

Summer Training at



**Fortis Escorts Heart Institute, Okhla, New Delhi
(April 9- June 1, 2012)**

Study on “Code blue process” (Emergency response system)

**By
Nitin Raheja**

**Under the guidance of
Dr. P.R. Sodani**

**Post Graduate Diploma in Hospital and Health Management
2011-2013**



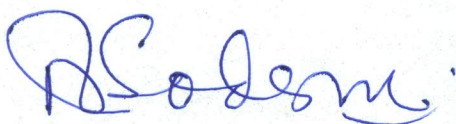
**Institute of Health Management Research,
Jaipur
2012**

Certificate

This is to certify that Dr. Nitin Raheja has undergone summer training at Fortis Escorts Heart Institute, Okhla, Delhi from 9th April to 2nd June 2012.

The candidate has carried out all the studies related to the summer training himself. His approach to the studies has been sincere, scientific and analytical. This summer internship training is partial fulfillment of the course requirement. He is recommended for the award of Post Graduate Diploma in Hospital and Health Management.

I wish him success in all future endeavors.



Dr. P.R Sodani
Dean (Academic and student affairs)
IIHMR, Jaipur

June 01, 2012

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Nitin Raheja** , a student of PGDHHM, IIMR Jaipur, has successfully completed his Internship in **Emergency, A Project Report on "Code Blue Process" (Emergency Response System)** at **Fortis Escorts Heart Institute, New Delhi**, during the period from April 9, 2012 to June 01, 2012.

His conduct throughout the tenure of internship was good.

FORTIS ESCORTS HEART INSTITUTE

 
AUTHORISED SIGNATORY

DR. V.R. GUPTA
MEDICAL SUPERINTENDENT

CERTIFICATE

Date: 2/06/2012

TO WHOM IT MAY CONCERN

This is to certify that Dr. Nitin Raheja, a student of PGDHM , IIHMR, Jaipur, successfully completed his project on "Code Blue process" (from 9th April to 1st June 2012). He was also involved in various audits of **Emergency**.

He has also participated in PPP model based school health camps organized by **FORTIS ESCORTS HEART INSTITUTE**.

During the period of his internship he was found punctual, hardworking and inquisitive.

We wish him every success in life.


Dr. V.R. GUPTA

(Medical superintendent)

Dr. V.R. GUPTA
Medical Superintendent
Fortis Escorts Heart Institute
Okhla Road, New Delhi-110 025

ACKNOWLEDGEMENT

A journey is easier when you travel together. Interdependence is certainly more valuable than independence. This project report is the result of two months of training whereby we have been accompanied and supported by many people. It is a pleasant aspect that we now have the opportunity to express our gratitude to all of them.

I am extremely indebted to all the professionals at **FORTIS ESCORTS HEART INSTITUTE (FEHI), NEW DELHI** for sharing generously their knowledge and precious time which inspired me to do our best during summer training.

I owe a great debt to **Dr. Vibhu Ranjan Gupta** (Medical Superintendent), **Dr. Dheeraj P. Arya** (Medical coordinator) and for showing their interest and sharing their valuable views in spite of their busy schedule. It has been our privilege to work under their dynamic supervision in the hospital.

The data collection and our learning would have not been possible without in depth discussions with **Mr. Rajiv Gupta** (Emergency Coordinator). I thank him for providing timely guidance, assistance, unconditional support & motivation during my study.

Mentors in IIHMR

I am highly grateful to **Dr. P.R. Sodani** and all the departmental heads and staff for giving me time in spite of their hectic schedule. Without their active cooperation and participation it would not have been possible to accomplish my task.

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LIST OF ABBREVIATIONS

PGDHHM- Post Graduate Diploma in Hospital & Health Management

FEHI- Fortis Escorts Heart Institute, Okhla, New Delhi

JCI: Joint Commission International

WHO: World Health Organization

NABH: National Accreditation Board for Hospitals

CABG: Coronary arterial bypass grafting

CAG: Coronary Angio Graph

PTCA: Per cutaneous Trans luminous coronary angioplasty

HMIS: Hospital Management Information System

HCC: Heart Command Centre

CRR: Cath Recovery

RR: Recovery area

FOS: Fortis Operating System

Cath. Lab. - Cardiac Catheterization Laboratory

CCU - Critical Care Unit

EMS – Emergency medical services

HR- Human Resource

ICU -Intensive Care Unit

PICU – Pediatric Intensive care unit

IPD- In-Patient Department

OPD- Out-patient Department

PICU- Pediatric Intensive Care Unit

ER - Emergency room

AED – Automated external defibrillators

CPR – Cardiopulmonary Resuscitation

ECC – Emergency cardiovascular care

ROSC – Return of spontaneous circulation

BLS – Basic life support

ACLS – Advanced cardiac life support

DNAR – Do not attempt resuscitation order

ITD – Impedance threshold device

APACHE - Acute physiology and chronic health evaluation

EURO Score – European system for cardiac operative risk evaluation

INTRODUCTION

As an integral part of the **PGDHM course**, the summer training helps us in understanding the overall functioning of the hospitals from a managerial point of view. Keeping this factor in view, I tried to understand different operating procedures in various department of **FORTIS ESCORTS HEART INSTITUTE (FEHI)** with a special focus on understanding the various procedures in place. I visited different departments, met the department In-charge and interacted with the doctors, nurses and other staff.

HOSPITAL PROFILE

ESCORTS HEART INSTITUTE AND RESEARCH CENTRE (EHIRC) is a renowned name in the field of cardiac surgery, interventional cardiology and cardiac diagnostics. The institute formally came into existence in October 1988; and was set up as a dedicated cardiac hospital to bring to India the best cardiac care, training of cardiac surgeons and cardiologists and also to conduct research of international standards. The Fortis group took over the hospital on 10th September 2005.

Now the *Escorts Heart Institute and Research Center* is popularly known as **Fortis Escorts Heart Institute** (FEHI) which is pioneer in the field of fully dedicated cardiac care facility in India. Fortis health care is the fastest growing hospital network in India. Fortis Healthcare is led by the vision of late *Dr. Parvinder Singh* for creating an integrated healthcare delivery system in India.

Fortis Escorts Heart Institute has set benchmark in cardiac care with its path breaking work over the past 20 years. Today, it is recognized world over as a center of excellence providing the latest technology in Cardiac Bypass Surgery, Minimally Invasive (Robotics), Interventional Cardiology, Non invasive Cardiology, Pediatrics Cardiology Surgery. The hospital is backed by the most advanced laboratories performing complete range of investigative tests in the field of Nuclear Medicine, Radiology, Hematology, Transfusion medicine, Microbiology.

Fortis Escorts Heart Institute has a vast pool of talented and experienced team of doctors, who are further supported by a team of highly qualified, experienced & dedicated support

staff & cutting edge technology like the recently installed Dual CT Scan. Currently, more than 200 cardiac doctors and 1600 employees work together to manage over 14,500 admissions and 7,200 emergency cases in a year.

The hospital today has an infrastructure comprising of around 310 beds (it currently enjoys 86.9% occupancy rate), 5 CATH Labs, 9 Operation Theatres, 2 Heart Command Centers, and 2 Heart Stations besides an array of other world-class facilities. FEHI provides top end services in areas of acute care, invasive and non-invasive cardiology and state-of-the-art surgical procedures, besides playing a leading role in prevention, early detection and the reversal of heart disease. A consumer forum (VOICE) has ranked its patient care and nursing services as No. 1 in Delhi. .

To spread cardiac care to more and more people FEHI has vast network of hospitals across the country. Also to cater the far-flung areas, the institute has started with Community Outreach Programme. It provides high-class emergency services to patients including the facility for air ambulance. The institute also offers many cardiac preventive health checks.

FEHI launched its **Community Outreach Programme**, which started out with a vision to reach out to the health needs of population in the remotest corners of the country, and has covered the states of Uttar Pradesh, Haryana, Punjab, Bihar, Madhya Pradesh, Himachal Pradesh and Rajasthan.

Over a period of time, the philosophy of the programme “**A give back to society**” has evolved and over 100,000 people are provided free cardiac check-ups annually. FEHI has now taken a landmark step in introducing Robotic Cardiac Surgery by installing the first the **Da Vinci Surgical System** in this Region.

MISSION

"To create a world-class integrated healthcare delivery system in India, entailing the finest medical skills combined with compassionate patient care"



Late Dr. Parvinder Singh,

Founder Chairman, Fortis Healthcare Ltd

The Fortis Edifice.....

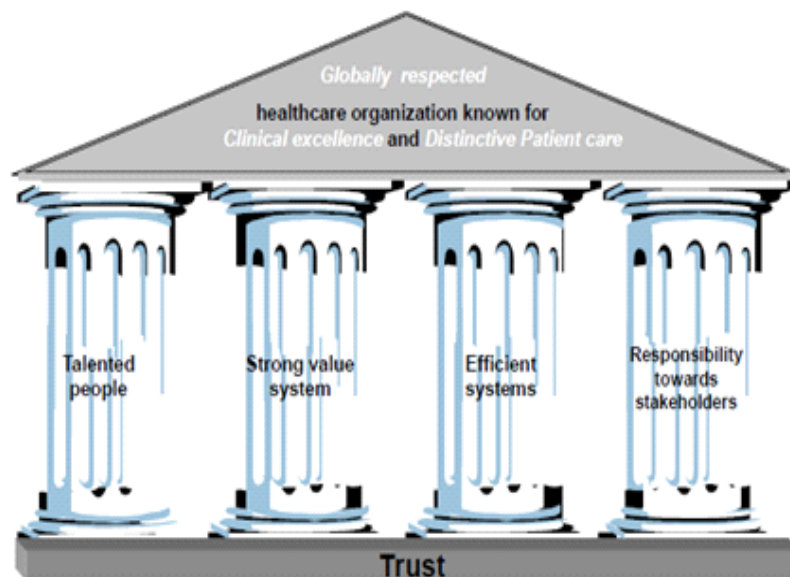


"Vision"

"To create a world-class integrated healthcare delivery system in India, entailing the finest medical skills combined with compassionate patient care"

"Achieved by"

"Foundation" of



VISION

Globally Respected Healthcare Organization recognized for Clinical Excellence and Distinctive Patient Care.

VALUES

➤ **Honesty**

Conduct everything we do with highest standards of professional and ethical integrity

➤ **Excellence**

Pursue excellence and continuous improvement in technology, skill, services and quality of interaction.

➤ **Attentiveness**

Be responsive to the physical and emotional needs of patients and their families, and expectations of the society.

➤ **Respect**

Show respect, compassion and truthfulness towards patients, co-workers and all persons we encounter.

➤ **Teamwork**

Recognize that working together can create a power greater than the sum of individual activities, and that mutual respect demands collegiality, consensus seeking and cooperation.

HOW FEHI HAS ACHIEVED THIS

- By providing state-of-the-art world standard healthcare that exceeds expectations of patients and families.
- Pursuing independent as well as collaborative research in all aspects of cardio-thoracic medicine and surgery.
- By establishing a network of joint ventures and satellite centers to extend the availability of quality health care to the population at their doorstep.

- Providing expert training for medical, paramedical, nursing and other professionals in the field of heart care.
- Networking with other organizations to promote health and well being in society through education, preventive checkups and community outreach programs.

Accreditations

(a) Joint Commission International, USA



Fortis Escorts is a Joint commission international (JCI) accredited hospital. JCI is the highest global accreditation body to recognize hospitals adhering to patient care and safety norms. The receiving of the JCI accreditation is a vindication of our excellence in medical services and the care we provide to each of our patients.

(Effective February 20, 2010)

(b) NABH



National Accreditation Board for Hospitals & Healthcare Providers (NABH) is a constituent board of Quality Council of India, set up to establish and operate accreditation programme for healthcare organizations. The board is structured to cater to much desired needs of the consumers and to set benchmarks for progress of health industry.

Fortis Escorts is proud to announce the comprehensive NABH Accreditation

(Effective June 16, 2008) The NABH reaccreditation of FEHI was scheduled on May 27, 2011.

(c) NABH (Blood Bank) Accreditation



Blood is a Drug which has to be administered with great caution. This life saving elixir can save lives but can also prove fatal for the recipient.

Effective Quality assurance is essential to ensure transfusion of safe, high quality blood and its components.

National Accreditation Board for Hospitals and Healthcare providers (the highest quality assurance wing of Quality Counsel of India) ,after a thorough check of processes and procedures being practiced at EHRC Blood Bank appreciated the high standards being maintained and were pleased to grant NABH accreditation. The Blood Bank was amongst the first few in the country to achieve this honour. To ensure the highest safety of blood the blood bank carries out Leuco depletion on all the blood donated at this centre and tests the blood by NAT Technology, the highest disease markers test available in the world, in addition to mandatory regulatory requirements of testing.

(Effective January 28, 2009)

ORGANOGRAM

HOSPITAL LAYOUT

FEHI is a renowned name and has 2 buildings. The main building and the rehabilitation centre both the blocks are on the opposite sides of the road which is connected through an underground tunnel which is basically meant for shuttles to take patients from one building to another. Each of the blocks would be dealt in details below

(A)MAIN BUILDING

Basement -

- Blood bank
- Laboratory
- Pediatric Echo Lab
- Finance department.
- Engineering department.
- Laundry
- Purchase Department.
- Stores.
- Nursing Office
- Corporate office
- Library
- Auditorium

Ground Floor-

- Emergency.
- Heart Command Centre I, II
- Heart Station I and II
- Day Care Centre
- Nuclear Medicine
- Administration
- Patient Care Service
- Medical Superintendent Office
- Director's Office

- Food and Beverages
- Cafeteria
- Dietician
- Security
- Personnel
- Pharmacy
- Counseling
- Billing
- Lounge
- International desk.
- TPA department.
- Board Room

First Floor-

- Pediatric ICU- II.
- Recovery I, II, III, IV
- Anesthesia Room
- OT
- IT department

Second Floor-

- CSSD
- Biomedical Engineering
- Regional director's Office
- MD office
- CEO Office
- Doctors' Office
- Catheterization Lab
- CATH Recovery I, II, III

Third floor-

- CATH Recovery IV
- Block A (Old) Ward- Bed no. 301 to 331F
- Block B (New) Ward- Bed no. 332 to 353, (Deluxe room 358, 359)

Fourth Floor-

- Cardiac Care Unit.
- Block A (Old) Ward- Bed no. 401 to 431F
- Block B (New) Ward- Bed no. 432 to 453, PS I and II

Fifth Floor-

- Pediatric ICU- I.
- Pediatric Ward.
- Ward bed no. 501 to 516.
- Step down I- Bed no. 517 to 521.
- Step down II- Bed no. 522 to 526.

(B) REHABILITATION CENTRE (Red Building)

Lower Basement

- Medical Records department
- Pathology Laboratory

Upper Basement

- Executive Health Centre

Ground Floor – (OPD Block)

- Help Desk
- OPD Billing
- Sample Collection Room
- X-Ray
- Echo
- ECG
- TMT
- Mammography
- Bone Densitometry
- Pharmacy
- Report Room
- Dialysis Center
- Consultant Rooms
- Administrator's Office

First Floor- (OPD Block)

- OPD Billing
- Three nurse counters
- Nineteen consultation chambers where specialized doctors in the following fields are available- Pulmonology
- Neurology
- Gastroenterology
- Ophthalmology
- Laparoscopic and General Surgery
- Psychiatry
- Thoracic surgery
- Pediatric surgery
- Urology
- Dermatology
- Diabetology
- Cardiology
- Cardiac surgery

- Vascular surgery
- Pediatric cardiac surgery
- Pediatric cardiology
- Pacemaker Clinic.

Second Floor

- Café Jam Ja Jee

Third Floor

- Centre for sight

Fourth Floor

- Quality department
- Human resource department
- Marketing department

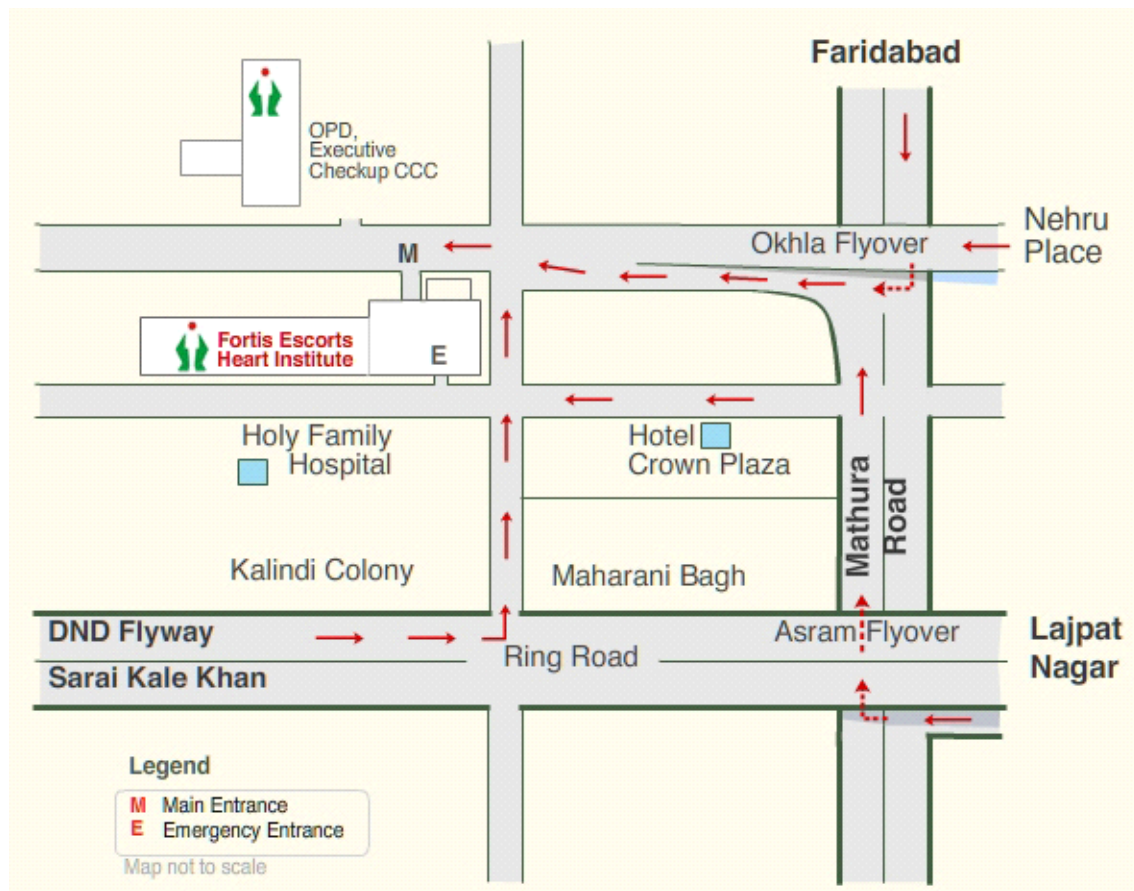
Fifth floor

- Corporate offices

Sixth floor

- Physiotherapy
- Gym

LOCATION



Fortis Escorts Heart Institute is located in South Delhi, off Mathura Road.

Distance of FEHI from some prominent places:-

Delhi Airport (Indira Gandhi International Airport)	30 Km
New Delhi Railway Station	10 Km
Old Delhi Railway Station	15 Km
Nizamuddin Railway Station	5 Km

Inter State Bus Terminal (ISBT)

Kashmiri Gate	15 Km
Sarai Kale Khan	5 Km
Anand Vihar	17 Km

Address:

Fortis Escorts Heart Institute

Okhla Road, New Delhi - 110 025 (INDIA)

Phone: 91-11-47135000

Fax: 91-11-26825013

email: contactus.escorts@fortishealthcare.com

Appointments/OPD & Executive Health Check-up: 91-11-26825004, 91-11- 26825005

Can also be reached through numbers 47134031 (8.30 a.m. to 4.45 p.m.) and 47135020

(8.30 a.m. to 6.45 p.m.)

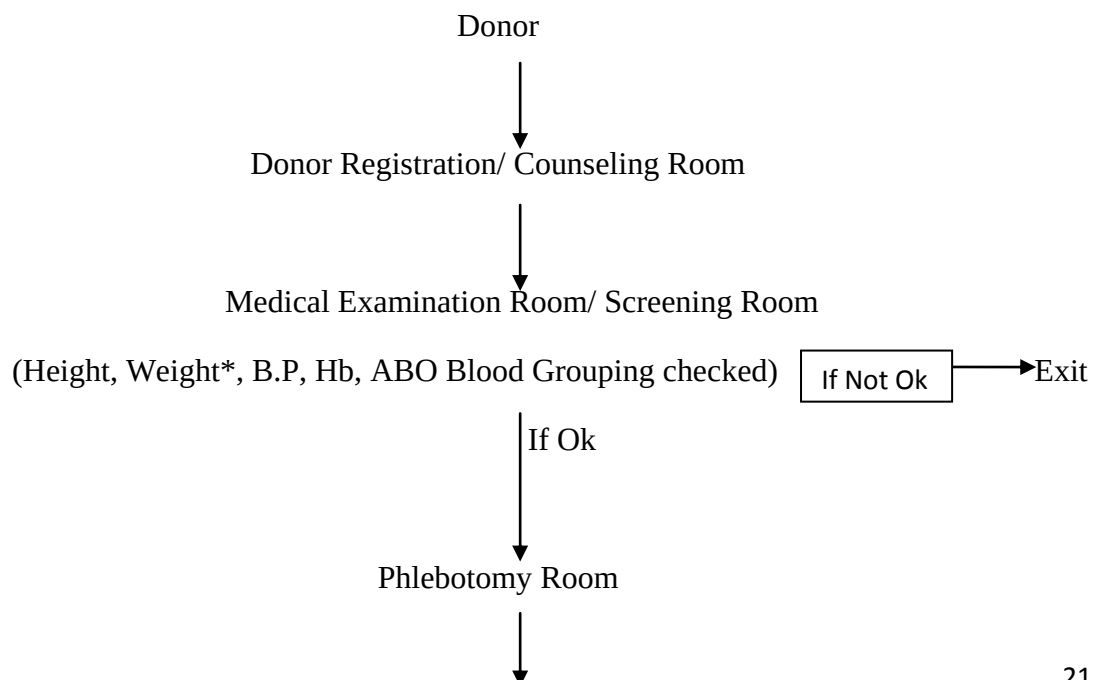
BLOOD BANK

Layout: Basement

Total staff: 20 which includes

- Consultant- 1
- Junior Consultant- 1
- Senior Technologist-1
- Technologist-1
- Junior Technologist-1
- TechnicalAssistant-2
- Senior Technician-1
- Technicians- 8
- Senior Office Assistant-1
- Office Assistant-1
- Staff Nurse- 1
- General Duty Assistant-1

FLOW OF DONOR:



Recovery Couch (If required)

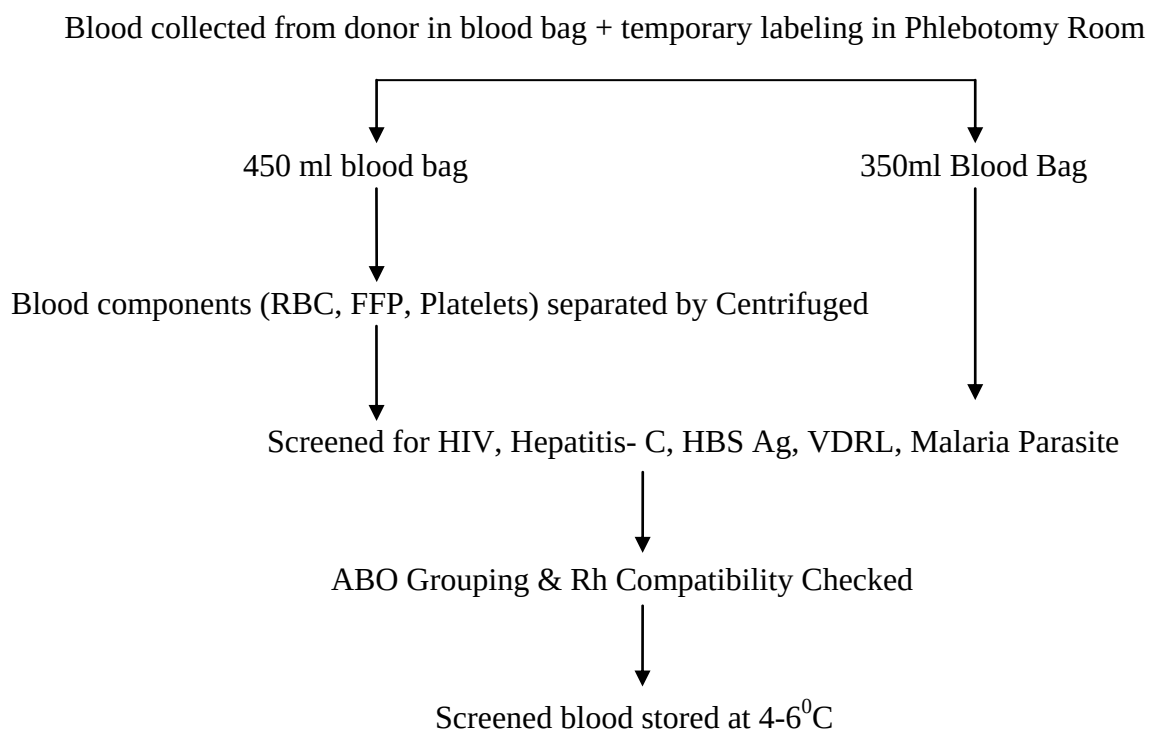
↓
Refreshment Room

↓
Instructions Given

↓
Exit

*- If the donor is more than 55kgs, then 450 ml of blood is collected; otherwise 350 ml.

