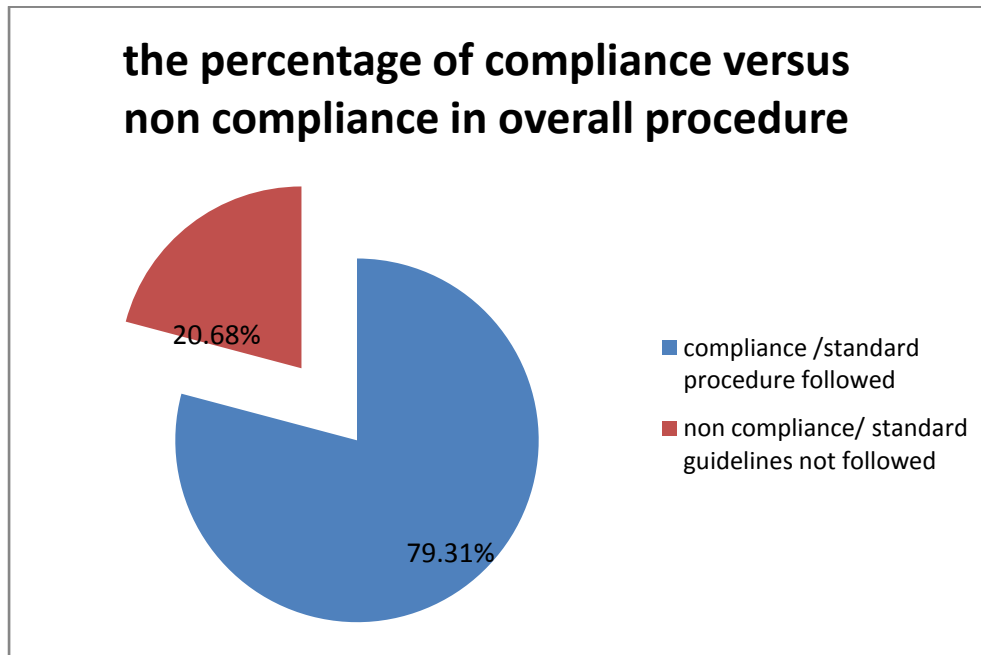
Data collection plan- for collection of the data interviews and observation of the procedure was carried out after taking authorization from concerned authorities of these departments.

Data analysis- done with the aid of MS-Excel sheets. The data was entered in sheets and then analyzed.

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

Data analysis, compilation and interpretation

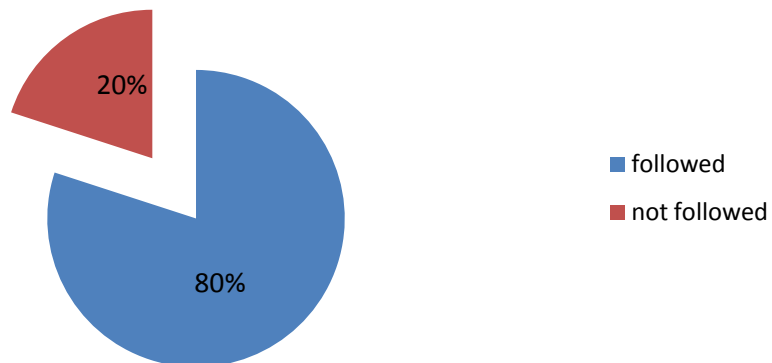
The standard procedures were divided into steps followed in the process of sterilization. The step wise analysis of the compliance is as follows:



According to the data in overall process of sterilization the percentage of non compliance with the standard guidelines is approximately 20.68%, while the compliance part outweighs it being 79.31%.

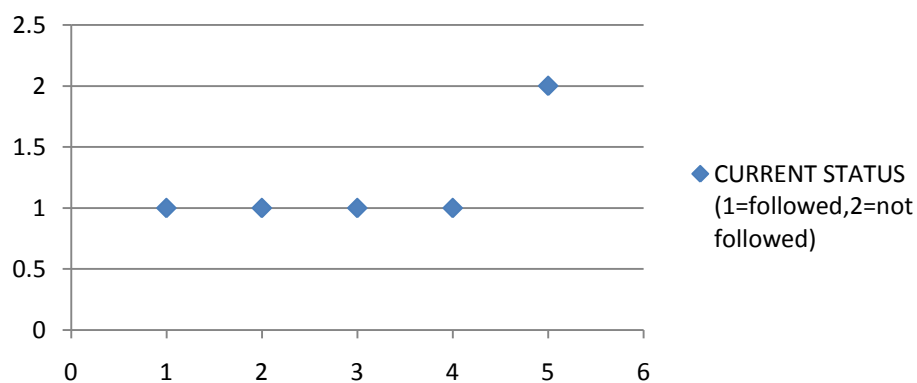
1. Transportation and collection:

TRANSPORTATION AND COLLECTION STATUS

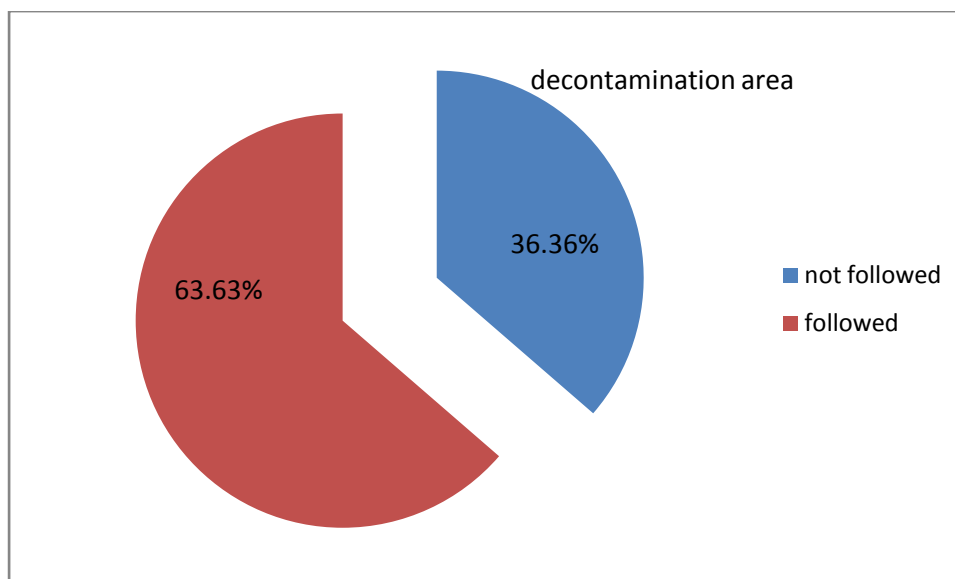


In the process of transportation and collection of dirty utility from the operation theatre to the decontamination area the status of non compliance is 20% according to the data collected through observation and interviews and that of compliance to the standard guidelines is 80%.figure below shows that only one out of the five guidelines is not practised.

CURRENT STATUS (1=followed,2=not followed)



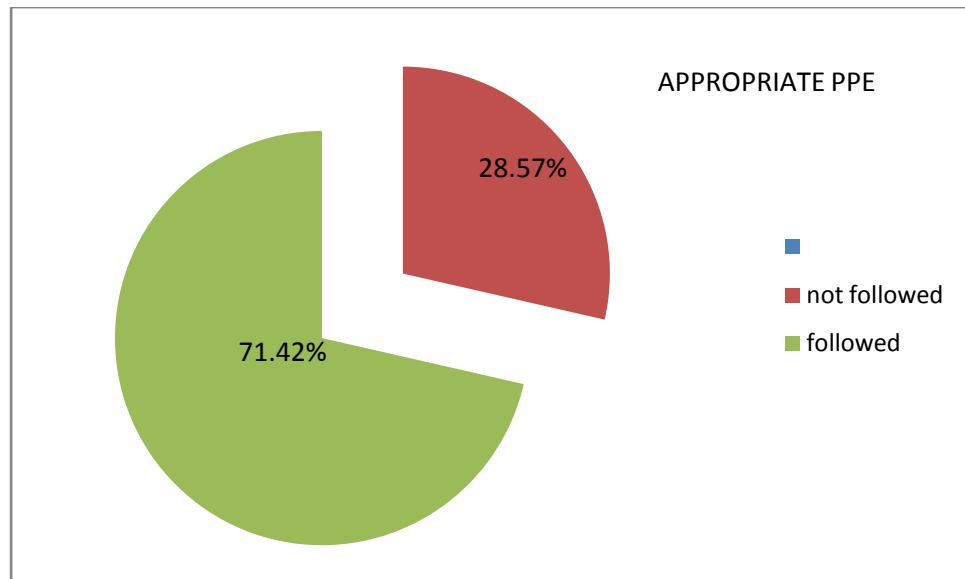
2. Decontamination Area :



If we see in general the standard guidelines that are to be followed in the decontamination area 36.36% on non compliance to the standard operating procedure exists which is quite a larger percentage as compared to the non compliance of other areas. 63.63% of compliance exists to the standard protocol while the instruments undergo cleaning in the decontamination area.

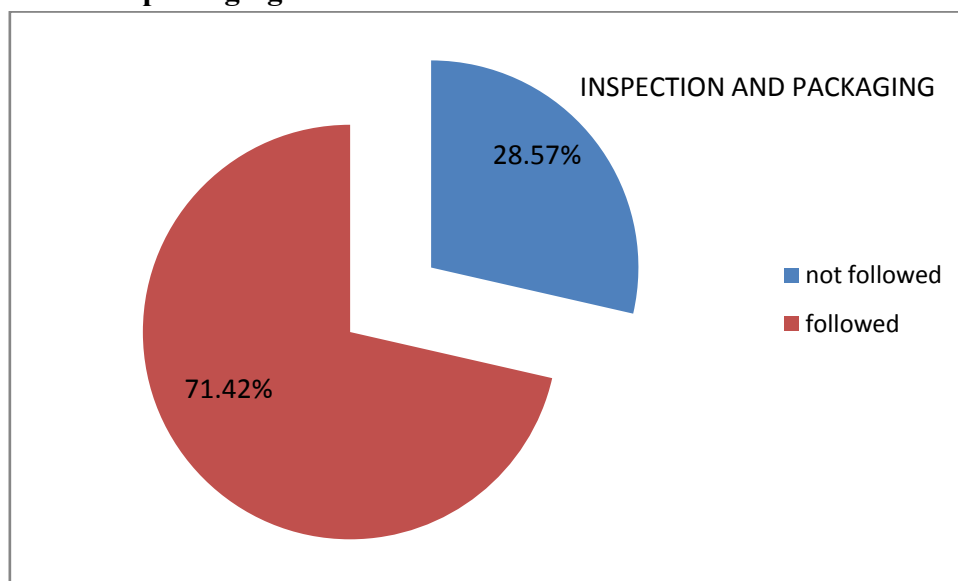
If we see specifically certain operating procedures in the area the status is as follows:

- (I) Proper cleaning guidelines: 100% results were obtained while analysing the data which shows all the 3 guidelines are followed to ensure proper cleaning of the unsterile instruments.
- (II) Three sink arrangements: this arrangement of 3 sink in the decontamination area is mandatory. It is found that this protocol is 100% compliant to the standard guidelines.
- (III) Contents of the enzymatic solution: it was observed that the contents required in the enzymatic solution to ensure proper cleaning of the body tissues on the instruments are all present with even the proper temperature maintenance of the solution required for proper cleaning. So the compliance is 100% to the standard requirements for the enzymatic solution.
- (IV) Appropriate PPE :



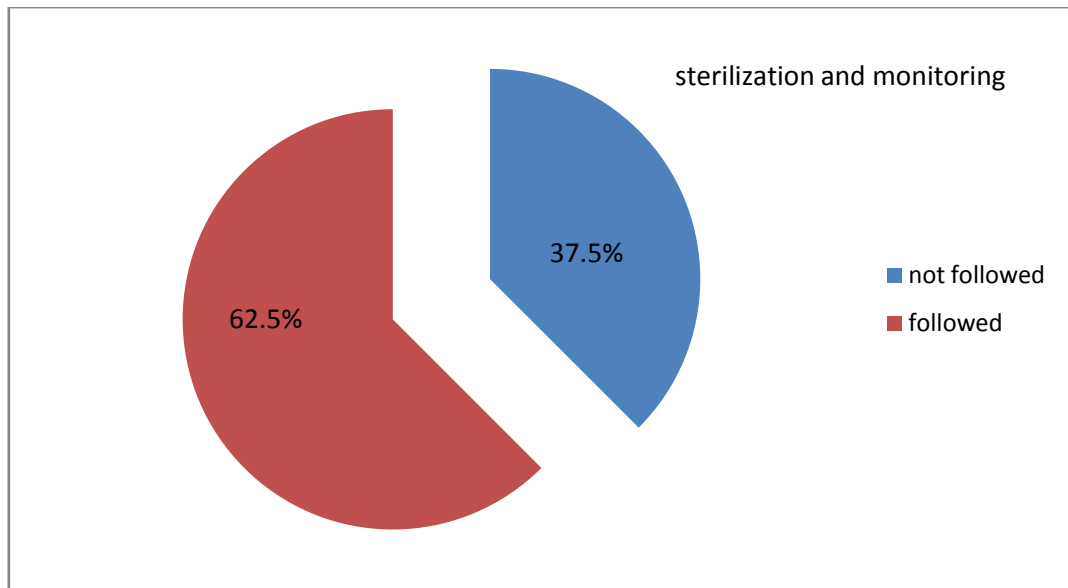
There is always a requirement of personal protective equipment in decontamination area and it is mandatory for all the health care workers to use these while working. it has been found that there is 28.57% non compliance for the use of PPE. Out of the seven essential requirements in PPE only 5 are followed i.e. 71.42% of the total.