Movement of Donor's Blood:



Infrastructure of the blood bank-

- Donor Registration/Counseling Room
- Medical Examination Room
- Donor room/Phlebotomy/Bleeding room- Blood is collected in this room.

- Aphaeresis Room
- Refreshment Room- After donating the blood, refreshments are provided here.
- Component Room: Here collected blood is formed into different components.
- Cross matching Room (Serology room) - Here Blood is tested & cross matched.
- Store Room/ Record Room- All the records and inventories are stored here.
- Wash & Sterilization Room- Here any blood tested positive for any infection or unmatched blood is discarded.

EQUIPMENTS

Equipments in Apheresis Room:

- Multi Component Cell Separator-2

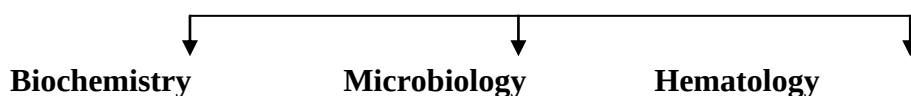
Equipments in Phlebotomy Room:

- Blood collection monitor
- Blood Bank Refrigerator

Equipments in Component Room:

- Refrigerated Centrifuge
- Platelet Agitator
- Cryoprecipitate Bath
- Automated Blood Grouping Machine
- Automated Antibody Screening Machine

LABORATORY SERVICES

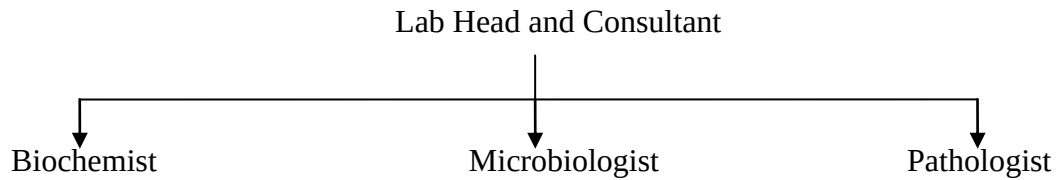


Layout: Lower Basement, Rehab Centre.

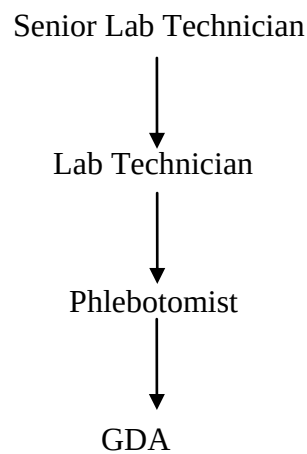
Basement, Main building

Total Staff- 55

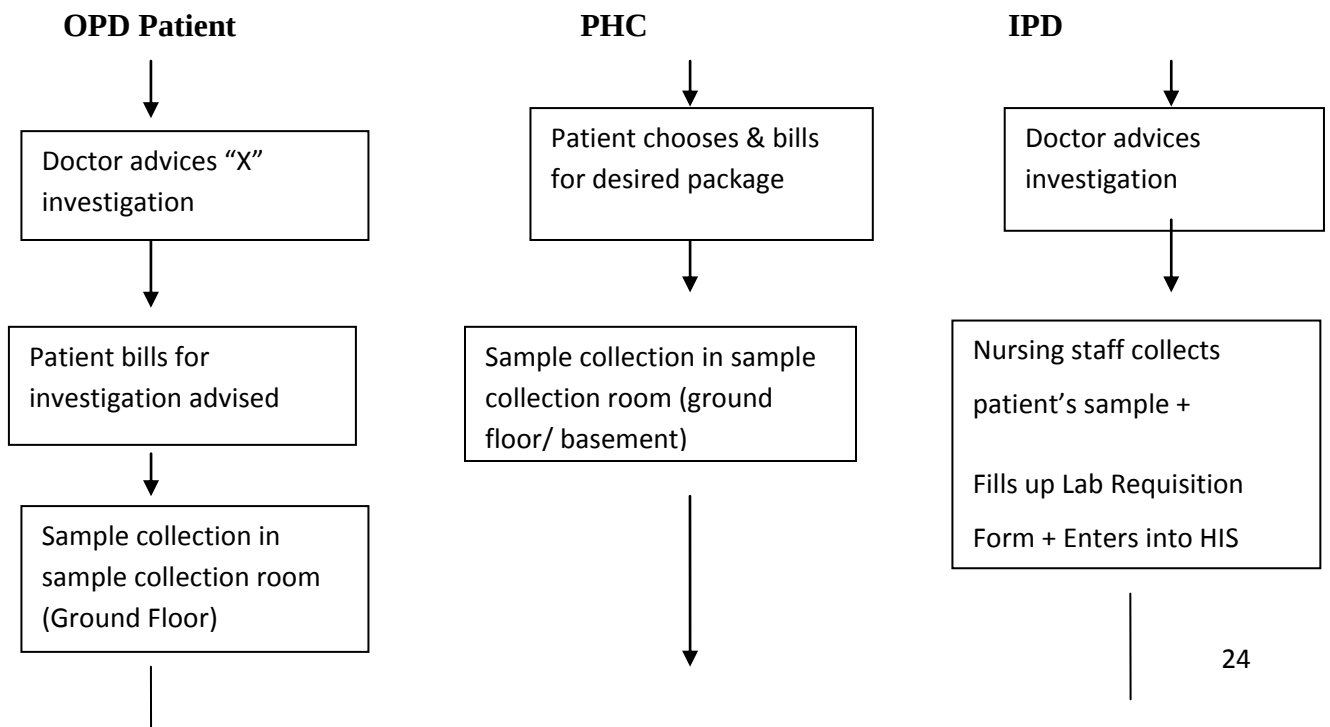
Organ gram -

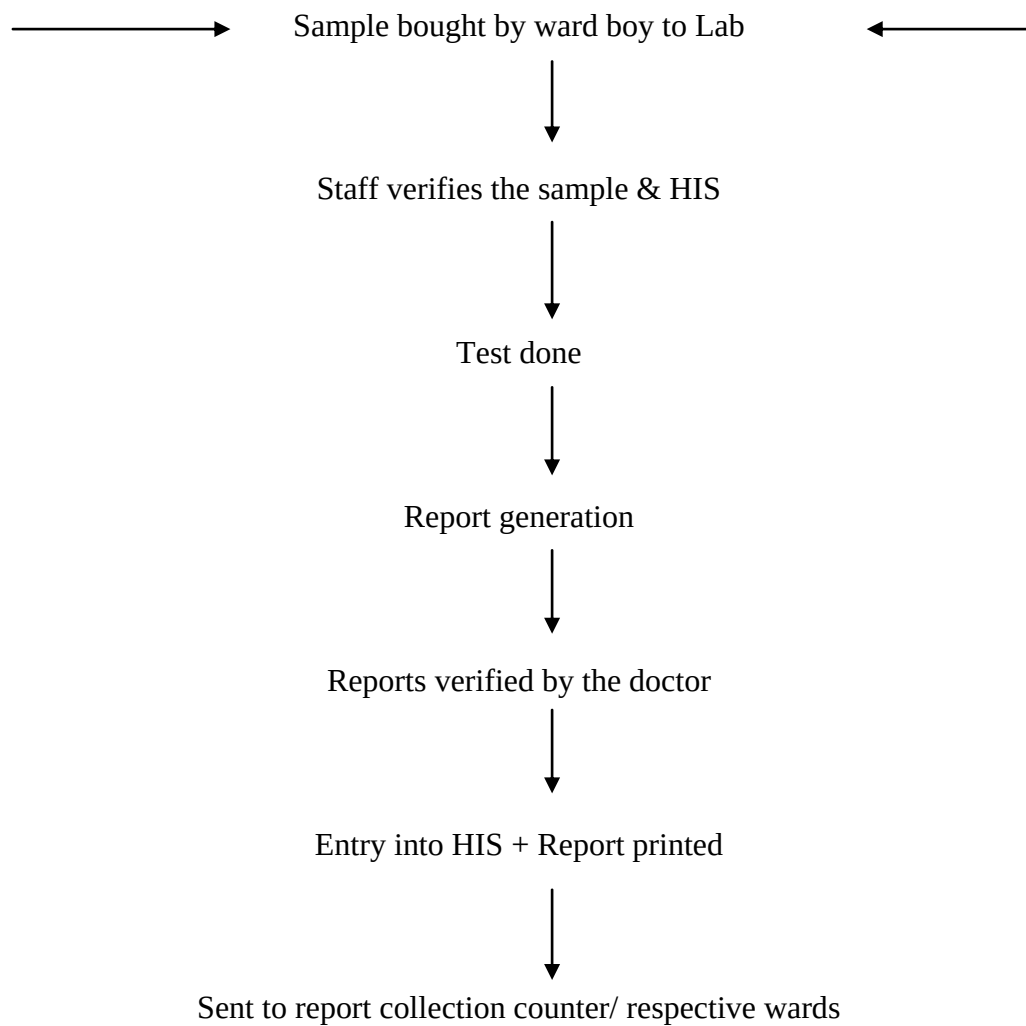


Each person has the following staff working under him/her-



Workflow:





Records Maintained:

- Quality Check File
- Calibration Log
- Scheduled service log
- Instrument log
- Instrument service log
- Daily maintenance log
- Delivery file
- Purchase file
- Patient Record Register

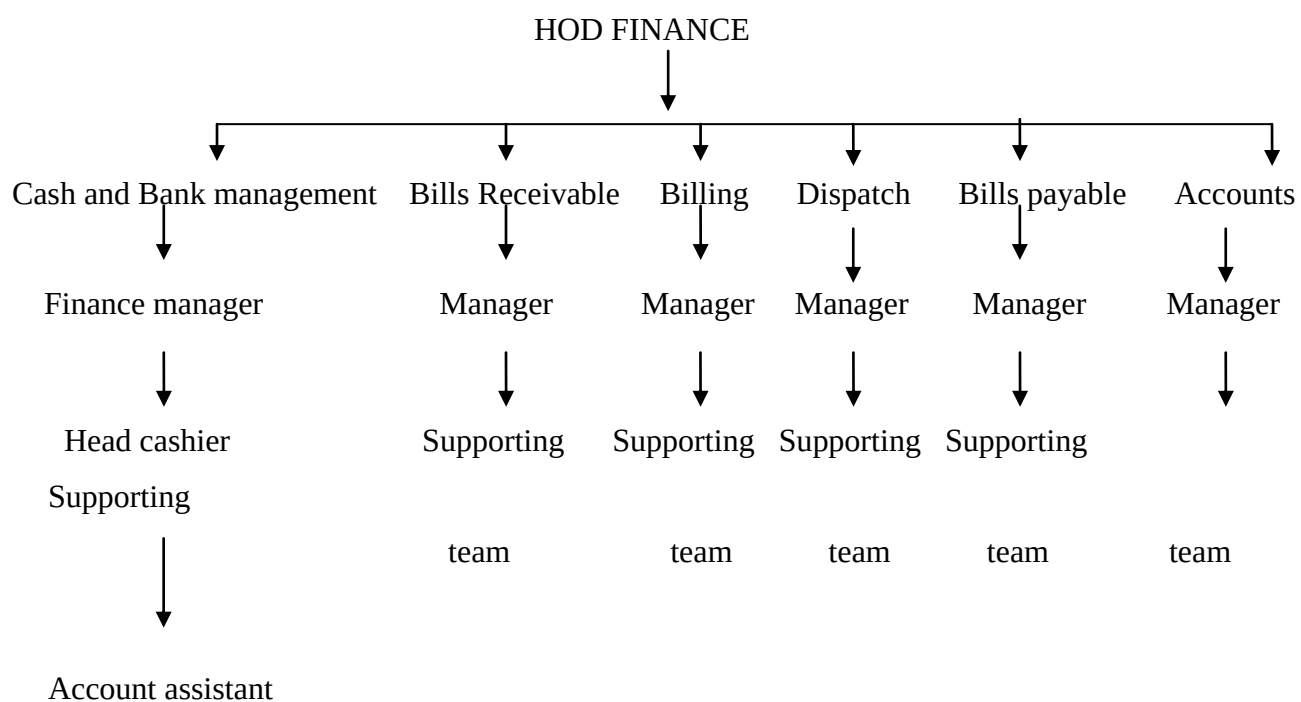
Equipments:

- ORTHO BioVeu
- DADE
- Cobass Analyzer
- Bact Alert 3D- Blood Culture Machine
- SYSMAC XT- 100
- Mini APPI
- CLINITECH
- Incubator
- Centrifuge
- Hot air oven

FINANCE & ACCOUNTS

Layout: -Basement

Organogram :

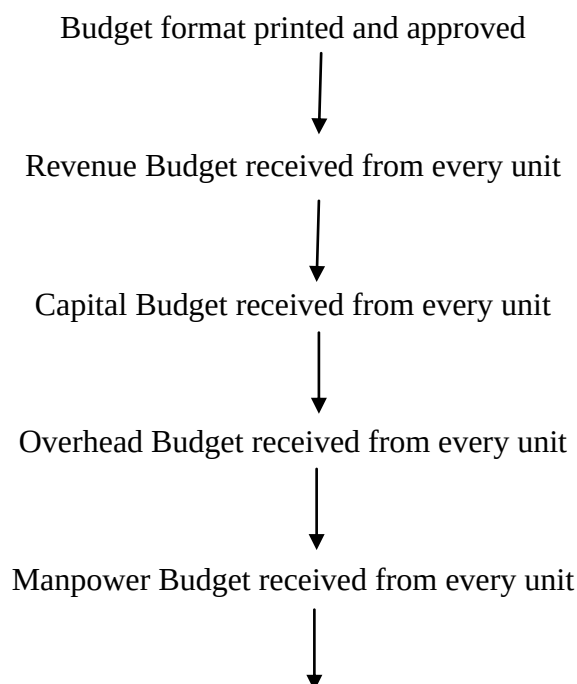


Scope of Services:

The scope & complexity of service provided by this department (which includes billing aspect also) is:

- Business building insights.
- Areas for lowering cost & improve profitability.
- Updating of bills on daily basis for IPD patients.
- Customer (Patient's Attendant) satisfaction for billing concern.
- The Billing staff has overall responsibility for coordination of various functions (Pharmacy, Wards etc.) and daily basis report for admission and they maintain a log of all the problems that arise on day to day basis and provide the necessary solution as deemed proper and reasonable.
- Daily collection of money from various sources in the hospital and its deposition in bank.
- Maintenance of petty cash.
- Budgeting
- Department serves all departments for finance & billing aspect.
- Making Balance sheet, Profit & Loss Statement for the financial year.
- Maintenance of file of all employees, vendors, creditors & debtors.

PROCESS OF BUDGET MAKING



Final budget received from every unit



Internal approvals



Board approval



Finalization of the budget

LAUNDRY SERVICES

Layout: -Basement

Equipments:

- Dryers : 4
- Washing machine (each 90 kg) : 3
- Washing machine (each 50 kg) : 1
- Bed presses : 2
- Calendar Machine : 1
- Steam Press : 2

Total Manpower:

Supervisor- 2

Operator- 2

Helper- 34

Tailor- 2

Tailor for CSSD- 1

Records Maintained:

- Department Register

- Items Received register
- Items issued register
- Detergent register
- Machine records

MAINTENANCE & ENGINEERING

Layout: -Basement

Total Staff: 41

Components:

- Electricals
- Boiler Plant
- Air conditioning
- Sewage treatment plant
- Carpentry
- Pump House + Fire Fighting
- HVAC
- Plumbing

Functions:

- Preparing the plan for equipment daily and preventive maintenance, spare parts and consumable for the department so that each facility works properly & there is minimum breakdown.
- Engineering is also responsible for controlling and ensuring for optimum use of power, water and diesel.

Records Maintained:

- Diesel Book
- Complaint Book
- Electricity Consumption Book
- AC Log Book

- Chiller Daily Parameter Log Book
- Pump Log Book
- Filter Cleaning Book
- Boiler Register
- Bore Well Register
- UPS Log Book
- Temperature Controller Register

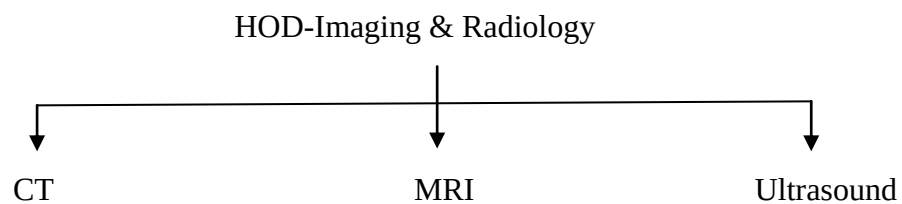
IMAGING & RADIOLOGY

Services provided :

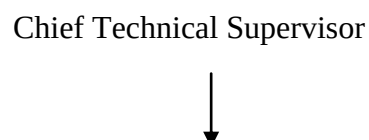
- CT
- ULTRASOUND
- X-RAY
- MRI
- MAMMOGRAPHY
- BONE DENSITOMETRY

Staff & Hierarchy :

Doctors: 4



Radiographers: 6



Senior Radiographer



Junior Radiographers (4)

MRI Technician: 1

Typist: 1

GDA's: 3

Records Maintained:

- Patient Register
- MLC Register
- BARC Standard Records

Equipments:

- High End Digital X-Ray machine
- Mammography machine
- 1.5 T MRI Machine
- CT Scan
- 3D Ultrasound Machine
- Bone Densitometry Machine
- Gamma Camera

Observations:

- Staff wearing Radiation monitoring bandages.
- Changes room is provided for patients.

HOUSEKEEPING

Shift timings:

Morning: 7A.M – 3.30P.M

Evening: 1P.M – 10 P.M

Night: 10 P.M – 7 A.M

FUCTIONS:

- Clean Floor ,Wall Ceiling
- Discharge Cleaning
- Remove Garbage
- Replace Supplies In Utility Rooms
- Clean Housekeeping Equipments
- Clean Room, Wards, Reception, OT, ICU Etc.
- Infection Control
- Pest & Rodent Control
- Odor Control
- Environment Hygiene
- Sanitation Hygiene
- Checking Cleanliness Of All Areas
- Control & Reporting Of All Maintenance Works
- Hospital Waste Disposal
- In-Service Training

Day	Weekly Assignment
Monday	Thorough Cleaning of all hospital doors
Tuesday	Thorough Cleaning of Ceilings & AC Ducts
Wednesday	Thorough Cleaning of corners & skirting
Thursday	Thorough Scrubbing of Toilets
Friday	Thorough Cleaning of AHU's & wooden beading cleaning

Saturday	Thorough Cleaning of Outer area + Parking Area
Sunday	Thorough Cleaning of all Administration Block + All Wards

EMERGENCY

Layout: - Ground Floor

- Nurse Station
- Store room: 1
- Doctor's Duty Room: 2

Infrastructure:

- Beds: Total: 11
 - For Triage- 2
 - For Observation- 9
- Ambulances- 2
- Air Ambulances- 1

Nurse: Patient Ratio: 1:1

Staff & Hierarchy:

1 Resident doctor, 1 Junior Consultant

Head nurse- 1

Team leader (nurse) - 1

Nurses- 11

GDA- 3

Records Maintained

Consent Forms	Investigation Forms	Patient Care Forms	Other Forms	Registers
- Surgical & Medical treatment - Anesthesia Consent - High Risk Consent for Anesthesia Surgery - Haemodialysis Consent - Informed Consent - Consent for Transfusion of blood & other blood products	Histopathological Exam. Cytopathological Exam. Indoor Patient Drug Req. Form Laboratory Req. Form MRI Investigation Form X-Ray/ Ultrasound Request Form	Progress sheet History sheet Nurse record Nursing care record Drug Prescription & Administration Record Investigation flow chart Vital Parameter Chart Pre Anaesthesia Check up Intake Output Chart	List of Linen for Washing Daily Floor Census Valuable Handover Form Daily Billing Activity Discharge Summary Transfer Request for Ambulance Discharge checklist	Daily Duty Register Laundry Register MLC Sample Reg. Duty Doctor Reg. CSSD Register Consumables Reg. Communication Reg. Ambulance Reg. Annual Leave Plan Reg. Loan Book Complaint Register RBS Register Equipment Breakdown Register

Inventory Management:

1. Inventory register:
 - Medicine trolley daily checklist
 - Dressing trolley daily checklist
 - POP Checklist
 - Crash cart checklist
2. Ambulance inventory Register

Maintenance Book:

- Oxygen pressure daily checklist
- ECG Checklist
- Biomedical Equipment Checklist.