3. inspection and packaging:



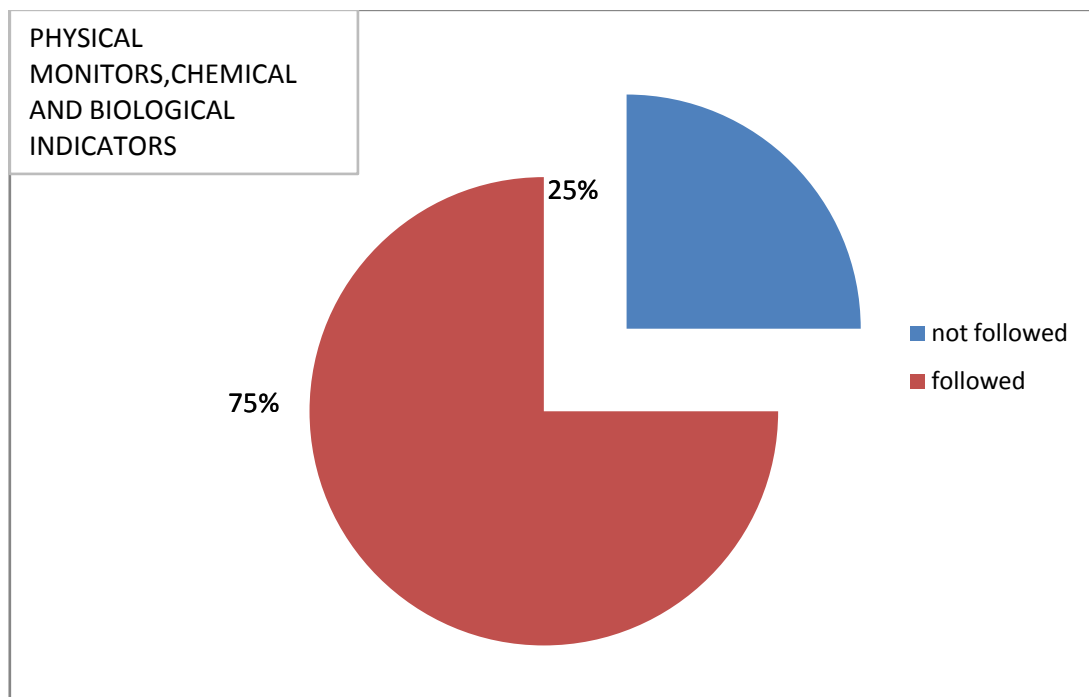
Inspection and packaging is a important part of the sterilisation process. It has been found in the sterile department that there is 28.57% non compliance regarding the standard protocols for inspection and packaging. Although the compliance outweighs with a percentage of 71.42.

4. sterilization and monitoring :



A cycle of sterilization has a number of guidelines to be followed out of which only 62.5% are completely practised in the facility and 37.5% non compliance was found.

5. physical monitors, chemical and biological indicators:



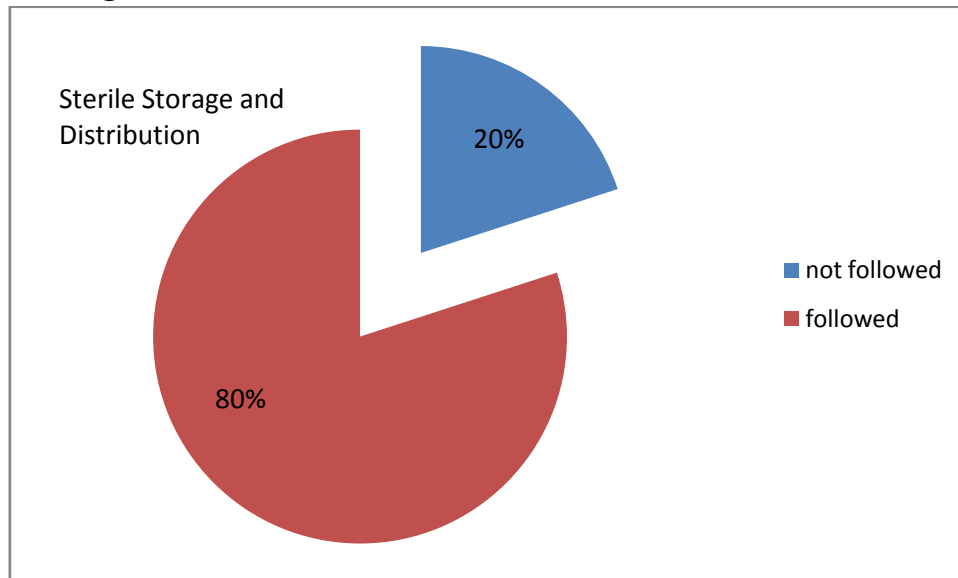
For each and every cycle there is a fixed protocol of certain practices and indicators to be used while sterilization process out of which 25% non compliance was found in the current operations.

6. Sterilizer maintenance:

100% compliance was found out to the maintenance protocol of the sterilizer.

7. Labelling: a very important step in the sterilization process and maintenance of proper supply a standard labelling system is made which is to be followed for every pack of instruments. Labelling was 100% followed in the facility.

8. Sterile storage and distribution:

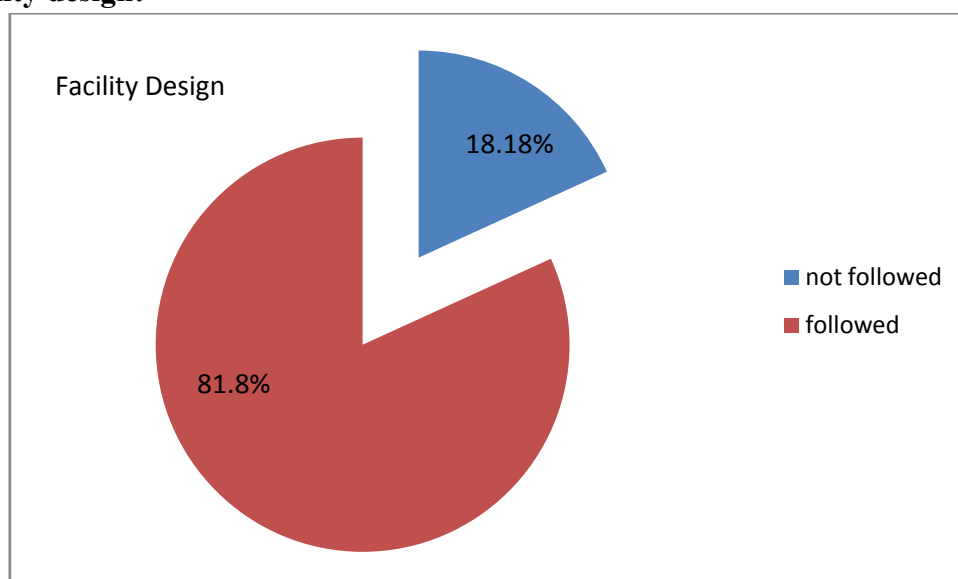


As the chart suggests 20 % non compliance exists for sterile packs storage and distribution.

9. Documentation:

100% compliance to the standard documentation is followed be it for recall policy or record of each cycle.

10. Facility design:



The foundation of CSSD is the facility design it must have. It was found out that there is 18.18% non compliance to the standard guidelines while 81.8% of those guidelines are practised.

CRITICAL FINDINGS

1. In the process of transportation and collection: there should be a dedicated elevator or dumb waiter for the direct access to the decontamination area which is a gap in this facility as the dumb waiter doesn't open in the zone.
2. Decontamination area :

The non compliance was found for the unit's tank cleaning and checking for bone chips at each water change.

The ultrasonic cleaner should be closed all times when the unit is operating but there was non-compliance observed.

Another point of non compliance was found for the maintenance of the ultrasonic cleaner, it was observed that the last maintenance was due.

Although ventilation exchanges were followed but temperature maintenance was not taken care of.
3. Although 5 out of the 7 guidelines were followed but health care attendants were observed non compliant for shoe covers and eye protection.
4. Packaging materials were kept outside before usage but not with the intention of keeping at open before 2 hours prior use at room temperature and at relative humidity of 30-60%. They were not regularly inspected for any holes and stains.

Tape which should not be ideally used for securing packages is used.

A fully open towel is expected to be kept at the base to help in drying process was observed not to used.
5. It was observed that some of the packs were touching the walls of the chamber of sterilizer and there was no distance between the packs.