AMBULANCE SERVICE FLOW

Call centre executive attends the emergency call



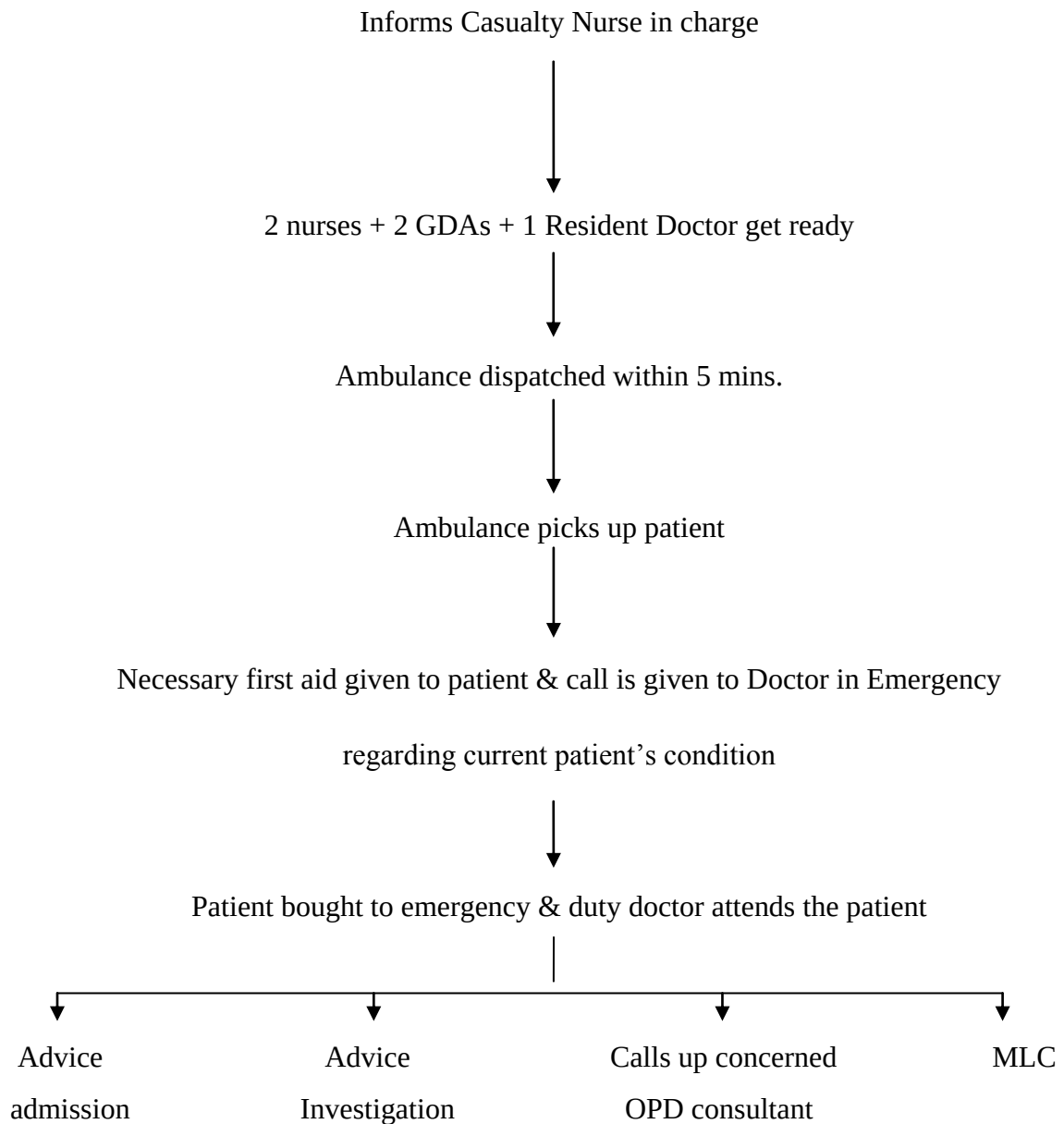
Transfer the call to Emergency's Doctor



Notes down necessary details like:

- Place/address
- Time of call received
- Details of call
- Name & contact no of caller





HEART COMMAND CENTRE- I AND II

Layout- Ground Floor

Beds- 12 (including 4 for Triage, 3 for Observation and 1 Isolation Room)

Staff- Senior Residents= 3 in morning shift, 2 in evening and night shift

Junior Residents= 2

Nurses= 15

GDAs= 3(morning), 2(evening), 2(night)

For critical patients, Nurse: patient=1:1

For non-critical patients, Nurse: patient=1:2

Workflow-

Cardiac procedure done in CATH lab or OT



Patient is transferred from OT to HCC- I or II



If patient is stable but requires further investigations, then transferred to wards

If patient is unstable, then he remains in the HCC till he is ready to be either shifted to
Wards (most of the times) or is ready for getting discharged

F&B DEPARTMENT

- Unit Manager- 1
- Assistant Manager- 2
- Supervisor-14
- Chef-1
- Accountant- 1
- Cashier- 8
- Cook- 33
- Order taker-2
- Stewards- 60
- Store Keeper-4
- Utility- 36

Functions:

- Catering to Inpatients, Hospital staff, Patient attendants.
- Diet counseling
- Education
- Smooth provision of laid out 9 diets to the patients.
- To check the patient, Attendant & Staff food for quality, preparation, presentation and packing.
- Coordinating closely with the Nursing shift in charges for changes in the patient's diet or new admissions etc.

Areas in Kitchen

- **Receiving & Storage Area-** Walk in refrigerator
- **Preparation Area:** For peeling, cutting, chopping, slicing, mincing.
- **Cooking Area:** Pantry, Bakery, Continental, Indian
- **Tray Layout & Packing Area**
- **Service Area:** From here food is transferred to patient's on trolleys.

Other Areas:

- Dish washing & pot washing area
- Dietician Room

Type of Diet	Diet Card Color
Normal	Green
For Diabetes Mellitus	Yellow

Flowchart of Dietician and Inpatient Interaction:

The Dietician takes details of new patients such as name, UHID, doctor's name, diagnosis and diet prescribed.



Then Dietician takes a detailed round wherein she meets every patient and determines patients' actual intake. Dietician then provides nutritional counseling and education, ensures patients' compliance to recommended diet. She also recognizes personal eating and food preferences.



Afterwards, the dietician does nutritional screening in order to know about patients' clinical condition, appetite and tolerance to food and acceptance to hospital diet, personal preferences, disliking and food allergies if any.



After the rounds, detailed food summary sheets are planned and prepared for every patient keeping in mind medical history and preferences of patient as well.

Flowchart of Dietician & Nursing staff interaction:

Dietician receives a daily diet requisition once a day from all nursing station.



Dietician cross-checks received diet requisition from time to time with nurse both during rounds and on phone constantly.



Dietician updates changes with respect to new admissions/ transfers/ discharges/ changes in diet

- ation Centre

ICU

It mainly caters to the non- cardiac patients.

No. of beds- 16 (including 1 bed for dialysis and 1 for Isolation of special patients)

Nursing staff: 15 nurses (in a nurse patient ratio of 1:1)

Housekeeping staff: 7 (in 3 shifts- Morning -3, Evening-2, Night-2)

Working Shifts:

Morning: 8.00 AM to 2.00 PM

Evening: 2.00 PM to 8.00 PM

Night: 8.00 PM to 8.00 AM

EQUIPMENTS:

1. Ventilator
2. Patient monitor
3. Defibrillator
4. Syringe pump
5. ECG machine
6. Pace Maker
7. ICU bed
8. Blood gas analyzer
9. Crash Cart

Records Maintained:

1. ICU consumable book
2. Replacement book/loan book
3. Handing over/transfer book
4. ICU Lab register
5. ICU MRD Register
6. Leave register
7. Store item receiving book
8. Assignment book
9. ICU Patient report book
10. Admission & Discharge Register
11. Procedure book for Doctor's & ventilation data

Forms with ICU:

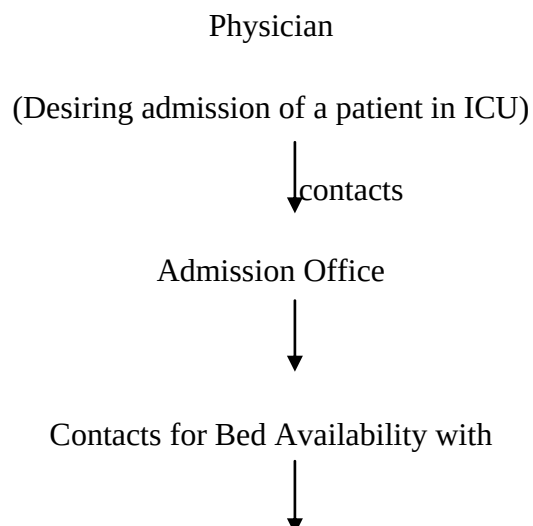
1. Daily Billing Activity
2. Consultation form
3. Discharge summary
4. History Sheet
5. Investigation Flow Chart
6. Daily Floor Census
7. Progress Sheet
8. Nursing Care
9. Blood Sugar Chart
10. Patient Registration Record
11. Pre Anesthesia Checklist
12. Pre operative Checklist
13. Pre & Post Operative Form
14. Nurse Record
15. MRI Investigation Form
16. Requisition forms: - Indoor Patient Drug Requisition Form
 - X-ray/ Ultrasound Requisition Form
 - Lab Requisition Form
 - Cytopathology Requisition Form
 - Histopathology Requisition Form
 - Blood Requisition Form
 - Requisition Form for Blood Transfusion
17. ICU Daily Notes
18. ICU Observation Chart
19. ICU Admission Consent form
20. Death certificate
21. List of Linen for Washing
22. Consent Forms : - Informed
 - High Risk Consent for Anaesthesia
 - Anaesthesia
 - Surgical & Medical Treatment
23. Valuable Handover Form
24. Discharge Checklist form

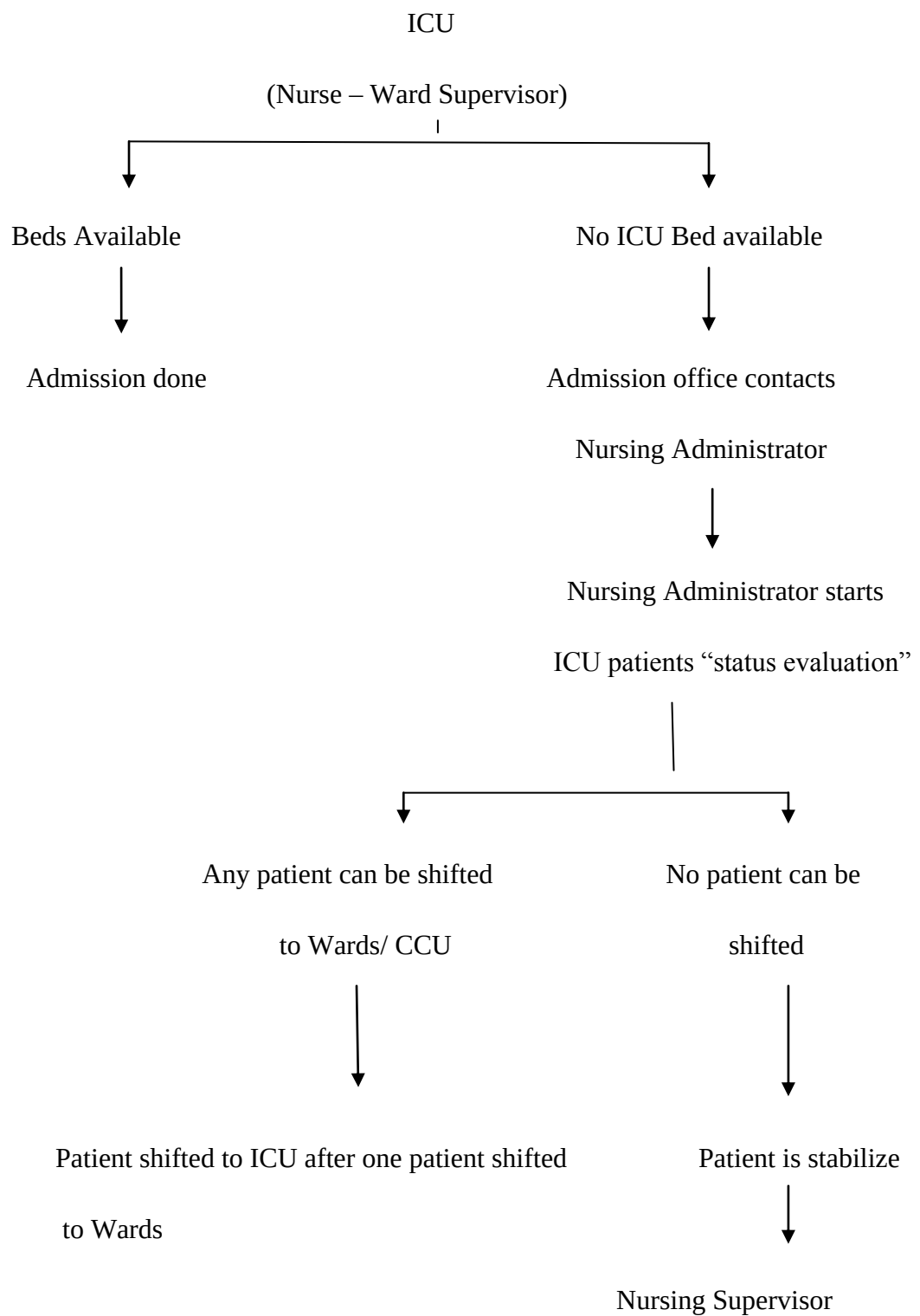
Each Bed Space Contains:

1. Motorized Electric Bed
2. Multi parameter Modular Philips Monitor – mounted on wall behind the bed.
3. Chart/ Locker Trolley
4. Independent wall mounted panel housing 2 each of Oxygen, Air & Vacuum outlets
(all connected to central manifold by concealed pipelines)
 - Each bedside monitor is hooked to CENTRAL NURSING STATION MONITOR.
 - Other Equipments (common to all beds):
 - Ventilators
 - Syringe pumps
 - Feeding pumps
 - Nebulizer
 - 1 bed has access to piped RO water & can be used for bed-side dialysis.

Admission in ICU can occur from:

- Inpatient wing of the hospital
- Emergency complex
- From other hospitals
- Sometimes directly from OPD
- Rarely from Bronchoscopy, Endoscopy, Dialysis unit

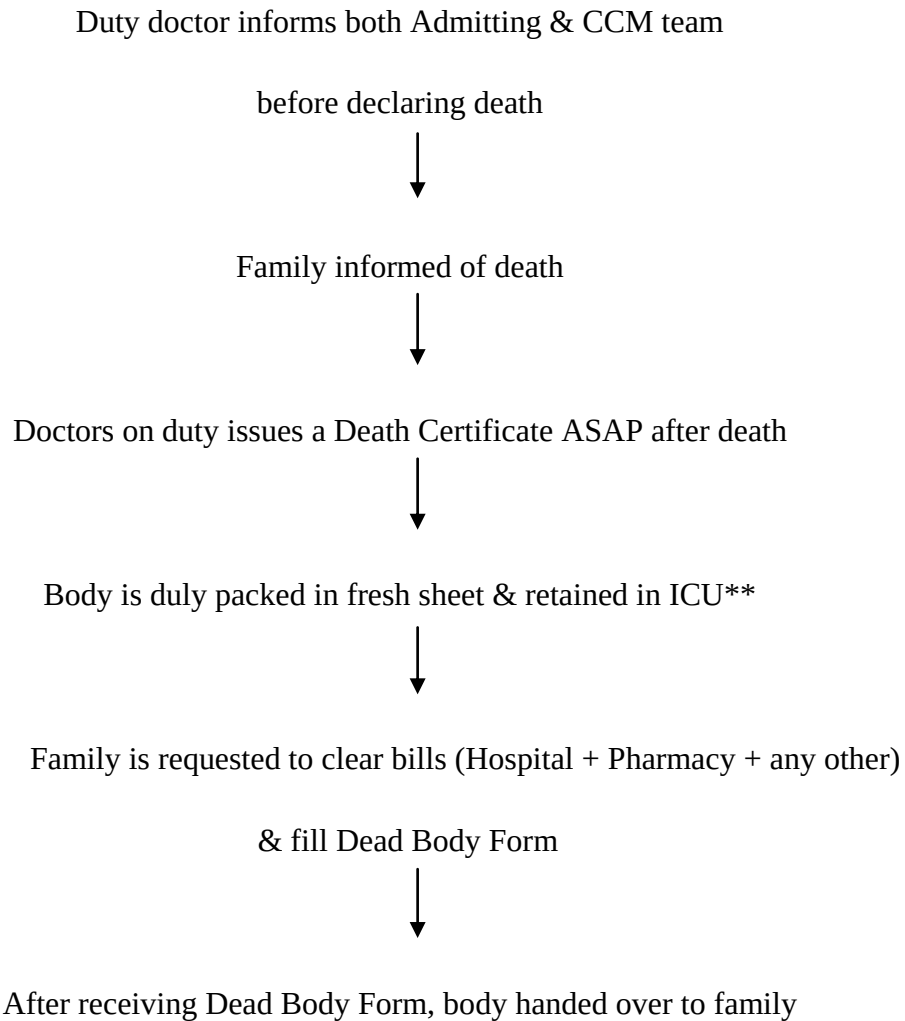
Patient admission procedure in ICU-



DEATH PROTOCOL

In case of clinical death





** Body retained in ICU for a maximum of 1 hr. after death and up to 4 hrs in exceptional situation on orders of Duty Doctor & beyond that on orders of GM (Admin). Thereafter body is sent to Mortuary and security is informed.

If it is a MLC case, packed body is sent to mortuary & handed over to police by security.

INFORMATION TECHNOLOGY (IT) DEPARTMENT

Outsourced to HCL (for FMS) and Remington (for hardware)

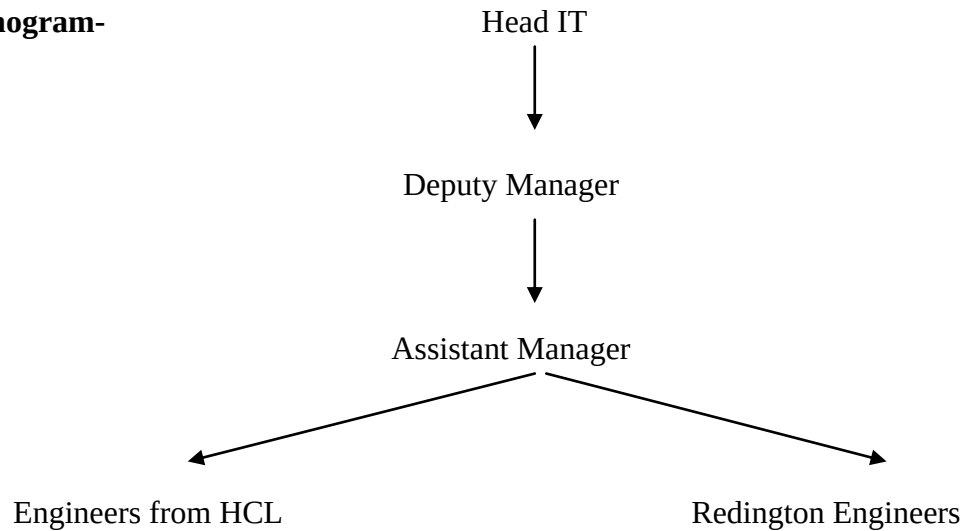
Layout: - First Floor

Staff: 8 – HCL

2 – Redingote

3 – FEHI (Managers)

Organogram-



Functions and responsibilities:

- To keep the servers alive
- To keep the network alive
- To keep internet connection alive
- To take care of all the desktops & laptops in the organization
- To track the records of all the desktops
- To keep an eye on the employees desktops.
- To resolve the complaints of the employees
- Training of the other staff for the HIS
- To come up with new technologies that can be implemented in the hospital to ensure its smooth functioning and increased safety of care of patients.