The sterilized items are to be kept on the cart for 30 minutes and are not touched during the cooling process but the sterile items were immediately transferred from the cart to the racks.
6. There must be verification of the cycle by reviewing cycle printout circle minimum temperature and exposure time so as to ensure proper sterilization but it was observed that they were checked and signed but not encircled.
7. It was observed that the temperature of sterile storage area was more as compared to the decontamination area it must be checked routinely but there was non-compliance for this.
8. According to OSHA guidelines a emergency eyewash station with a continuous flush for 15minutes must be located within 10 seconds travel time of all chemical usage locations but it is not available.
9. There should be a routine monitoring for temperature and humidity which is left unnoticed.
10. Attrition rate is very high amongst the staff of CSSD.
11. Improper documentation of packs received and sent .

RECOMMENDATIONS

1. Development of hospital information system so as to have a direct communication of material transferred from the cssd and vice versa from the OR. It can be done with every pack having a fixed barcode which can be scanned at both sender and user's end which reflects the contents of the pack. It will be useful in prevention of missing instruments and to avoid miscommunication.
2. There is lack of manpower due to which the personnel in decontamination area sometimes after finishing his work have to go to the assembly area which is ideally not permitted. Manpower can be increased to at least 1 per 15 beds. This might even increase the output of the department and utilization can be increased.
3. The utilization of the department can be increased to 20% which can be seen as a prospect for a new business in which the facility can act as a outsourced cssd and generate revenue.
4. There must be a retention policy of the workers as attrition rate is high and the training given to them for almost a year goes wasted.
5. Once the sterile items are sent from the dumb waiters the lift can be stopped by any of the floor staffs which creates confusions. It is suggested to put the respected floor buttons only at the sender's end and users can just open and take it out and send it back without any stop button.
6. Instead of using linen disposable linens or gowns can be used. Although this may increase the cost of the surgery to the patient but it is safer to use. To reduce the cost of surgery to the patients we can create a policy of using the same gowns in normal cases but those with fatal infections cannot reuse the gowns that will save the cost of surgery and in a way will be better for patient's safety.
7. The department is located in the lower basement of the facility which makes it difficult for the administration to appreciate the work of the technicians indirectly making them leave the job. It is suggested to create a appreciation or performance enhancement tool to retain the employees.
8. A washroom facility must be given for employees so they can take a shower before leaving the premises which is necessary to prevent infections.

REFERENCES

1. APSIC, CSSD centre of excellence program audit standards.
2. International association of hospital central sterile material manual (IAHCSMM) .
3. National accreditation board of hospital guidelines.
4. Standard operating procedure, Kokilaben Dhirubhai Ambani Hospital, Mumbai.
5. Article on emerging trends in sterile supply by coordinator Medical Services at Fortis Hospital, Vasant Kunj, New Delhi, Indian express newspaper.
6. AAMI, association for the advancement of medical instrumentation.

CHECKLIST

ZONE	STANDARD GUIDELINES	CURRENT STATUS (1=followed,2=not followed)
TRANSPORTATION AND COLLECTION	reusable items separated from waste at point of use	1
	gross soil is removed from instruments at point of use if not immediately transported	1
	soiled items should be kept moist (moist towel,enzyme foam or spray product)	1
	transportation of soiled instruments avoids high (public) traffic areas	1
	dedicated elevators (or lifts)	1
DECONTAMINATION	direct accessibility to the area(OR) through dumb waiters	2
	appropriate PERSONNEL PROTECTIVE EQUIPMENT are used	1
	hair covering	1
	eye protection	2
	face mask	1
	gown with reinforced sleeves	1
	barrier at front for fluids	1
	gloves	1
	shoe covers	2
	instrumentation is disassembled (according to manufacturer's instructions) to expose all surfaces for cleaning	1
	inspect returned supplies using checklists to determine if any missing parts or instruments	1
	cleaning agents are used according to manufacturer's instructions (dilution and temperature)	1
	proper CLEANING	1
	neutral pH solution	1
	ensure trays are not overloaded	1
	after cleaning instruments must be rinsed in RO water	1
	detergent base	1
	protease enzyme	1
	lipases enzymes	1
	amylase enzymes	1
	surfactant	1
	temperature 40 degree celsius / 104 degree fahrenheit	1
	wash sink with water and a detergent solution	1
	intermediate rinse should contain plain water	1
	third sink with distilled water	1
	unit's tank cleaned and drain checked for bone chips at each water change	2
	degas the ultrasonic cleaner at each water change(for 5 minutes)	1
	the lid of the ultrasonic cleaner should be closed all times when unit is operating	2
	preventive maintenance and QC is done according to IFU for ultrasonic cleaner	2
	horizontal work surface cleaned at the end of each shift	2
	negative pressure with 20-23 degrees celcius temperature	2
	ventillation 10 air exchanges per hour	1

INSPECTION AND PACKAGING	ensure instruments are cleaned and dried before packaging	1
	inspect instruments for flaws and damage	1
	follow IFU for instruments requiring lubrication after cleaning or prior sterilization	1
	instruments that open are held in unlocked position	1
	instruments are packed in a definite and orderly manner as per the list to facilitate their use in OT	1
	a checklist with signature of person responsible for assembling packing to be signed by person using the set	1
	a checklist in each instrument set is kept with the correction of any less or repair instruments	1
	packaging materials are held atleast 2 hours prior to use at room temp (21 degree celsius - 24 degree celsius) and at relative humidity ranging from 30-60%.	2
	paper/plastic pouches labelling done on plastic side only	1
	tape (other than sterilization indicator tape) should not be used to secure packages, nor should safety pins, ropes, paper clips, staples, rubber band or any other sharp objects	2
	packaging materials are examined for defects before use (i.e. holes and stains)	2
	a fully opened (single layer) towel should be placed at the bottom of tray to assist in drying	2
	the assembled set should be sealed with sticking tape and labeled with the name of the set, expiration date and a process indicator with initial.	1
sterilization and monitoring	lubrication of the power, pneumatic and rotary equipments as per manufacturer's recommendations and as directed.	1
	sterilizer manufacturer's instructions are followed	1
	allow space between packs in sterilizer cart	2
	do not overload the sterilizer cart	1
	packages on the sterilizer cart should not touch the chamber walls	2
	door kept open slightly at the end of the cycle (for sometime) prior to removing the load	1
	there should be no visible signs of liquid or water droplets (wet items are considered contaminated even if touched)	1
	general sterilization temperature by steam is at 121-134 degree celsius.	1
	sterilized items remain on the cart to cool for minimum of 30 minutes, and are not touched during the cooling process.	2
PHYSICAL MONITORS, CHEMICAL AND BIOLOGICAL INDICATORS	verification of parameters of the cycle by reviewing cycle printout tapes. circle minimum temperature and exposure time, sign/initial and date	2
	bowie dick testing is done daily in prevacuum sterilizer before first process load	1
	bowie dick process testing at 132 degree - 134 degree celsius for 3.5 to 4 minutes	1
	external process indicators (indicator tape, labels) are affixed to hospital - sterilized packages and containers.	1
	internal chemical indicator(s) (class 4, 5, 6) are placed inside every package in the most challenging location for sterilant to reach	1
	implant loads - monitor with BI PCD containing a class 5 integrating indicator	1
	routine sterilizer efficacy testing with a BI PCD is done daily (if sterilizer runs daily). Place BI PCD in first load of items to be sterilized.	1
	BI test / control and results : steam daily (each day the sterilizer is used)	1
	BI should be used in every load in gaseous sterilization (EO, hydrogen peroxide)	2
	for sterilization process failures where the cause is not immediately identifiable, and after major steam or sterilizer repairs, run 3 empty cycles with a BI PCD followed by 3 empty cycles with a bowie dick test in prevacuum sterilizer.	2
	regular validation tests for sterilization are carried out and documented	
	bowie dick test	1
	leak rate test	1