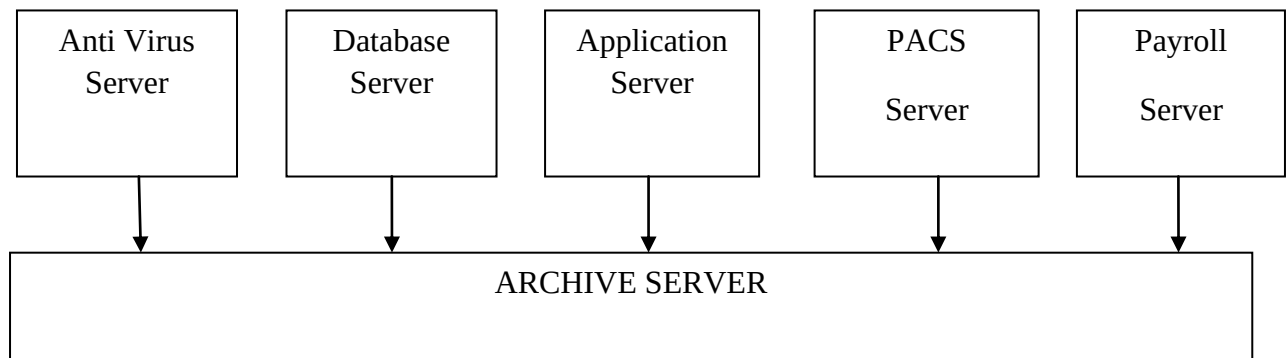
2 Major Work Areas: General Administration & HIS

I) General Administration:

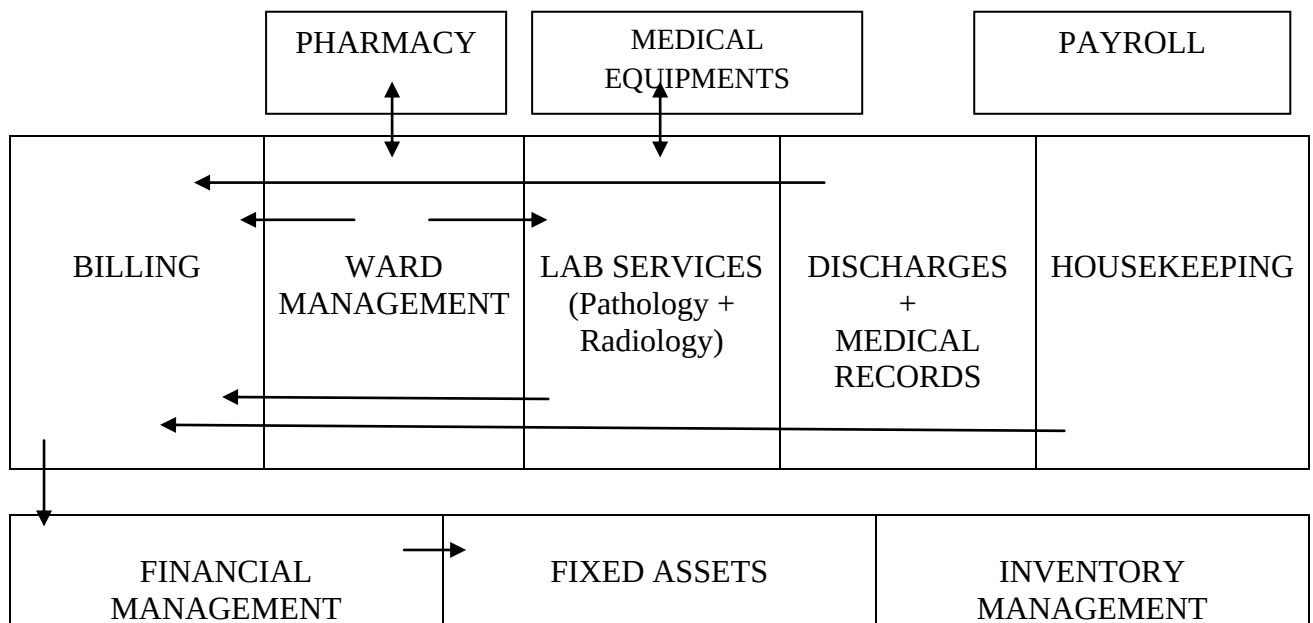
Servers:

- Antivirus server
- Database server
- Application server
- PACS server
- Payroll server

- Archive server



II- HIS STRUCTURE:



HIS Backup:

- Daily
- Weekly
- Monthly
- Yearly

OT (OPERATION THEATRE)

❖ **Layout :** 1st floor

- ❖ **No. of OT's : 9**
- ❖ **No. of beds in Pre operative ward : 5**
- ❖ **No. of beds in post operative wards : 6**
- ❖ **Utility room : 1**
- ❖ **Doctor's Lounge : 1**
- ❖ **Nurse and Technician Lounge : 1**
- ❖ **Pantry : 1**
- ❖ **Sterile room : 1**
- ❖ **Changing rooms : 4**
- ❖ **OT Staff-**
 1. OT Coordinator- 1
 2. Surgeon- 1
 3. Anesthetist- 1
 4. Anesthetist Assistant- 1
 5. Senior OT Technician-1
 6. OT Technician- 6
 7. Perfusionist-1
 8. Per fusionist technician- 1
 9. Scrub Nurse-1

Records Maintained

Forms Maintained	Registers maintained at OT Pre holding area	Registers maintained in Sterile Room	Registers maintained with Nursing In-charge	Registers maintained with Manager Technician
1. Consent forms: - Informed - Anesthesia - Surgical/ Medical Treatment. 2. Pre anaesthesia Check up form 3. Surgical safety checklist form 4. Requisition form : - Histopath. - Blood bank - Laboratory - Indoor patient drug requisition form 5. Operation note 6. Instrument checklist form 7. Form for linen & laundry	1. OT Patient Pre Hold Register 2. Operation Record Register 3. OT Daily Charge Register 4. In-Out 5. Register 6. CSSD Register	1. Instrument Set Register 2. OT Fridge medicine Register 3. Cidex OPA Register 4. Formalin Register 5. Re-Autoclave Register 6. Autoclave Register 7. ETO Register 8. Plasma Register	1. Inventory Book 2. Movement Register OT 3. Duty Roaster 4. OT Purchase Book 5. Emergency OT Register 6. Complaint OT Register 7. Pharmacy Bill OT Register 8. OT Checklist Register 9. Consent form file	1. OT Culture File 2. Daily OT Cleaning Register 3. Fumigation Record File

OT Washing & Fumigation Schedule:

OT - 1, 2 ,3,8 ,9 : Every Saturday

OT - 4 ,5 , 6,7 : Every Sunday

Present Scenario:

OT Washing and fumigation done every Saturday and Sunday



In case, culture report (every 72 hrs for each OT) shows more **than 3 types of isolates** then fumigation done on same day in OT.

Infection control surveillance programe for ot

Records maintained for OT Sterilization Check:

1. OT Culture File :

- Contains culture report of each OT
- Done every **72 hrs.**
- Swabs taken from OT Floor, walls, table locations.
- Method used : **Slit Air Method**
- Format : Site (OT No.)

Method

Receiving date

Reporting date

Microbiology report

2. Daily OT Cleaning File :

- Daily OT cleaning record (compiled to get monthly record) with format as :
OT No./Item name /Qty./ Date /Morning, Evening, Night with
(personnel sign & ID no.)

- OT Washing date record, OT Fumigation date record.

3. Fumigation Record File

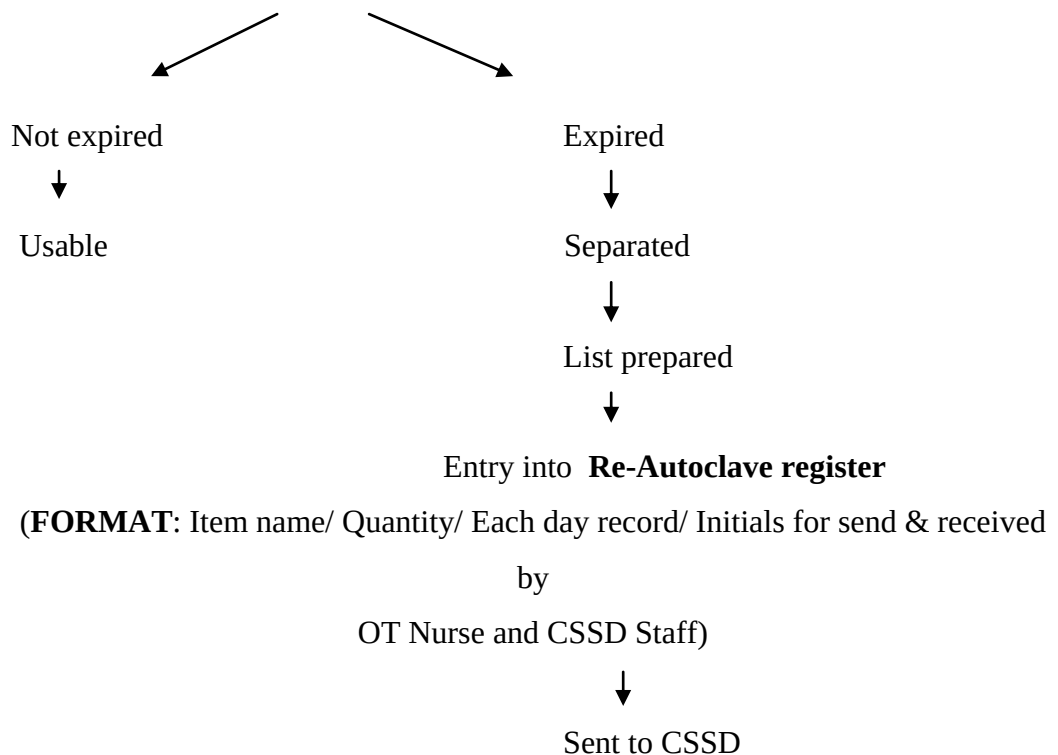
- Separate record for each OT
- Fumigation done by **2% trigene**
- Weekly reporting
- FORMAT :

Date/ Fumigation done by/ Technician name/ Remarks

OT Inventory Management & Records:

1. INSTRUMENT SET REGISTER (In sterile room)

- For daily inventory management in sterile room
- Person on charge : nursing staff personnel (assigned duty everyday)
- Inventory maintained according to **racks number**
- Each rack assigned a specific number
- Daily expiry check of each item in racks



2. FRIDGE MEDICINE REGISTER OT (In Sterile Room)

- Each day inventory maintained by personnel-in-charge of sterile room
- Daily expiry check

3. INVENTORY BOOK OT

- For each OT separate register
- For drug inventory in OT
- Inspected, maintained and signed daily by nurse-in-charge.

Documents and checklist mapping according to patient flow in ot

Patient's Progress	Documents in file	Documents to be added	Checks and checklist	Procedure done by nursing staff (during the process)
From WARD to PRE-OPERATIVE AREA	Consent forms: - Informed - Surgical - Anaesthesia Pre operative checklist Bill clearance papers Records of- Antibiotic & Investigations	Surgical safety checklist form Requisition forms: -Histopathology -Blood bank -Laboratory -Indoor patient's drug requisition form	All documents received from wards are complete. Part preparation done On-time pre surgery antibiotic schedule	OT Patient Pre hold register completion Time in entry in “ In-Out Register”

	Pre anaesthetic check up record			
From PRE- OPERATIVE AREA to OPERATION THEATRE (OT)		Completed Surgical safety check list form. Operation notes	“First column” of Surgical safety check list form completed or not. Checks of : -Medical gases -Equipments -Electrical points -Linen -Complete surgical set “Pre column” of Instrument checklist form.	Completion of “ second column” of Surgical safety check list form Operation records register completion “Post column” of Instrument checklist form completed.

From OT to POST OPERATIVE AREA/RECOVERY AREA		Completed operation notes form OT Daily Charge Bill	Proper disposal of OT waste as per procedures laid down. OT preparation for next surgery. Special attention to blood spills.	OT Daily charge bill completion Completion of “Time-out” in “In-Out OT Register”
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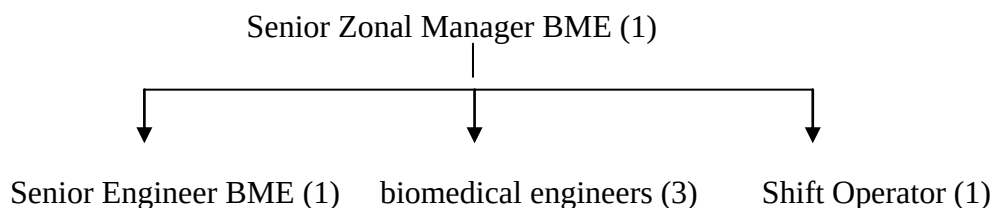
BIO MEDICAL ENGINEERING DEPARTMENT

Layout: 1st floor

Total Staff: 6

Organogram:

The biomedical department of Fortis Escorts Heart Institute comprises of the following staff-



Functions-

Biomedical Engineering Department performs four main functions:

1. Budgeting for new equipments
2. Installation
3. Preventive maintenance/calibration

4. Breakdown management

CSSD

(Central Sterile Supply Department)

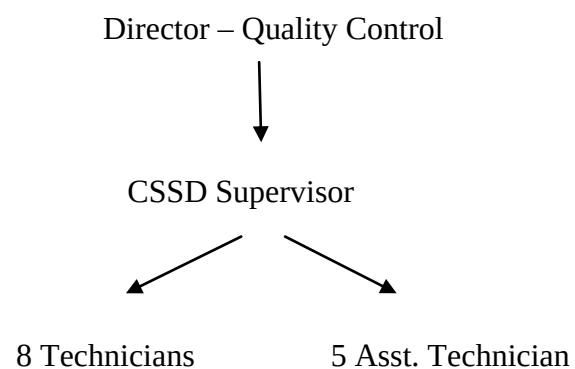
Layout: 2nd floor

Staffing: 1 Supervisor

8 Technicians

5 Assistant technicians

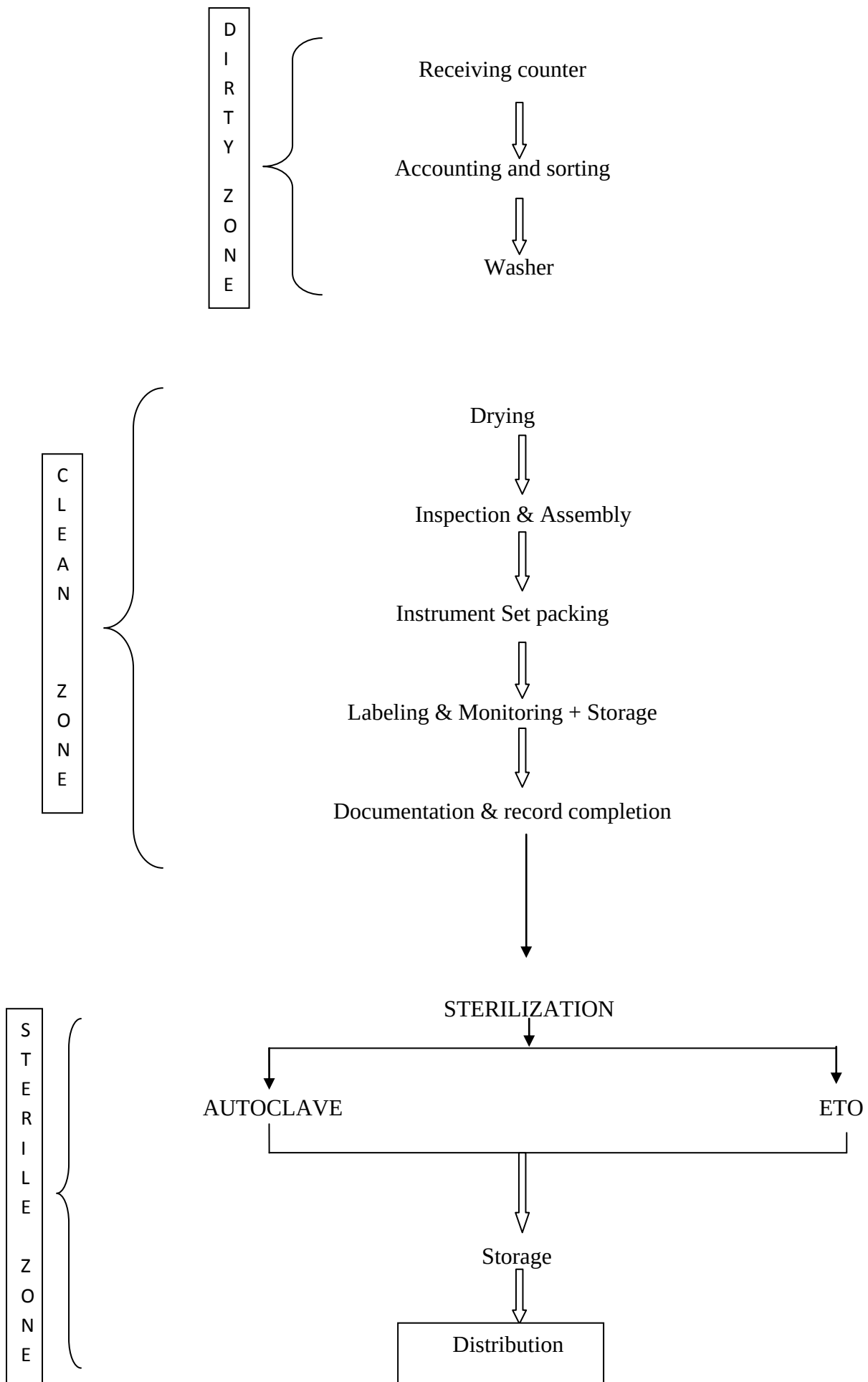
Organogram:



Infrastructure:

- Autoclaves (vacuum type) -2
- ETO -3
- Ultrasonic washer- 2

DEPARTMENT WORK FLOW:



METHODS OF STERILIZATION USED

AUTOCLAV (Steam sterilization)	ETO
- No. of autoclaves – 2 - Type –vacuum type - No of cycles per day – Acc. to load. - Temp/time/pressure. 121 deg C/ 15 mins/ 1.2 kg 134 deg C/ 4 mins/ 2.2 kg STERILIZATION CHECK : - Bowie Dick Indicator (Chemical Indicator) Once a day - Biological Indicator : <i>G. Stereothermophilus</i> Once a week	- Number – 3 - No of cycles – usually 1 / day (But can vary acc. to load) - Temp – 54 deg C 12 hour cycle STERILIZATION CHECK : ✓ Biological indicator <i>Bacillus atrophaeus</i> : Each load.

Monitoring

CHEMICAL MONITORING	BIOLOGICAL MONITORING
• Class I Indicator : Interlocking Tape applied on packs. • Class II Indicator : Bowie Dick + Batch Monitor • Class VI Indicator : To be put in packs.	• <i>G.stereothermophilus</i> • <i>B.atrophaeus</i>

Labeling:

Autoclave I or II/ Lot no/ Date of Sterilization/ Date of Expiry/ Indicator Slip/ Contents

Records Maintained:

1. Receivable item register
2. Items issued register
3. CSSD Sterilization Record Register :

It includes:

- Reports from microbiology
- Graphs generated from each sterilization
- Batch Monitoring Record

4. Record keeping register of each sterilization process :

It includes:

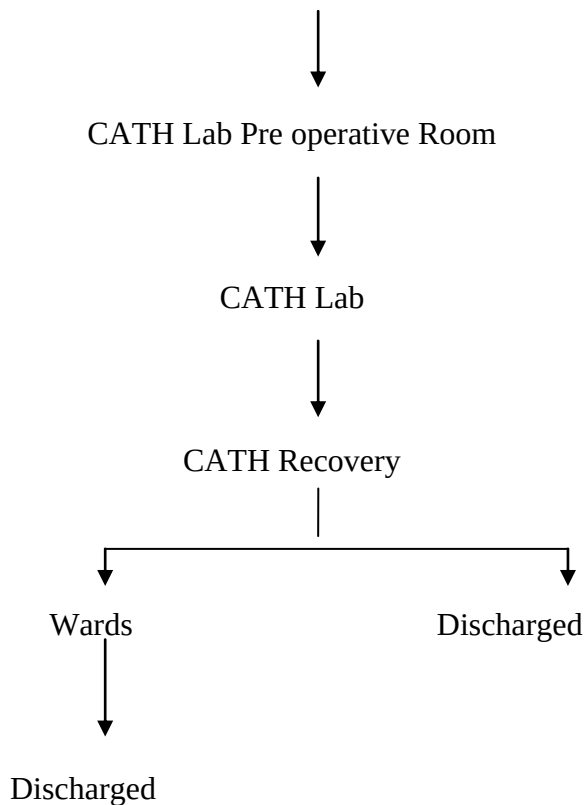
- Indicator used
- Temperature / pressure
- Time of start/end
- Initials of person doing sterilization

- Process number

CATHETERIZATION LAB (CATH)

- **Layout:** 2nd floor
- **Workflow:**

Patient from Cardiac OPD/ Emergency/ Wards (rarely)



- **Common procedures in CATH Lab:**
 - Coronary Angiography (CAG)
 - Coronary Angioplasty (PTCA)
 - Balloon Mitral Valve Valvoplasty
 - Permanent Pacemaker
 - Single chamber
 - Dual chamber
 - Bivent

- Combo device
- AICD

➤ Electrophysiology study- Radiofrequency Ablation (EPS-RFA)

- **Equipment:**

1 lab has equipments of PHILLIPS and 4 labs have GE equipments (for coronary & vascular intervention)

- **Records Maintained:**

- CAG Register
- PTCA Register
- PTA Register
- PPI Register
- Cleaning records
- Fumigation records
- Inventory records
-

CATH RECOVERY

Layout- 2nd Floor

Beds- 12 (3 rooms)

Staffing- Doctor-1

Nurses-9-10 (if the patient is critical then the nurse: patient ratio is 1:1, otherwise it is 1:2)

GDAs-= 3-4

Workflow-

After the patient has undergone a cardiac procedure, he/she is shifted to CATH Recovery (any of the 3 rooms), to keep an eye over the cardiac status for the next few hours.

- If the patient had only Angiography, he is discharged from CATH Recovery after 6 hours of the procedure
- If the patient has undergone any surgical procedure, then he/she is shifted to the wards the next day for further investigations.

The nurses keep the record of the patients' status and their medications as well. The duty doctor is responsible for reviewing the patients from time to time.

CCU

Layout- Fourth floor

Beds: 7

Store: 1

Clean utility room: 1

Dirty utility room: 1

Daily Checks & Checklist:

- Inventory & Expiry Check Reg.
 - CCU Crash Cart Inventory
 - CCU Fridge Inventory
 - CCU Medicine Trolley I & II
 - CCU Capital Item
 - CCU Cup Board Inventory
 - CCU Laundry

Equipments daily working checks

Records Maintained

<u>Consent Forms</u>	<u>Investigation Forms</u>	<u>Patient Care Forms</u>	<u>Other Forms</u>	<u>Registers</u>
<u>Consent forms for:</u> - Surgical & Medical treatment - Anesthesia Consent - High Risk Consent for Anesthesia Surgery - Haemodialysis Consent - Informed Consent - Consent for Transfusion of blood & other blood products - Hand written consent form	<u>Requisition forms for:</u> Histopathological Exam. Cytopathological Exam. Indoor Patient Drug Req. Form Laboratory Req. Form MRI Investigation Form X-Ray/ Ultrasound Request Form	Progress sheet History sheet Nurse record Nursing care record Drug Prescription & Administration Record Investigation flow chart Vital Parameter Chart Pre Anaesthesia Check up Intake Output Chart	List of Linen for Washing Daily Floor Census Valuable Handover Form Daily Billing Activity Discharge Summary Discharge checklist	Daily Duty Register Laundry Register Duty Doctor Reg. CSSD Register Consumables Reg. Communication Reg. Maintenance Reg. Annual Leave Plan Reg. Loan Book Complaint Register MRD Book Handover Book Housekeeping record GRBS Register Patient Shifting Register Complaint Book Stock Register CCU

Workflow:

OPD Patient

↓
Doctor advises "X"
advices
investigation
investigation
↓
Patient bills for
Nursing staff fills
investigation advised
Ultrasound/ MRI

Requisition Form

↓
Radiology Dept.

PHC

↓
Patient chooses & bills
for desired package
↓

IPD

↓
Doctor

↓

X-Ray/

↓

GDA brings
patient to
↓

→ Patient in Radiology Dept. ←

↓

Investigation done

↓

Film & Report generation

↓

Film & Report sent to Radiology Reception
desk/ Report room/ Respective ward.

WARDS

Layout- 3rd, 4th floor (for adults) and 5th Floor (for pediatrics)

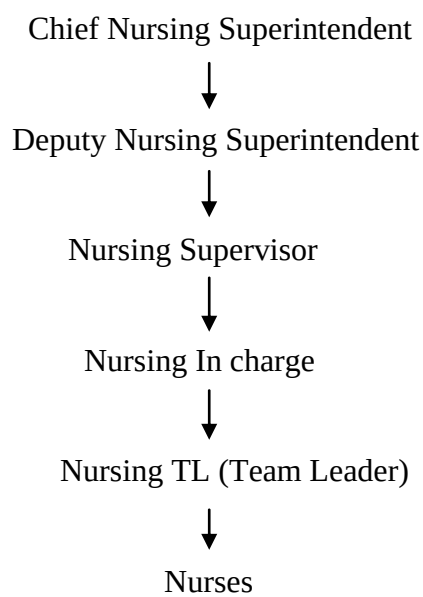
Beds- 3rd floor= 64

4th Floor= 60

5th Floor= 26

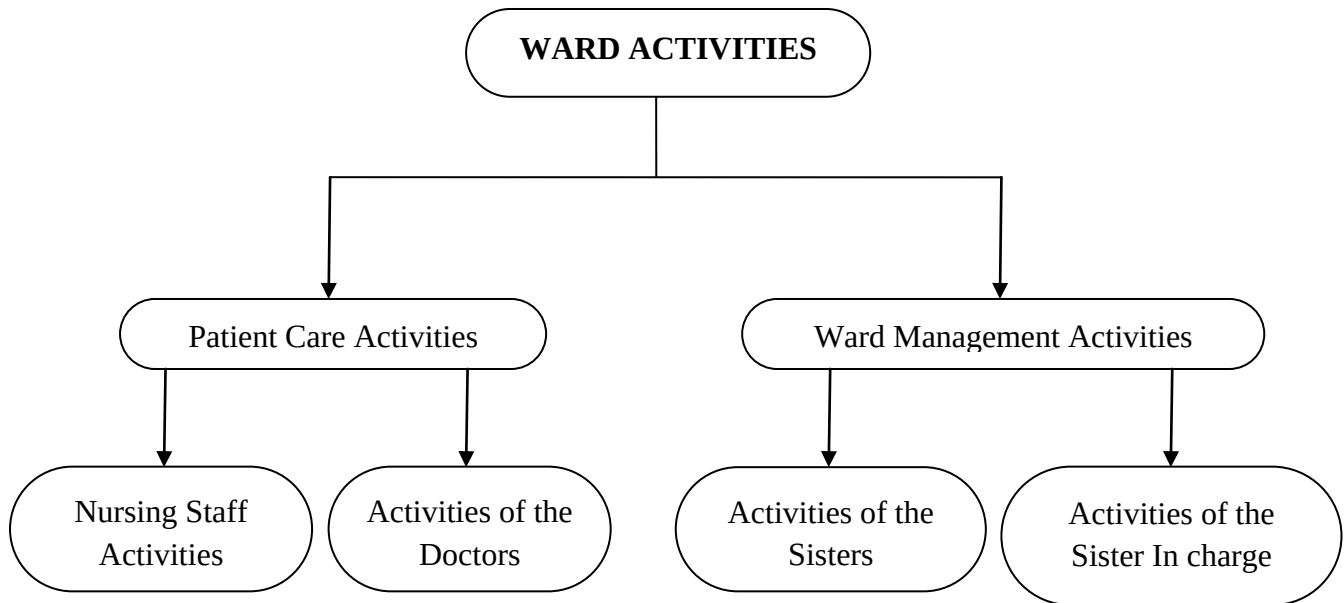
Staff- At every floor, the staffing pattern was the same.

Staffing of Nursing Personnel In Wards-



- Nurse to Patient ratio= 1:5
- The staff works in three shifts-
 - a. Morning (8am -2pm).
 - b. Evening (2pm-8pm).
 - c. Night (8pm-8am).

Workflow-



There is one doctor present in each ward. He mainly reviews the new admissions and checks the discharge summaries. There are 5-6 nurses in the wards for one shift. Depending on the number of patients, this number is increased or decreased. The nurses are responsible for the daily medications, any investigations required, and proper care of patients. Also, there are 3 General Duty Attendants in each shift who generally assist the nurses in patient care.

OPD DEPARTMENT

- Timings: 8:00 am to 5:00 pm
- The OPD department of the hospital is located as a separate complex around the hospital.
- Since, Fortis Escorts Heart Institute is a cardiac super-specialty hospital, its OPD department mainly provides cardiac consultations, cardiac comprehensive packages and also, employee health check-up packages. These packages include a variety of diagnostic services such as

electrocardiography (ECG), echocardiography (ECHO), chest x-ray, treadmill test (TMT), ultrasound and blood tests.

- All the patients' coming for comprehensive cardiac packages gives blood samples, urine samples, undergoes chest X-ray and ECG examination. Then, the patient goes for cardiac consultations and on doctor's advice, may also undergo ECHO, TMT and ultrasound examinations.
- Signage is available at various places inside and outside the OPD directing the patients.
- Various investigation facilities are available close to each other reducing the distance and motion time.
- Adequate waiting hall is available in the main lobby with LCDs at place, connected with public utilities.
- Coffee shop is available in the basement of OPD while the other investigations are conducted on the ground floor.

Staff pattern in the various departments of OPD

Department	No.	Consultant(s)	Technician(s)	Nurse(s)
Sample Collection Room	2	-	6	2
ECG Room	2	-	2	-
Chest X-ray Room*	1	1	2	-
ECHO Room	2	2	2	-
TMT Room	2	2	6	2
Ultrasound Room	1	1	1	-

*Radiologist available in chest x-ray room is responsible for making the x-ray reports for chest x-rays, bone x-rays and mammography, also.

EXECUTIVE HEALTH CHECK UP (EHC)

Layout: - Upper Basement

Process flow-

FEHI has a separate OPD department with basement totally meant for preventive health check. It offers a wide range of preventive health check packages for various mindsets. This area is exclusively designed for providing complete body check-up for.

1. Corporate executives.
2. Pre-employment check-ups
3. General health check-up for walk-in patients.

For corporate clients, Escorts have various health check packages that are pre-designed and customized by the respective company, according to their policies.

The patients usually come with a prior appointment, empty stomach that is then undergone through a series of tests under the supervision of doctors. The package includes complimentary breakfast and doctors consultation both pre-post, valid up to 15 days from the date of visit. Executives coming from empanelled companies are required to bring along a letter of reference from their office, duly authorizing the check

This health center exclusively caters to patients from various companies with whom FEHI has a tie-up and also other executive patients including international patients. These patients have an array of various health checkup packages to choose from. They can decide which package to choose, depending on their present health condition and medical history, or they can consult the doctor, who can guide them in making the decision. After the patient has opted for a health check-up package he is guided to various diagnostic procedures.

The EHC has the following facilities:

- Sample collection room
- TMT
- ECG
- ECHO
- PFT
- Ultrasound
- Audiometry department
- ENT Department
- Gynecology department
- Dental department
- Dietician
- Clinical Psychologist
- Cardiologist

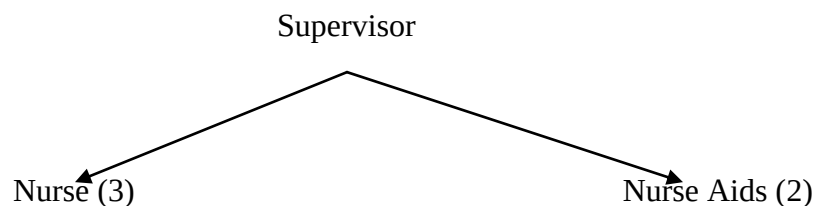
Apart from these facilities, EHC also has a spacious Patient Waiting Lounge and a Learning Center.

OPD DEPARTMENT (ground floor)

- **Help Desk**

It guides the patients and gives them the information about all the packages of FEHI and also guides the patient to their required destinations. There are 6 nurses who provides all the information and guides the to their respective destination

Organogram-



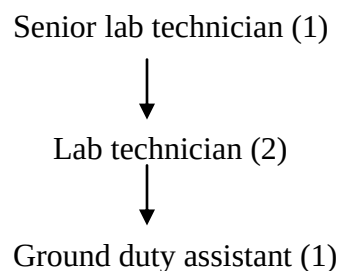
- **OPD Billing-**

Here the billing of all the tests is done (both individual test billing as well as packages test billing). The billing counter at ground floor starts at 8a.m to 5pm. There are 2 billing staff for this purpose

- **Sample Collection Room-**

Staff – 4

Organogram-



Blood samples for testing hemoglobin, fasting blood sugar, postprandial blood sugar, T3-T4 etc are collected along with urine and stool samples for urine and stool analysis respectively.

Then the sample of blood, stool and urine are taken by GDA to the pathology lab for analysis.

STANDARDS OF OPD

- PATIENT TURN AROUND TIME = 4.5 HOURS
- DOCTORS DELAY = 15 MIN.
- WAITING TIME FOR PATIENT = > 15 MINUTES

PROCESS FLOW:

- As the patient enters at ground floor, he has to go at billing counter where he has to pay the initial amount for CCC package.
- If the patient is C.G.H.S / D.G.H.S .Beneficiary, then he has to fill only admission card.
- After completing billing ,patient comes to the nursing counter and from there patient goes for the investigation (sugar –fasting)
- After that patient comes back to the nursing counter and here patient is diverted for various investigation.
- Then reports send to the report room from various investigation centres. where the reports are compiled and distributed to the patient.

PROCESSING IN OPD

Every patient coming for CCC was considered and observed throughout all the procedures he/she undergoes, till the time their reports are compiled in the report room.

Average time taken for each package was calculated by combining the time spent by the patient for the tests, since the time his billing is done till he undergoes the last test and finally the time at which the reports are available.

The patients visiting the CCC consist of company executives, executives for pre-employment medical checkup and the walk-in patients. The total time for each package per patient was calculated initiating from the billing time till the report generation time.

Tests include:-

➤ Doctor's consultation and full medical examination

➤ Blood tests:

Complete haemogram (Hb, TLC, and DLC)

ESR, Haematocrit, peripheral smear)

Blood group (ABO, RH)

Blood sugar (fasting and post prandial)

Blood urea

Serum uric acid

Lipid profile

➤ Urine examination

➤ X-Ray chest PA

➤ ECG

➤ Ultrasound whole abdomen

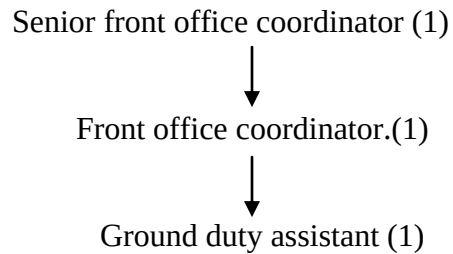
➤ Stress screening by psychologist

➤ Post check-up consultation

Report Room-

Staff – 3

Organogram-

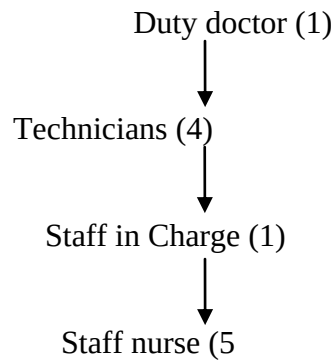


Reports for all the tests done in the hospital are available, for collection by the patients (IPD/OPD), in the report room.

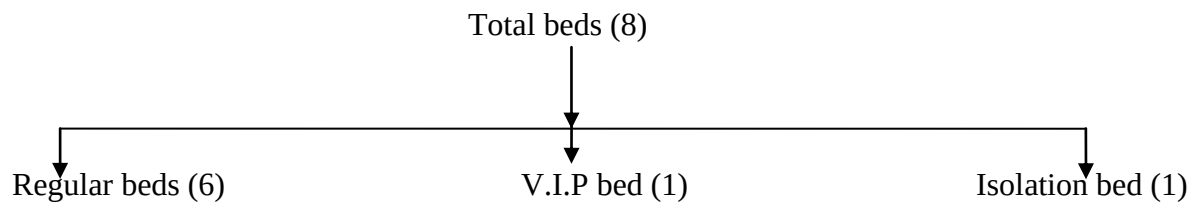
DIALYSIS CENTER

Total Staff - 11

Organogram-

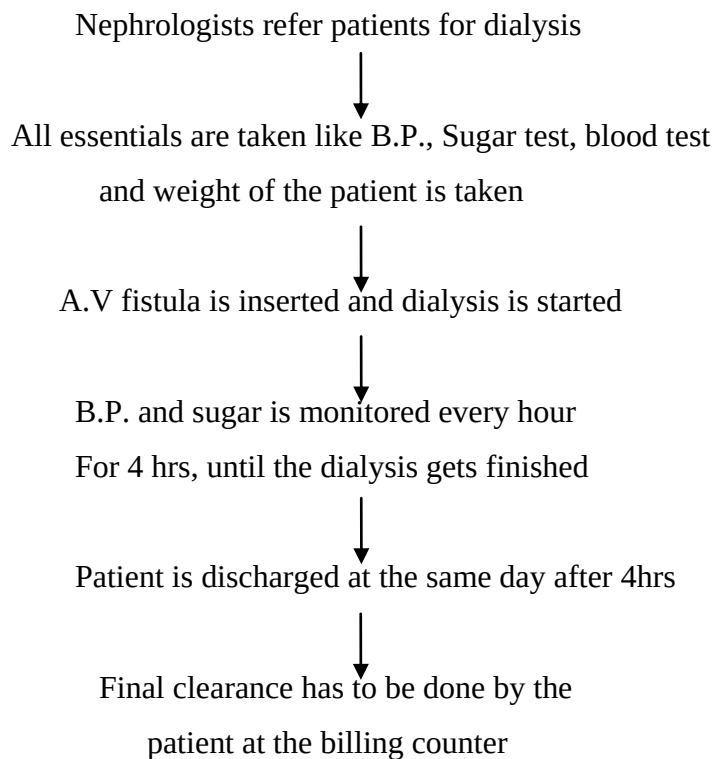


Infrastructure-



- For each bed there is a haemodialysis machine i.e. there are 8 machines
- Peritoneal dialysis is conducted very rarely

Process flow



- The patient is given the appointment for the next dialysis depending upon the condition of the patient. But if the patient is called twice or thrice a month then investigations are not performed. The tests are valid for one month only, after that patient has to undergo all the tests before admitting for the procedure
- Consultant Rooms
There are two chambers for doctors consultation at the ground floor, rest all chambers are at the first floor OPD.
- Administrator's Office

The hospital administrator for the OPD controls all the workings from this office

There are various tests which are being performed at the ground floor they are as follows:-

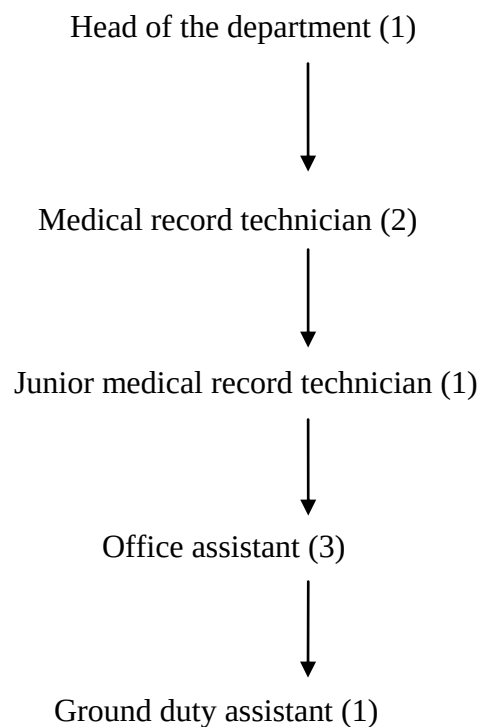
- X-Ray
- Echo
- ECG
- TMT
- Mammography
- Bone Densitometry

MEDICAL RECORDS DEPARTMENT

Layout: - Lower Basement

Staff: 8

Organogram:



Functions of MRD

- To ensure that the FEHI has complete & accurate medical record for every patient.
- Public dealings With respect to TPA queries, Bill verification, MLC cases and dealing with Summons to the doctors, hospital.
- To maintain high level of confidentiality as far as patient's records are concerned.
- To ensure that the records are Identified and stored safely to prevent unauthorized changes and easily retrieved whenever required.
- Issuing **Emergency, Medical, Birth & Death certificates**.
- To generate **Bed Occupancy reports** (daily & monthly),
- Sorting of active files from the inactive files.

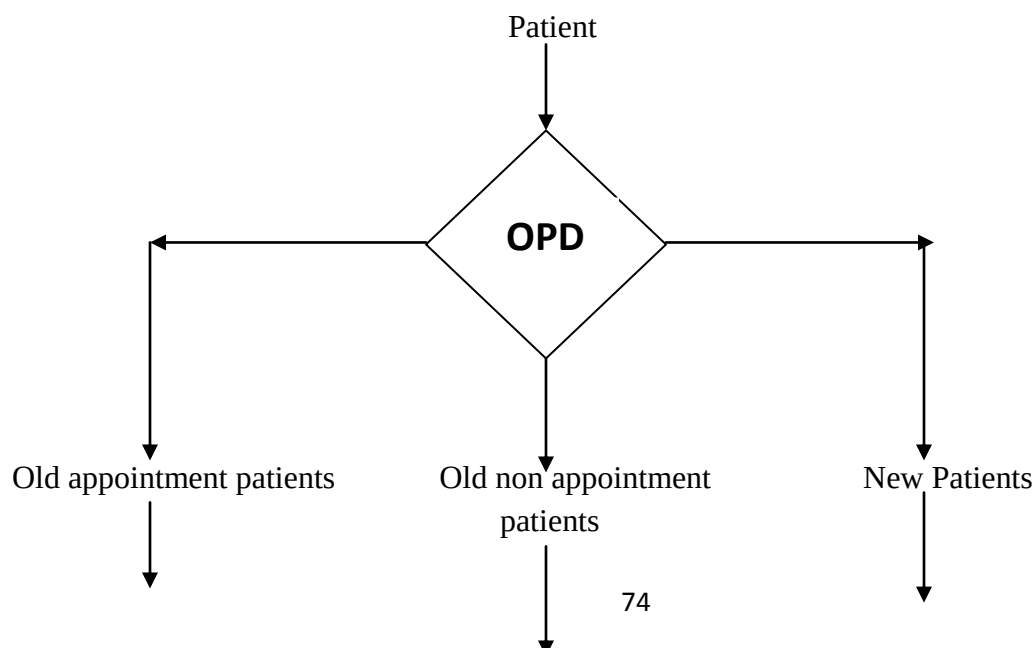
Record Retention Periods:

- IP Records : 5 years
- OPD documents : 3 years

PROCESS FLOW

The MRD department of FEHI is centralized (OPD + IPD)

1. OPD



List is generated 4-5hrs
prior to the appointment
which is sent to MRD

Files are sent to
the OPD on calls

Patient gets a registration
number and a file

Respected files are taken
out and sent to the OPD

These files are sent back to the MRD after doctor's
consultation and are arranged according to their
registration numbers.

One file of documents is given to the patient (patient copy) and one document is kept in the file (file copy).

2. IPD

Patient admitted in wards

The patient file is maintained
by the nursing staff

Once the patient is discharged the file is
sent to the MRD Department for the
storage and for future referral

The checklist to the file is attached
and available documents is tick marked

The file is then arranged at their respected positions

PHARMACY

(RELIGARE WELLNESS - the complete health store)

Layout: -OPD – Ground floor, red building

IPD –Ground floor, main building

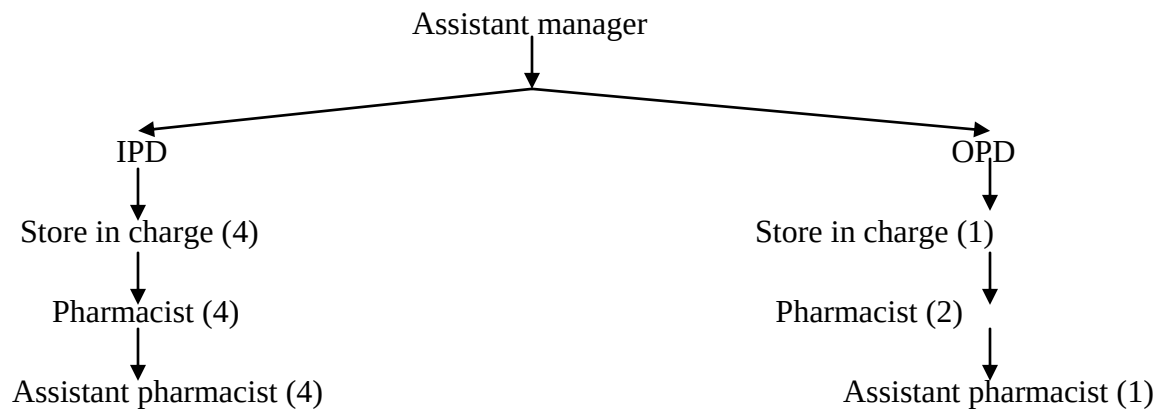
Status: Outsourced

Staff:

OPD – 4

IPD – 12

Organogram:



Infrastructure:

- Desktops: 4
- Printers: 2
- Refrigerator: 2

Timings:

- OPD: 8:30 AM – 8 PM
- IPD: 24 Hours

Drugs available are:

- Prescription drugs
- OTC drugs
- Baby care

- Medical Devices
- Accessories
- Health beverages and foods
- Personal care

PROSESS FLOW:

FOR IPD PHARMACY-

In-Patient Wards, All ICU's, OT, Emergency, CTVS, CATH Lab



Nurse Request for Drug indentation through med track ”