STERILIZER MAINTENANCE	sterilizer "drain strainers" are inspected daily for debris	2
	sterilizer internal external surfaces are routinely cleaned.	2
LABELLING	description of package contents	1
	initials of package assembler	1
	lot control no.	1
	earliest expiration date of any time sensitive contents	1
	identification number of sterilizer and cycle to be used	1
	date of sterilization	1
	may include department or surgeon's name	1
STERILE STORAGE AND DISTRIBUTION	Outside shipping containers and corrugated cartons are not used as containers in sterile storage areas	1
	storage area temperature is generally <24 degree celsius and relative humidity should not exceed 70%	2
	sterile items are stored at least 20-25cm(8-10") above the floor,45cm (18")below the ceiling or sprinkler heads, and atleast 5cm(2")from outside walls	1
	supplies are stored only on designated shelving,counters and carts (not on floors)	1
	when stacking container system ,ensure they are firmly stacked on one another	1
	heavy items kept at the bottom and lighter ones higher	1
	supplies are distributed on a first in first out (FIFO)basis	1
	carts are decontaminated /dried before reused for transporing sterile supplies	2
	sterile area wet mopped and vaccumed daily	1
	weekly fumigation and weekly checking for microbial count by taking air sample for 10minutes	1
DOCUMENTATION	documentation for each sterilizer is maintained , and includes results from each load(eg.monitoring results,sterilizer repair records)	1
	record of each cycle	1
	lot number	1
	load contents	1
	exposure time /temperature, name /initials of sterilizer operator	1
	results of BI testing,if applicable	1
	results of bowie dick testing if applicable	1
	results of Cis in test packs,results of non-conclusive or non-responsive Cis found in the load	1
	each load should have	1
	content description	1
	temperature	1
	pressure	1
	time record chart	1
	physical/chemical tests daily	1
	weekly biological tests	1
	an instrument tracking system or other type of computer system is used	1
	PRODUCT RECALLS	1
	policies and procedures are clear and concise	1
	records are maintained	1
	lot control labels are used,to include: sterilizer ID,lot number,sterilization date, expiration date, name of pack and initials	1
FACILITY DESIGN	department size is appropriately designed with regard to anticipated volume	1
	emergency eyewash stations (requires by OSHA)located withim 10 seconds travel time of all chemical usage locations , with a continous flush for atleast 15minutes eg.decontamination area	2
	functional workflow pattern : clear distinction (i.e.physical wall)between dirty and clean	1
	functional workflow pattern: pass through window available to avoid hallways	1
	temperature and humidity monitoring daily(negative pressure in decontamination and positive in sterile area)	2
	all CS personnel receive a minimum annual training on department policies and procedures.	1
	easily accesible MSDSs(material safety data sheets) for all potentially hazardous substances.	1
	adequate space and appropriate zoning	1
	suitable location	1
	proper layout	1
	separated clean and dirty areas	1
	sufficient space to perform activities properly	1

SPECIFIC PROJECT 2

COST ANALYSIS OF STERILIZATION IN **UNILATERAL TOTAL KNEE** **REPLACEMENT**

OBJECTIVE

To determine the cost of sterilization in unilateral total knee replacement surgery.

INTRODUCTION

Sterilization of surgical instruments is of the utmost importance in the medical field and therefore disinfection of medical devices is an important practice. The process of disinfection requires the equipments and materials for proper sterilization of the instruments. This cost is a part of the surgical procedure performed. To determine the cost of sterilization of unilateral total knee replacement instruments one need to go through every step and calculate the respective costs.

ANALYSIS

Step 1 Dirty utility from dumb waiter to decontamination zone is taken through a trolley in the facility. Cost per usage came out to be 0.60/- INR

Step 2 Pre rinsing requires water costing 20/- INR

Step 3 Ultrasonic cleaning requires detergent solution, water and electricity for machine to clean the instruments which costs 155.25/- INR.

Step 4 Washer disinfectant needs chemicals, hot water, cold water ,RO water and electricity for the process which costs together 384.28 /- INR

Step 5 lubrication costs around 230.5/- INR

Step 6 packaging of every TKR set costs 547.5/- INR

Step 7 sterilization cost along with the cost of RO water and electricity is 324.29/- INR

Step 8 indicators used in the process of sterilization to ensure proper sterilization costs

Bowie dick – 16 /- INR

Bowie dick indicator- 4.28 INR

Three line labels- 5.6INR

Process challenge device -63 INR

Temperature steam test indicator – 120INR

Biological indicator- 1.42INR

Step 9 Manpower necessary to perform this process of sterilization costs 176.27/- INR per set of TKR.

Step 10 Instruments sent to operation theatre by dumb waiter which consumes electricity and thus the cost of operating this for transporting this one set of TKR is 14.3/- INR.

RESULTS

Total cost of sterilization in unilateral total knee replacement is 2101.022 INR.

Cost of sterilization in TKR accounts for only 0.840% of the total cost of surgery in the facility.

COST BREAKUP

steps

materials used

dirty utility from dumb waiter to
decontamination area

pre rinsing

ultrasonic cleaning

washer disinfectant

Lubrication

Packaging

Sterilization

quality indicators

Manpower

dumb waiter

trolley

water

detergent

water

electricity

chemical

hot water

cold water

RO water

electricity

asepti lub

water

SMS-(120'-120')

peel pouches(4' 25cm)

electricity

water

RO water

bowie dick

bowie dick (6bars)

3 line label

process challenge device

TST

biological indicator

cleaning

packaging

sterile unloading and transactions

electricity cost for one time

THANK YOU