Ward boy take drugs to respective ward/OT/ICU

FOR OPD PHARMACY

Patient comes to the pharmacy counter



Shows the prescription by doctor



Prescription is verified by the pharmacist



Entry made in the computer



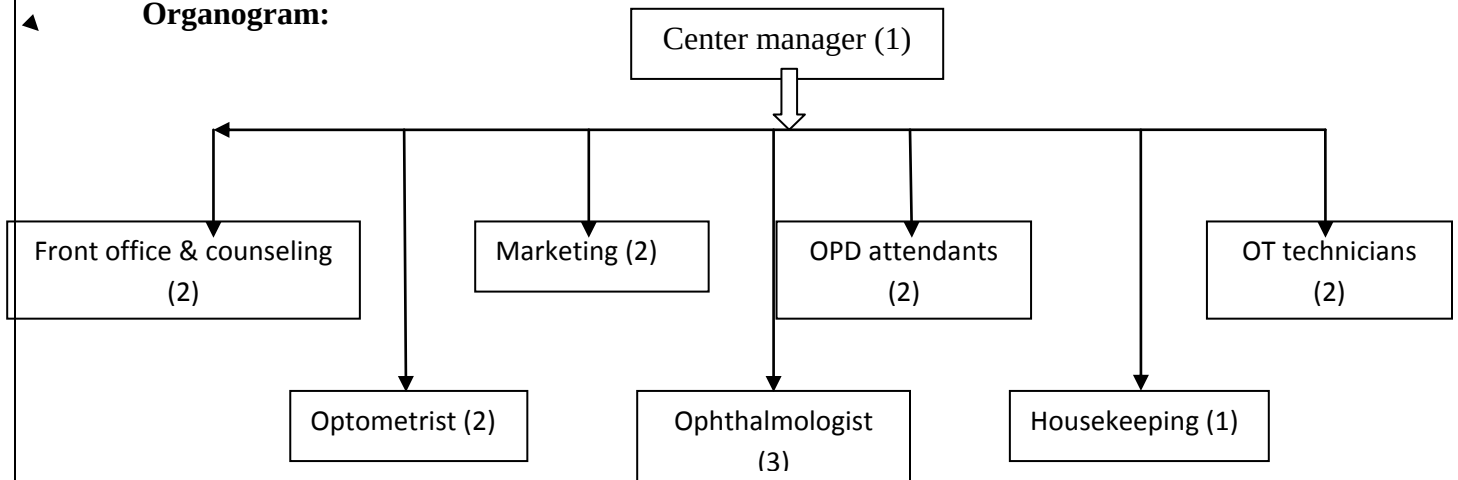
Required drug is delivered

CENTER FOR SIGHT

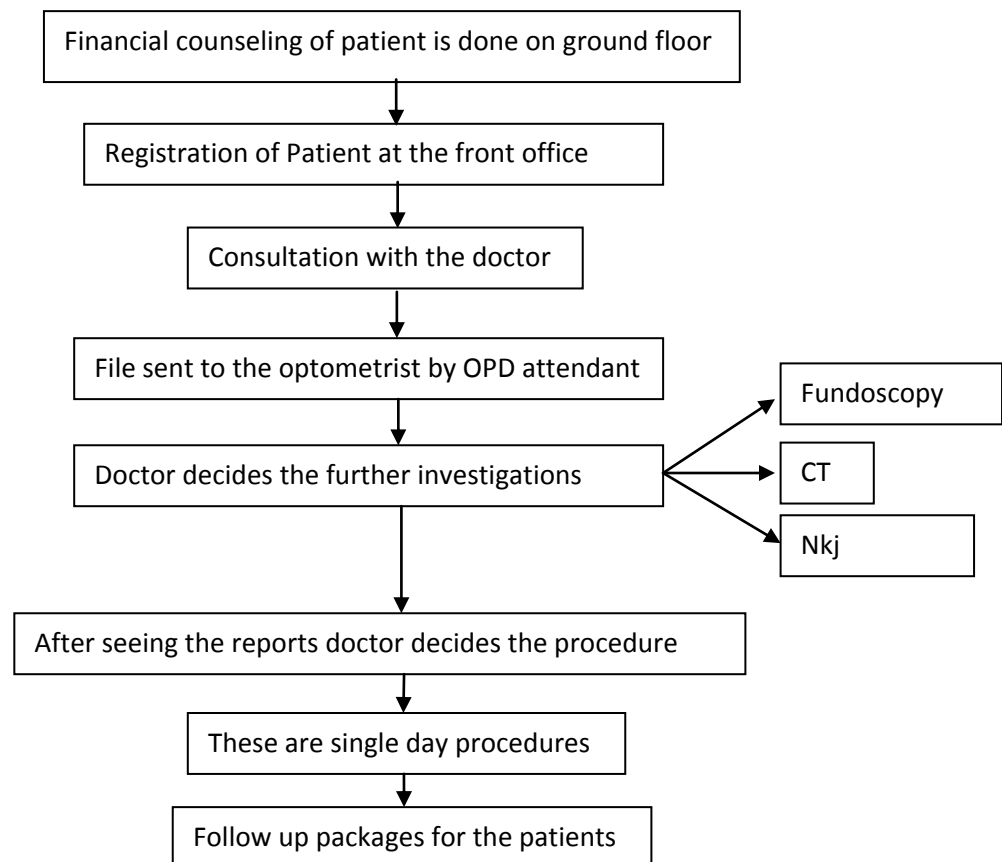
Layout: Rehab block, 3rd floor

Staff: 14

Organogram:



Process flow

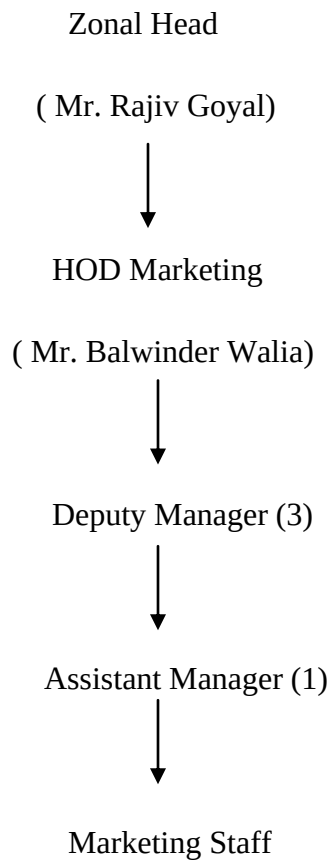


MARKETING DEPARTMENT

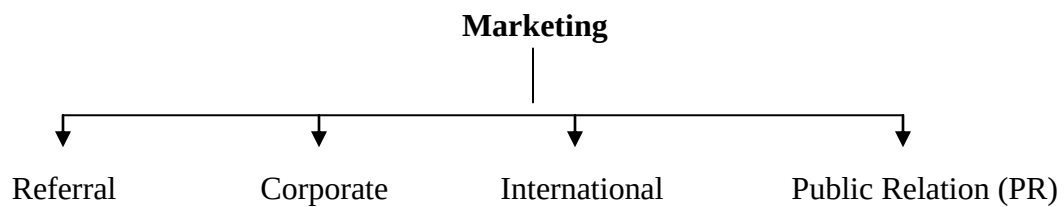
Layout: -Rehab block, 4th floor

Total Staff: 21

Organogram:



Marketing Pattern:



1) Referral :

- Community Education Programmes (CME)
- General Practitioners
- Picnics
- Community Outreach Programs (COP) i.e. Free Community Checkup Camps
- Friends of Escorts (FOE)
- *Nannichhav*

2) Corporate

- Empanelment/ Corporate Tie ups
- PSU's Tie-ups
- TPA Tie Ups
- Summits
- Workshops

3) International

- Embassy
- Doctors
- Facilitators

4) P.R

- Press Conferences
- Shoots/ Interviews
- Print Media: Newspapers, Magazines
- Branding: Events, Conferences, Trade shows.

LOCAL PUBLICITY

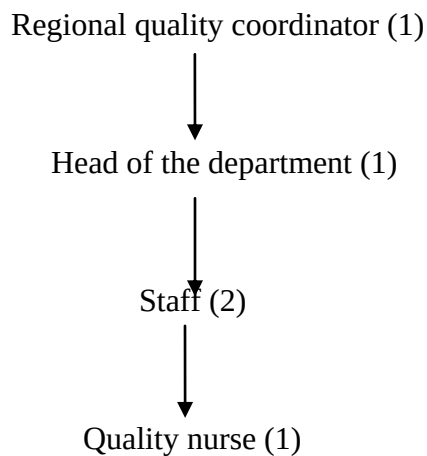
- TV ads / Cable ads
- Newspaper Ads
- Ads in local magazines, supplements, directories
- Leaflets , Pamphlets and Flyers
- Direction Boards
- Kiosks
- Hoardings
- Hospital Board (Glow sign)
- SMS Health Tips & Discount scheme

QUALITY DEPARTMENT

Layout: - 4th floor

Staff: 4

Organogram:



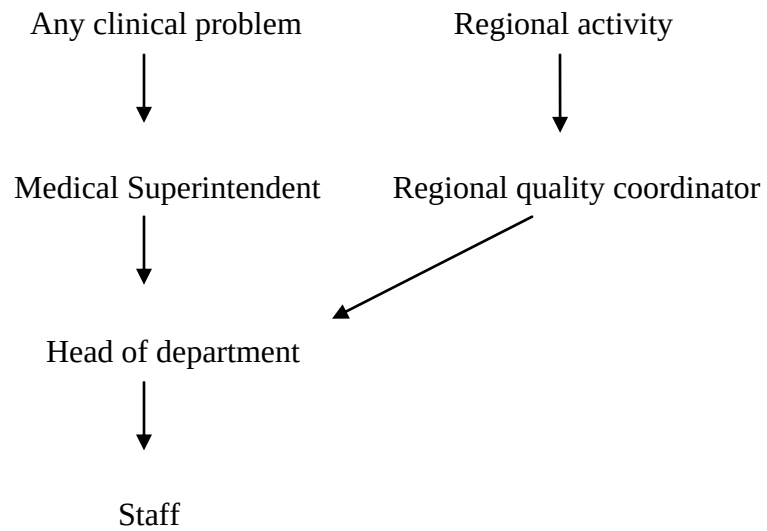
There is one regional quality coordinator who sits at FEHI. There are around 7 units which comes under this supervision. They are

- FEHI
- Fortis Vasant Kunj
- Fortis la femme
- Fortis Amritsar
- Fortis Mohali
- Fortis Raipur
- Fortis Raigarh

Functions of quality department

- Clinical and non clinical audit
- Policy making
- Quality initiative
- Committee meeting coordination
- Organizing meeting and taking the minutes
- Various committee organized by quality department are:-
 - Infection control committee
 - Safety and quality staring
 - HR committee
 - Pharmacy and therapeutical committee
 - Medical audit committee
 - Medical record committee
 - OT committee
 - Sexual harassment committee
 - Independent ethics committee
 - Executive council committee
 - Institutional review board committee

Process flow

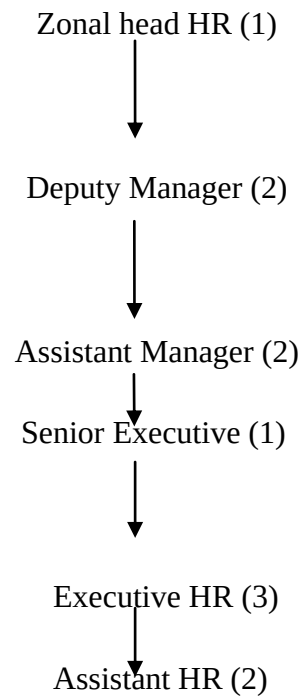


HUMAN RESOURCE DEPARTMENT

Layout: -4th floor

Total Staff: 11

Organogram:



Jobs & Responsibilities:

- Manpower Planning
- Internal Job Posting Process
- CV Selection
- Credential Policy
- Confirmation and Appraisal
- Staff Queries
- Follow up with selected candidates
- Issuing of appointment letters
- Disciplinary Policy
- Leaves sanctioning
- Payroll
- Budgeting for departments
- Doctors payout
- Duty roster
- Issuing of Experience letters
- Investigation of staff grievances
- Issues of slow cause
- Salary statement
- Full n final settlement
- Outsource staff attendance
- Induction and orientation
- Finger print report checking
- Manpower planning
- Dispatch of salaries
- Pre recruitment calls
- Organizing interviews
- Housekeeping of CV'S
- Preliminary interviews
- Joining formalities
- Leave record maintenance

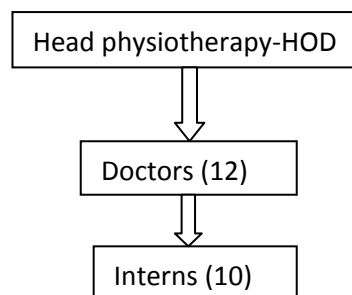
- Issuing of I-Cards
- Conducting Employee Welfare Programme e.g. Nurse Day
- Issuing of Refreshment Coupons
- Conducting Exit Interviews.

PHYSIOTHERAPY DEPARTMENT

Layout: Rehab block, 6th floor

Total Staff: 12

Organogram:



EQUIPMENTS AVAILABLE

1. Computerized IFT
2. Ultra sound machine
3. Traction unit
4. Microprocessor based 4 channels T.E.N.S.
5. Physiotherm pulsed 500ss

INTRODUCTION

‘**CODE BLUE**’ is an emergency response system for alerting the defined team combining of anesthetic , cardiologist , critical care for immediate medical attention at the site from where the code is called.

The objective of code blue policy and procedure at Fortis Escorts Heart Institute, Okhla is to ensure a skilled and timely response to a life threatening emergency such as a cardiac and respiratory arrest , or a pre cardiac or pre-respiratory arrest. The success of cardiopulmonary resuscitation (CPR) depends upon prompt initiation of basic cardiac life support, co-ordination of advance resuscitative skills among team members, on the scene health professionals and others.

Cardiopulmonary resuscitation (CPR) is a procedure to support and maintain breathing and circulation for a person who has stopped breathing and/or whose heart has stopped functioning abruptly. CPR is performed to restore and maintain breathing and circulation and to provide oxygen and blood flow to heart brain and other vital organs.

CPR is the part of emergency cardiac care which can save many lives. Many deaths can be prevented by prompt recognition of the problem and notification of the emergency medical system (EMS), followed by early CPR, and advanced cardiac life support measures.

FEHI being a cardiac care hospital and most of its patients of cardiac ailments, it is extremely important to improve and strengthen the code blue program for sudden cardiac arrest patients so that they can be saved. Standard policies and procedures were laid down by Code Blue Committee to review and strengthen support system, infrastructure and the functionality of the code blue team.

STATEMENT OF PROBLEM

Patterns of hospital bases emergency resuscitation practices shows a marginal effect on cardiac arrest patient revival and survival. So this study is taken to understand and identify the improvement areas in CPR management during Code blue calls and to benchmark the current procedure with international standards to further improve quality of emergency medical services (EMS) at FEHI.

OBJECTIVES OF STUDY

- To analyze the code blue process statistically and its outcome.
- To identify the improvement areas in CPR management by resuscitation documentation auditing.
- To measure the operational efficiency of the CPR team during cardio respiratory emergencies.

METHODOLOGY

I. Area of research

FORTIS ESCORTS HEART INSTITUTE, OKHLA, New Delhi.

II. DURATION OF STUDY

4 months (1ST JANUARY to 30TH APRIL 2012)

III. STUDY DESIGN

- Retrospective – uses historical data to understand trends.
- Analytical - to use facts or already available information for critical evaluation.
- Cross sectional

IV. SAMPLING TECHNIQUE

Purposive sampling

V. SAMPLE SIZE

Total number of CPR events reported – 134

VI. TOOLS AND TECHNIQUE

i. Data sources

- Coder sheet
- CPR form
- In hospital patient record

ii. **Statistical tools**

- Bar diagrams
- Pie charts
- Questionnaire

REVIEW OF LITERATURE

[Annals of Emergency Medicine](#) [1981, 10(8):408-16]

- I. A study was carried out on 1073 cases of cardiopulmonary resuscitation (CPR) at St. Elizabeth Medical Center (SEMC), Boston US and it was analyzed and compared with 13,266 hospital CPR cases in the literature.

Determinants of study was

- Place of cardiac arrest (in hospital CA)
- Age of patient

Findings

- CPR success rate was unaffected by patient location within the hospital. But most patients initially arrested in emergency department and had the best survival to discharge rate.
 - Study shows that the SEMC hospital had a CPR success rate of 56 % and survival to discharge rate of 24 % which is better than 39% and 17 % respectively when compared with literature.
- II. **A study was carried on retrospective review of CPR attempts at the Veterans Affairs Medical Center at Dayton, Ohio.**

431 CPR attempts were recorded for 340 patients by code blue team. Out of them 53 patients had multiple CPR attempts and 190 (53%) could not be resuscitated during CPR.

Determinants of study was

- Outcome for patient who had CPR during a 2 year period.

- Effect of age variable on survival rate.
- Effect of CPR duration on survival rate.
- A point system was assigned to each procedure and medication given during CPR and then a correlation was made between point score and survival rate.
- Effect of witnessed and unwitnessed cardiac arrest on survival rate.

Findings



OUTCOME	NUMBER	%
Survived initially	150	40
Alive 24 hour after CPR	102	30
Alive 1 month after CPR	44	13
Alive 6 month after CPR	22	6
Alive 1 year after CPR	16	5
Alive 4 year after CPR	5	1.5

- Most of the patients in study were elderly. Mean age of all the patients in the study was 66.9 years. Mean age of initial survivors versus non survivors of CPR was not significantly different.
- Survival among patients who had prolonged CPR was significantly lower than patients who had CPR of shorter duration.
- Lower the point score as per scoring system longer the patient survived. In other words, patients who were resuscitated quickly and with few procedures were more likely to survive longer than patients who had more procedures.
- Out of total patients 216 had witnessed cardiac arrest and 124 had unwitnessed cardiac arrest. Only 27 patients (22%) with unwitnessed arrests were successfully resuscitated compared to 123 (57%) patients with witnessed arrests.

‘CODE BLUE’ is an emergency response system for alerting the defined team combining of anesthetic , cardiologist , critical care for immediate medical attention at the site from where the code is called.

Cardiopulmonary resuscitation - A life saving emergency procedure that involves breathing for the victim and applying external chest compression to make the heart pump. In the early stages of a heart, death can often be avoided if a bystander starts CPR within 5 minutes of the onset of ventricular fibrillation. When paramedics arrive, medications and/or electrical shock (cardio version) to the heart can be administered to convert ventricular fibrillation to a normal heart rhythm. Prompt CPR and advanced cardiac life support can improve the chances of survival from a heart attack.

Basic life support (BLS) - is the level of medical care which is used for patients with life-threatening illnesses or injuries until the patient can be given full medical care at a hospital. It can be provided by trained medical personnel, including emergency medical technicians, paramedics, and by laypersons who have received BLS training. BLS is generally used in the pre-hospital setting, and can be provided without medical equipment.

CPR has to be performed within four to six minutes after cessation of breathing so as to prevent brain damage or death. When performed by a bystander, CPR is designed to support and maintain breathing and circulation until emergency medical personnel arrive and take over. When performed by healthcare personnel, it is used in conjunction with other basic and advanced life support measures. However, many CPR attempts are not ultimately successful in restoring a person to a good quality of life.

When performed quickly enough, CPR can save lives in such emergencies as loss of consciousness, heart attacks or heart "arrests," electric shock, drowning, excessive bleeding, drug overdose, and other conditions in which there is no breathing or no pulse.

The purpose of CPR is to bring oxygen to the victim's lungs and to keep blood circulating so oxygen gets to every part of the body. When a person is deprived of oxygen, permanent brain damage can begin in as little as four minutes and death can follow only minutes later.

A simple mnemonic is used to aid memory of the clinical approach to the unconscious patient and CPR. The most common one used worldwide is A-B-C which stands for **A**irway, **B**reathing and **C**irculation. But now sequence has been changed and steps followed in basic life support (BLS) is C - A - B (circulation, airway and breathing) according to the AHA CPR guidelines October 2010 act.

The steps usually followed in CPR are as follows:

- If the victim appears to be unconscious with either no breathing or no pulse, the person should be shaken or tapped gently to check for any movement. The victim is spoken to loudly, asking if he or she is OK. If there is no response, emergency help must be called and CPR begun immediately.
- The victim is placed on his or her back on a level surface such as the ground or the floor. The victim's back should be in a straight line with the head and neck supported slightly by a rolled up cloth, small towel, or piece of clothing under the neck. A pillow should not be used to support the head. The victim's clothing should be loosened to expose the chest.
- The rescuer kneels next to the victim, tilts the victim's head back, lifts the jaw forward, and moves the tongue forward or to the side, making sure it does not block the opening to the windpipe. The victim's mouth must be kept open at all times, reopening as necessary.
- The rescuer listens close to the victim's mouth for any sign of breathing, and watches the chest for movement. If the victim is found to be breathing, and has perhaps fainted, he or she can be placed in the recovery position until medical assistance arrives. This is done by straightening the victim's legs and pulling the closest arm out away from the body with the elbow at a right angle or 3 o'clock position, and the other arm across the chest. The far leg should be pulled up over the victim's body with the hip and knee bent. This allows the victim's body to be rolled onto its side. The head should be tilted back slightly to keep the windpipe open. The head should not be propped up.

- If the victim is not breathing, rescue breathing begins, closing the victim's nostrils between a thumb and index finger, and covering the victim's mouth with the rescuer's mouth. Two slow breaths, about two seconds each, are breathed into the victim's mouth with a pause in between. This is repeated until the chest begins to rise. The victim's head should be repositioned as often as necessary during the procedure. The mouth must remain open and the tongue kept away from the windpipe.
- When the chest begins to rise, or the victim begins to breathe on his or her own, the rescuer looks for signs of circulation, check CAROTID ARTERY 10 seconds for adults check BRACHIAL ARTERY for infants .If no pulse start compression.
- If chest compressions are needed to start, the rescuer will place the heel of a hand above the lowest part of the victim's ribcage where it meets the middle-abdomen. The other hand will be placed over the heel of the first hand, with fingers interlocked. Keeping the elbows straight, the rescuer will lean his or her shoulders over the hands and press down firmly about 30 times. It is best to develop an up-and-down rhythm, keeping the hands firmly on the victim's chest.
- After the compressions, the rescuer will give the victim two long breaths. The sequence of 30 compressions and two breaths will be repeated until there are signs of spontaneous breathing and circulation or until professional medical help arrives for Defibrillation and Advanced life support.

CALL



CALL 911

BLOW



**TILT HEAD,
LIFT CHIN,
CHECK
BREATHING**



**GIVE TWO
BREATHS**

PUMP



**POSITION HANDS
IN THE CENTER OF
THE CHEST**



**FIRMLY
PUSH DOWN
TWO INCHES
ON THE CHEST
30 TIMES**

**CONTINUE WITH TWO BREATHS
AND 30 PUMPS UNTIL HELP ARRIVES**

FIGURE 1 – CARDIOPULMONARY RESUSCITATION

Advanced cardiac life support (ACLS) - refers to a set of clinical interventions for the urgent treatment of cardiac arrest and other life threatening medical emergencies. It relies on the monitoring of the electrical activity of the heart on a cardiac monitor. Depending on the type of cardiac arrhythmia, defibrillation is applied, and medication is administered. Oxygen is administered and endotracheal intubation may be attempted to secure the airway. At regular intervals, the effect of the treatment on the heart rhythm, as well as the presence of cardiac output, is assessed.

Defibrillation is the definitive treatment for the life-threatening cardiac arrhythmias, ventricular fibrillation and ventricular tachycardia. Defibrillation consists of delivering a therapeutic dose of electrical energy to the affected heart with a device called a **defibrillator**. This depolarizes a critical mass of the heart muscle, terminates the arrhythmia, and allows normal sinus rhythm to be reestablished by the body's natural pacemaker, in the sino atrial node of the heart.

TYPES OF DEFIBRILLATOR –

- Monophasic (360 joule)
- Biphasic (120 to 200 joule)

Defibrillators can be external, transvenous, or implanted, depending on the type of device used. Some external units, known as automated external defibrillators (AEDs), automate the diagnosis of treatable rhythms, meaning that lay responders or bystanders are able to use them successfully with little, or in some cases no, training.

Automated external defibrillators (AED) are based on computer technology which is designed to analyze the heart rhythm itself, and then advise whether a shock is required. They are designed to be used by lay persons, who require little training.

Return of spontaneous circulation (ROSC) is resumption of sustained perfusing cardiac activity associated with significant respiratory effort after cardiac arrest. Signs of ROSC include breathing, coughing, or movement and a palpable pulse or a measurable blood

pressure. Cardio pulmonary resuscitation and defibrillation after cardiac arrest increases the chances of ROSC.

CODE BLUE COMMITTEE

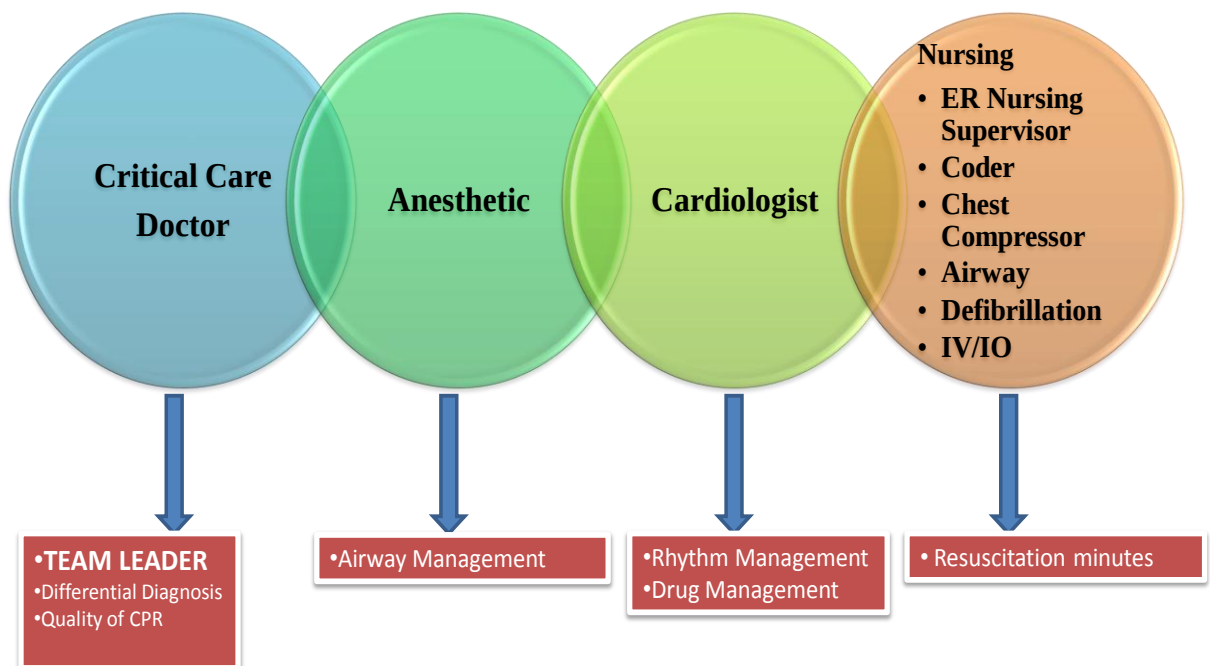
A separate code blue committee was developed to facilitate the smooth handling of Code Blue events. **Member's are-**

- Medical Superintendent
- Head of Emergency
- Head of Anesthesia
- Head of Cardiology
- Head of critical care
- Head of security
- Head of nursing
- Head of IT

Regular meetings are conducted to discuss the variations in the Code Blue events and the need of improvement. The committee establishes and reviews the standards, policies and procedures related to the Code Blue. **Frequency of the meeting: once a quarter**

CODE BLUE TEAM

Organization of **CODE BLUE** Team



Team deals with any medical emergency to give basic and advanced life support to the patient.

CODE BLUE RESPONSE

- CPR to be started and continued by all available staff till arrival of code blue team
- Bag mask ventilation to be done till arrival of anesthetist/ on instructions of team leader
- All the staff to clear out on arrival of code blue team

Senior nurse:

- i. Start recording events in the code blue running sheet
- ii. Ensure availability of Glucometer and BP apparatus through other nurse
- iii. Create labels for blood samples
- iv. Hand over the required medications to staff nurse
- v. Dispatch blood samples to lab as required by the team leader
- vi. Process the patient for transfer to ICU/mortuary at the end of code blue

Priority for Code Blue nurses:

- i. Obtain and open Crash Cart
- ii. Hand over laryngoscope and ET tube to anesthetist/ competent person
- iii. Administer medications as per Team Leader
- iv. Obtain blood sugar level by Glucometer
- v. Transfer the patient at the end of code blue

Priority for team leader

- i. Attach defibrillator leads and obtain baseline recording
- ii. Interpret ECG finding and advice medications accordingly
- iii. Ask nurse to do glucometer check
- iv. Obtain ECG recordings after every 5 minutes interval or sooner if there is a change in cardiac rhythm
- v. Order DC shocks, medications, tests as required
- vi. Confer with primary consultant at the end of code blue
- vii. Discussions with patient's family at the end of code blue
- viii. Write detailed CPR notes

Priority for **anesthetist**

- i. Establish airway and breathing
- ii. Establish venous access if not done so far

Residents / CCC

- i. Start cardiac massage and rotate every 3-5 minutes
- ii. Start venous access
- iii. Give DC shock as advised by team leader
- iv. Check vitals as desired by team leader

CRASH CART

Crash Cart is a multi shelf, movable trolley which contains all sorts of drugs, equipments and consumables required during medical emergency. The list of drugs and equipments is compiled by the code blue committee and is reviewed as and when required.

Drugs are stocked and checked by pharmacy. Pharmacy shall replace the used medications in the crash cart immediately without any delay after the Code Blue.

Crash cart is sealed and opened only during the Code Blue. Nurses have to check seal intact at every shift change. Detailed quarterly audits are done by pharmacy.

- ✓ Coder sheet and CPR forms are the important tools to document , monitor and improve code blue process. Coder sheet is filled by nurse team leader during the Code Blue.

Figure 2 - CPR FORM



**ESCORTS
HEART INSTITUTE &
RESEARCH CENTRE**

A Fortis NETWORK HOSPITAL
Okhla Road, New Delhi-110 025, INDIA
Phone : 26825000, 26825001
AN ISO 9001 INSTITUTE

PATIENT NAME : _____

EHIRC NO. _____ IPD NO. _____

AGE: _____ SEX: _____ WARD: _____

CARDIOPULMONARY RESUSCITATION RECORD

Date _____ Time Event Recognized _____ Location _____ Witnessed: ☐ Yes ☐ No
 Age _____ Weight _____ Height _____ Hospital-wide resuscitation reeponse activated? ☐ Yes ☐ No
 Illness Category : ☐ Medical Cardiac ☐ Medical Noncardiac ☐ Trauma
 ☐ Surgical Cardiac ☐ Surgical Noncardiac ☐ Other _____
 Condition when need for chest compression/defibrillation was identified? ☐ Pulseless ☐ Pulse (poor perfusion)
 Did the patient with a pulse requiring compressions became pulseless? ☐ Yes ☐ No
 Was patient conscious at onset? ☐ Yes ☐ No ☐ Event Detected by ☐ ECG ☐ Pulse Oximeter ☐ Apnea

Airway / Ventilation	Frist Rhythm Requiring compressions :
Breathing at Onset : Spontaneous / Apneic / Agonal / Assisted	Frist Documented PULSELESS Rhythm : _____
Time of First Assisted Ventilation :	compressions: ☐ None ☐ Manual ☐ Device : _____
Ventilation : ☐ Bag-Valve-Mask ☐ Endotracheal Tube	Time chest compressions started: _____
☐ Tracheostomy ☐ Other: _____	AED applied: ☐ Yes ☐ No Time applied: _____
Intubation : Time: _____ Size: _____	Defibrillator type(s): _____
By Whom: _____	Pacemaker On: ☐ Yes ☐ No
Confirmation ☐ Auscultation ☐ Exhaled CO ₂ ☐ Other	

Bolus - Dose / Route

Infusions - Dose / ml per hour

Time	Breathing		Pulse		BP	Rhythm	AED	Manual	Joules	Amiodarone Dose / IV	Atropine Dose / IV	Epinephrine Dose / IV	Lidocaine Dose / IV	Vasopressin Dose / IV	Dopamine	Dobutamine	Epinephrine	Norepinephrine	Comments : I.e. : Peripheral/Central Line Placement, Chest tube, Vital Sign, ABG, Response to Interventions
	Spontaneous	Assisted	Spontaneous	Compression															

Time Resuscitation Event Ended: _____ Status: ☐ Alive ☐ Dead
 Reason Resuscitation Ended: ☐ Return of Circulation (ROC) > 20 min ☐ Efforts Terminated (No Sustained ROC)

Recorder Signature _____ ID # _____ Team Leader Name _____ ID# _____
 Code Team Nurse Signature _____ ID# _____ Team Leader Signature _____
 Signature Medical Superintendent _____

Entered by Name _____ Sig. _____ ID _____ ECG (Strips Posted on Back)
 Nursing Team Leader Name _____ Sig. _____ ID _____
 Doctor Name _____ Sig. _____ ID _____
 WAD/63-00 20 Pads/09/07/Shivam

CODE BLUE ANALYSIS

Table – 1

Month	Total No of CPR events reported
January	36
February	26
March	48
April	24

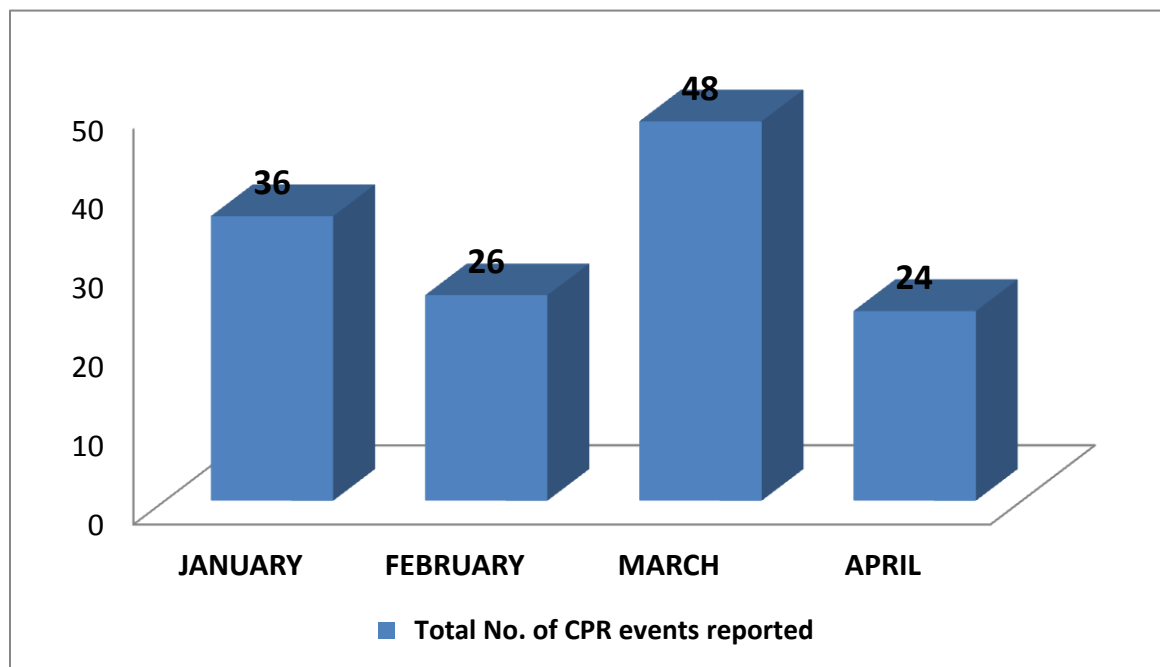


Figure 2 – Month wise number of CPR events reported

Table 2

Month	Code Blue	Total No. of Admission	Percent
January	35	1565	2.24%
February	26	1755	1.48%
March	48	1851	2.60%
April	24	1683	1.43%
Total	134	6854	

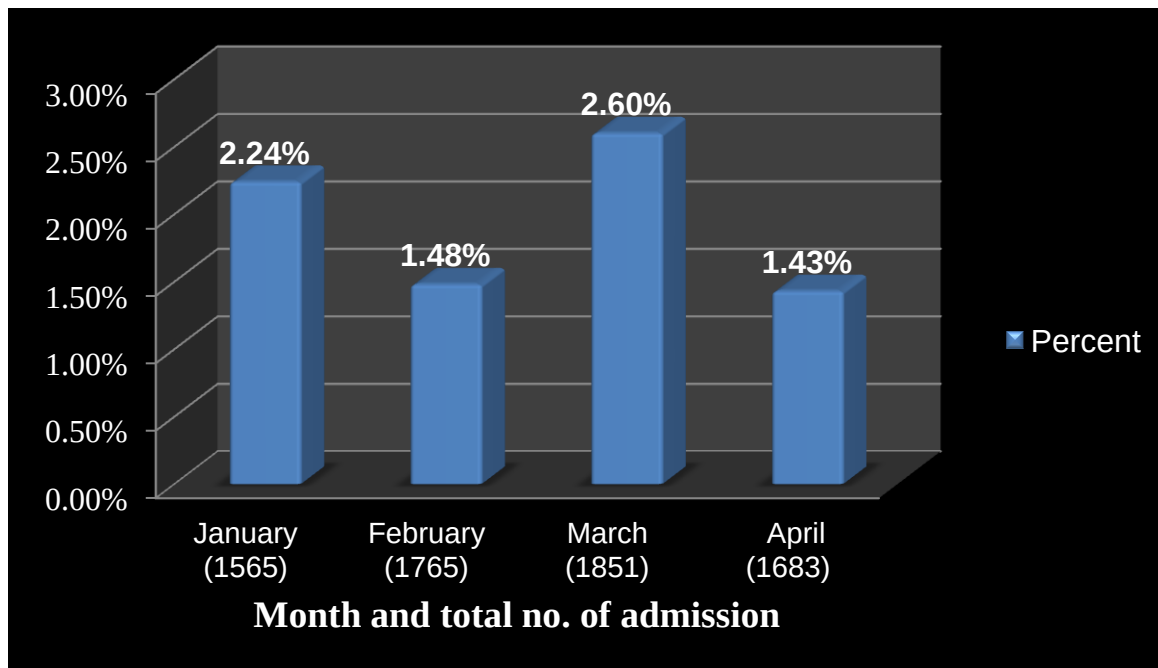


Figure 3 – Percentage of code blue with admission

Table 3

Area	No of CPR EVENTS
HCC I and II	70
ICU I and II	31
EMR	8
PICU I and II	12
RR I , II ,III	9
WARD	1
CATH LAB and DAY CARE	3

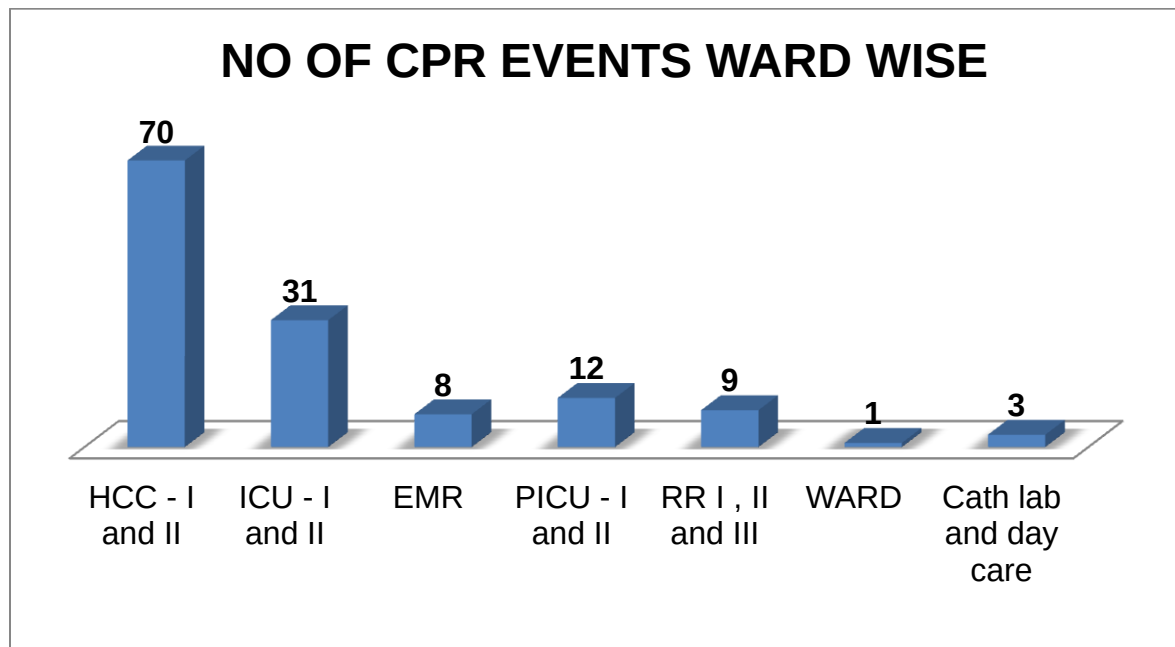


Figure 4 -Ward wise categorization of total no of CPR events reported.

Table 4

DEPARTMENT	SUCCESSFUL	UNSUCCESSFUL
HCC I and II	12.86 %	87.14 %
ICU I and II	0 %	100 %
EMR	25 %	75 %
PICU I and II	33.33 %	66.67 %
RR I ,II and III	33.33 %	66.67 %
WARDS	100 %	0 %
CATH LAB and DAY CARE	33.33 %	66.67 %

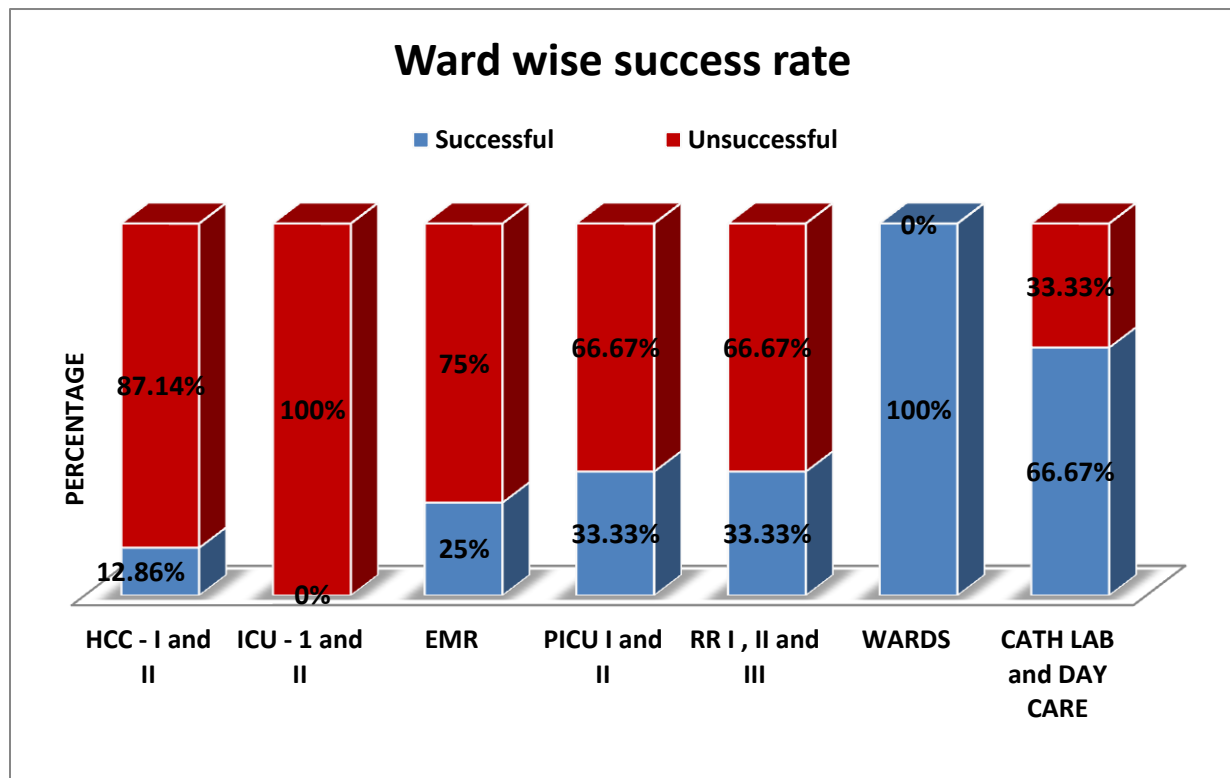


Figure 5 – Ward wise success rate of CPR events reported

Table – 4

Total CPR events	134
CPR to ROSC	21
DISCHARGE	5

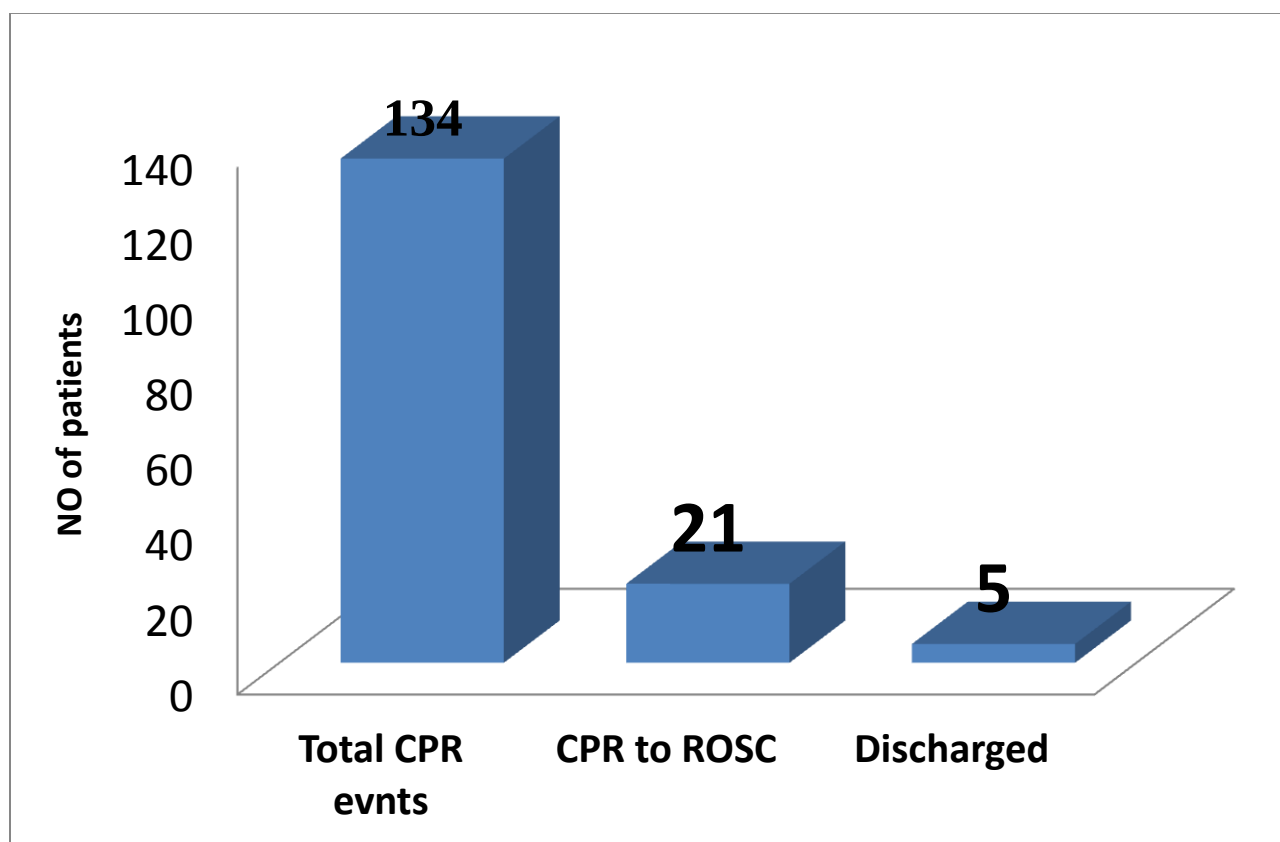


Figure 6 – CPR to ROSC till survival and discharge

Table – 5

Age group(yrs)	Male	Female
35 - 55	19	2
55 -75	38	22
75 n above	19	14

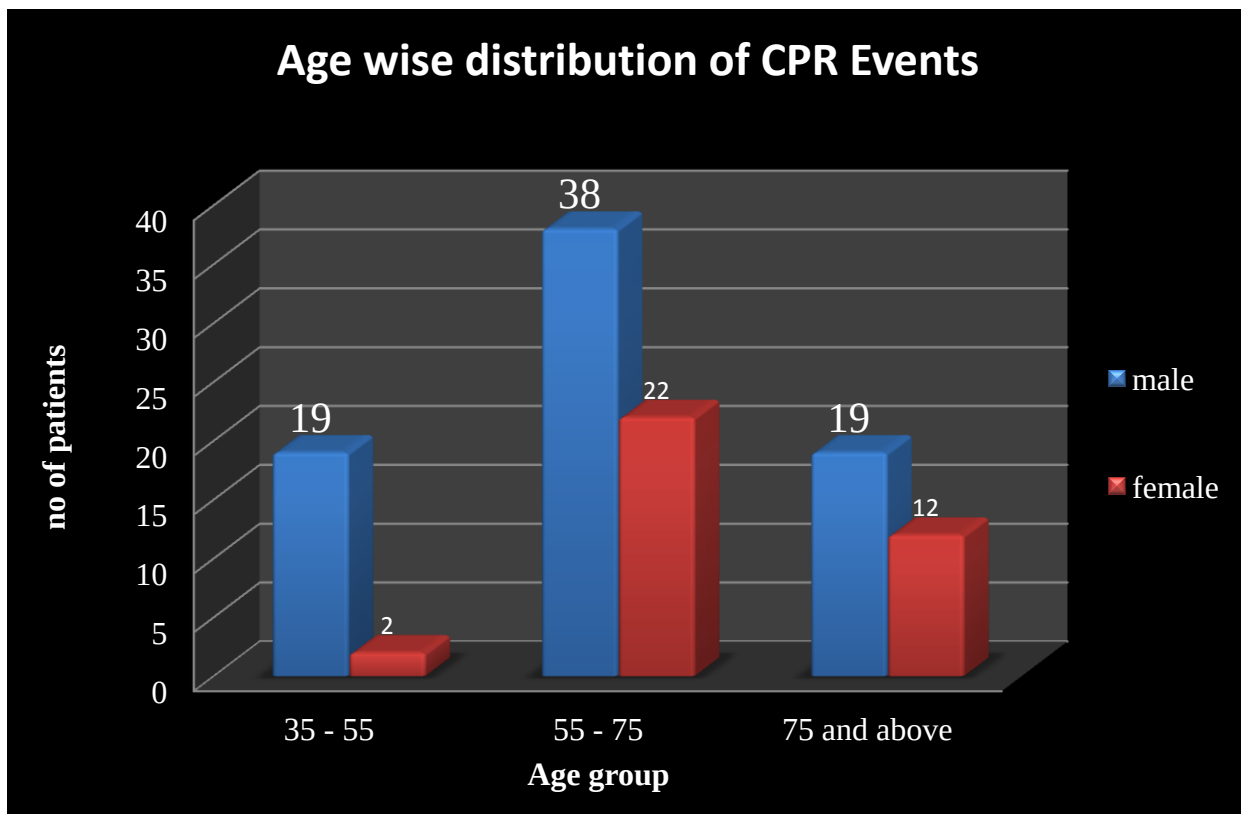


Figure 7 – Age wise distribution of CPR events reported.

Table 6

Documentation errors ward wise

Errors	HCC I & II	ICU I & II	RR	EMR	PICU
Wrong rhythm identification	15	4	2		1
Wrong drug administration	5	1	1	2	
INCOMPLETE FORMS	41	23	3	3	3
INCORRECT FORMS	15	8	4	2	2

Code Blue process improvement

APPROACH

I have used a very common problem solving approach for code blue process.

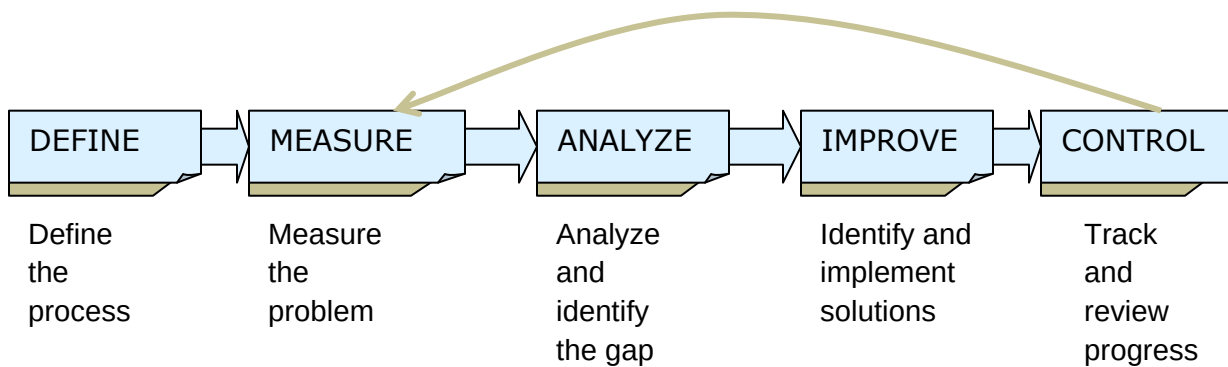
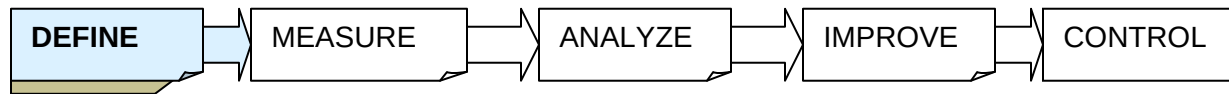


Figure 8 - DMAIC Model

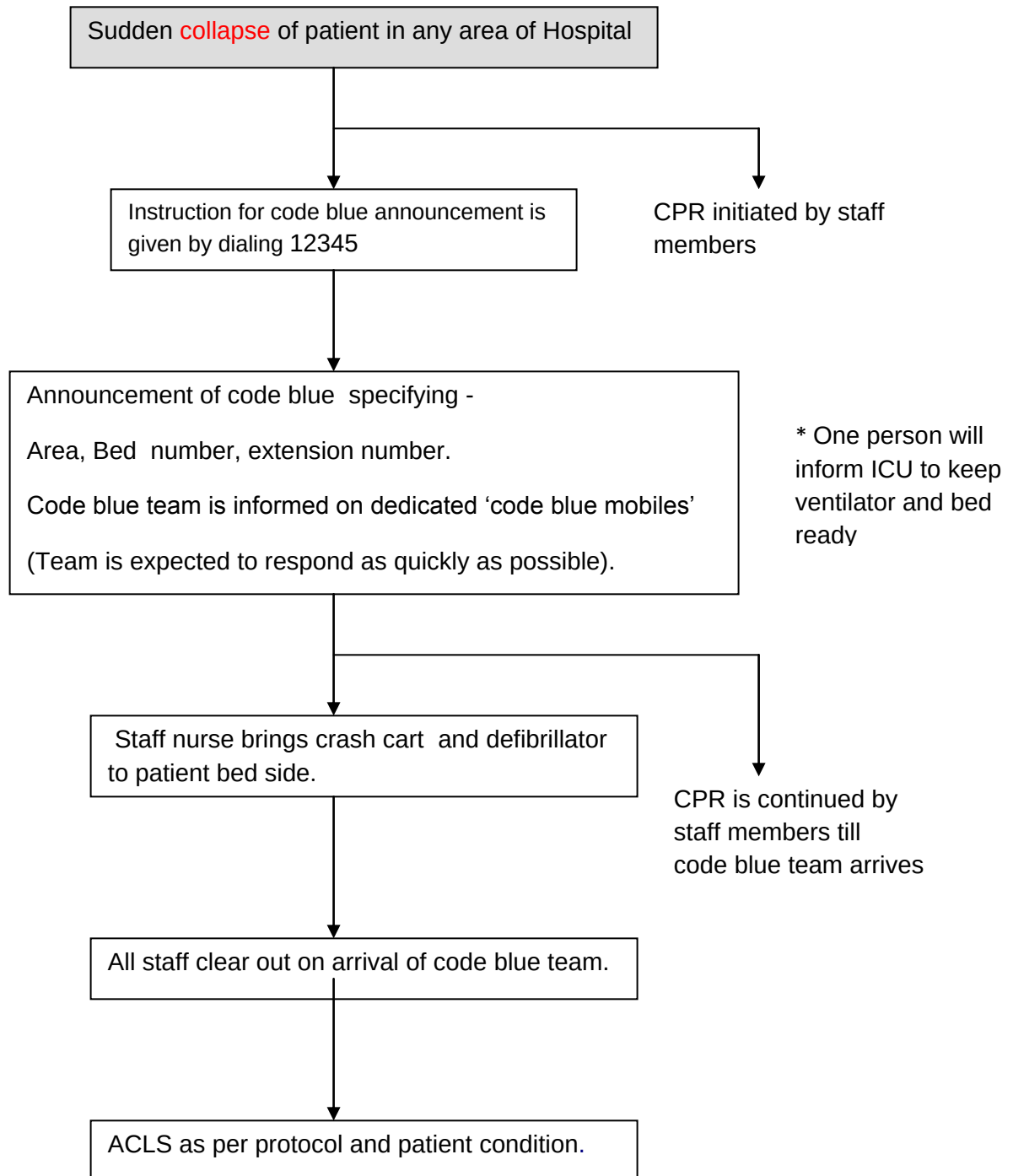
Above approach is used to map, understand and improve the existing code blue process. It includes the work flow, time and efficiency management of the code blue team. Recommendations and control of code blue process is based on previous data as well as current pilot study done through questionnaire and interviewing various personnel involved in code blue process.

STEP 1



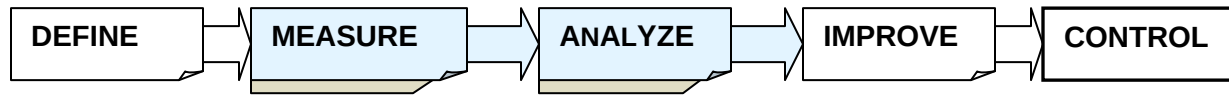
Map the existing process

CODE BLUE PROCESS



- Coder sheet is filled simultaneously.

STEP 2



In-depth data mining and analysis

Assess scope for improvement based on benchmarks.

QUESTIONNAIRE

A questionnaire was prepared using inputs from various members from Code Blue team.

Objectives:

- To measure the level of awareness of Code Blue
- To understand effectiveness of policies and procedures of Code Blue implemented in hospital
- To identify problems faced by staff during Code Blue process
- To obtain feedback and suggestions for further improvement.

Questionnaire was distributed among nurses staffed in various thrust areas of hospital (i.e. where most of Code Blue cases are encountered)

1) How do you call for a Code Blue?

- By dialing number 11
- By dialing number 12345
- By dialing any number 1234
- Do not know

2) Indication for Code blue

- Only cardiac arrest
- Only respiratory arrest
- Both
- Any medical emergency which staff is unable to handle

- 3) How much time does it take for code blue team to arrive at the place of emergency?
- 1 to 2 minutes
 - 3 to 4 minutes
 - 5 to 6 minutes
 - More than 6 minutes
- 4) Do you always start and continue the CPR till the arrival of code blue team?
- Yes
 - No
- 5) How much time does it take for the pharmacy to replace used medications in the crash cart after the Code blue event?
- 1 to 4 hours
 - 5 to 8 hours
 - More than 9 hours
 - Within 15 minutes
- 6) Who is the team leader of code blue team?
- Critical care doctor
 - Surgical registrar
 - Cardiologist
 - Anesthetic
- 7) Do you always check the seal intact with crash cart at every shift change?
- Yes, always
 - Often
 - Rarely
 - Never

8) What are the problems you face during code blue? (Please specify and explain)

- Code blue team arrival
- In rescuing and resuscitation
- In transfer of patient
- Medications and equipments

9) What type of training have you been provided for code blue?

- BLS
- ACLS
- BLS and ACLS both
- Mock drill

10) When was the last training provided?

11) Who is being trained?

- Medical Staff ☐ Yes ☐ No
- Nursing Staff ☐ Yes ☐ No
- Administration ☐ Yes ☐ No

12) Your feedback and suggestions to improve code blue process.....

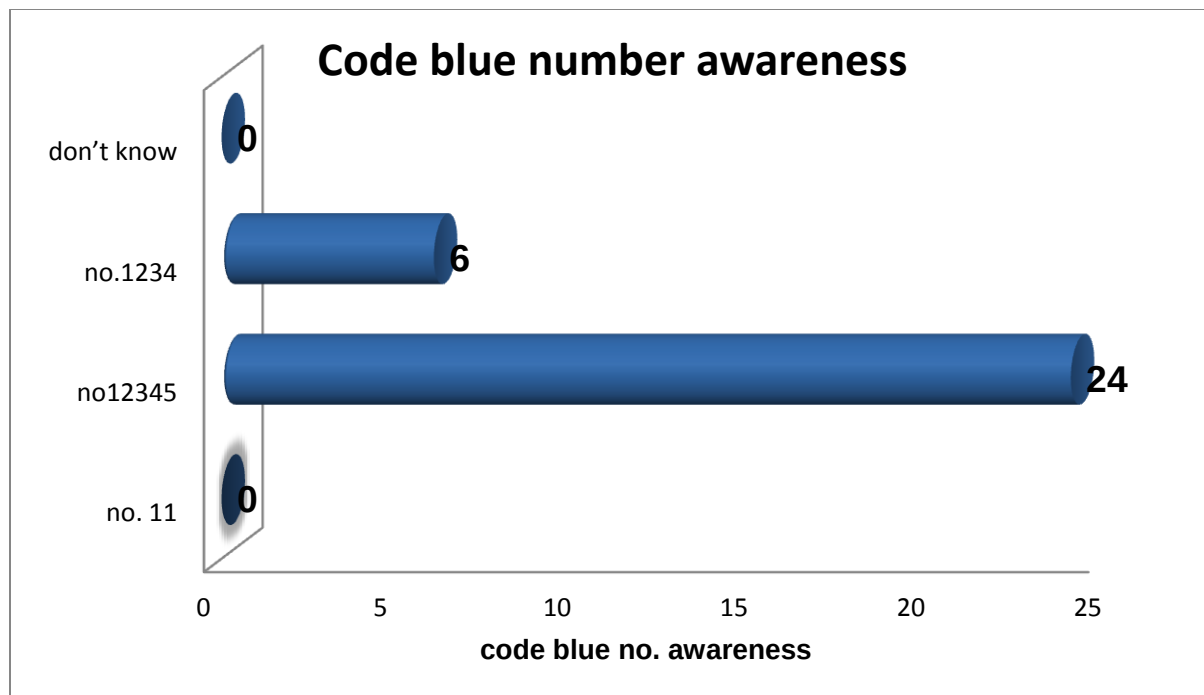


Figure 8

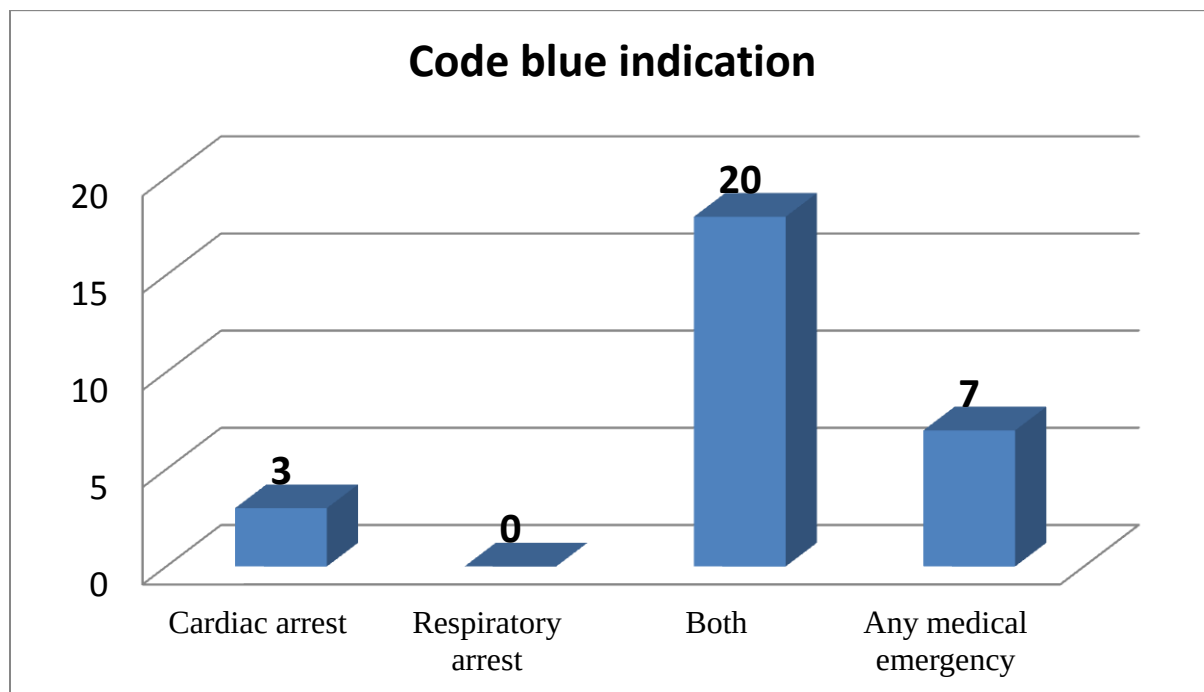


Figure 9

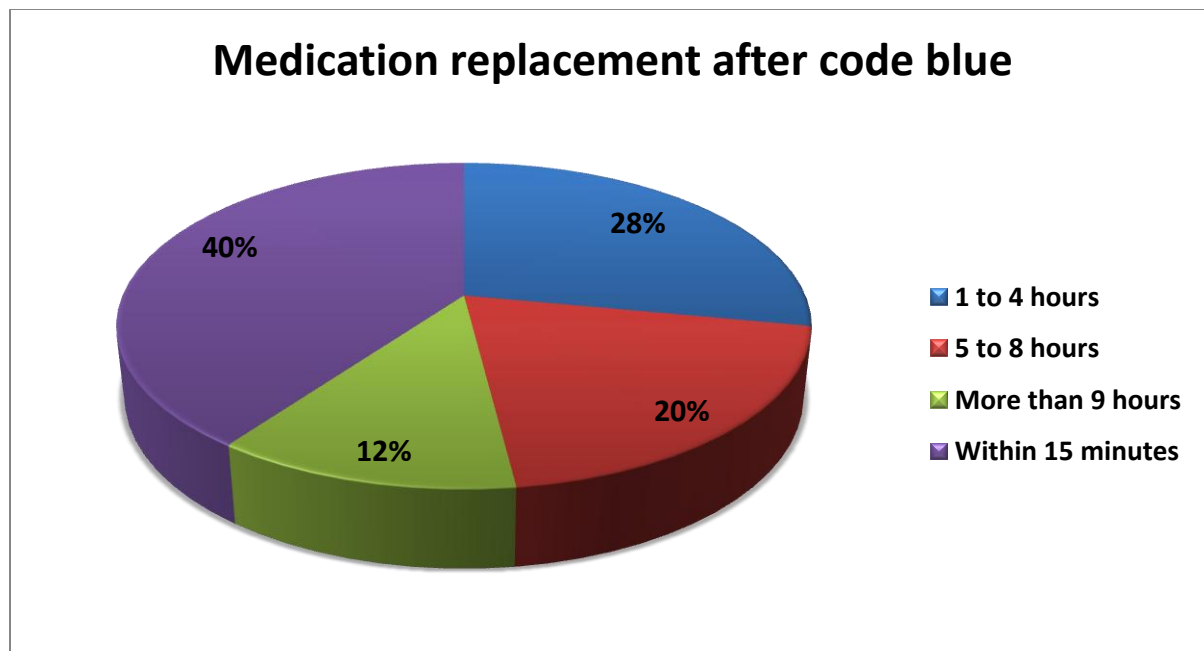


Figure 10

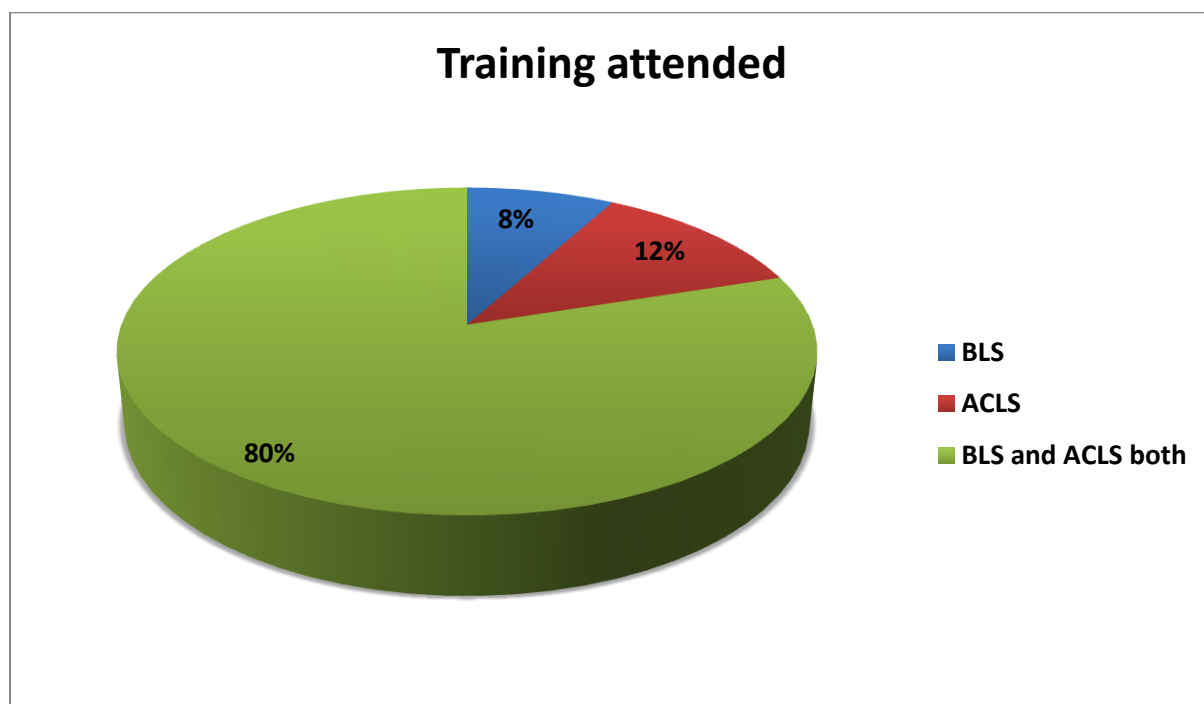


Figure 11

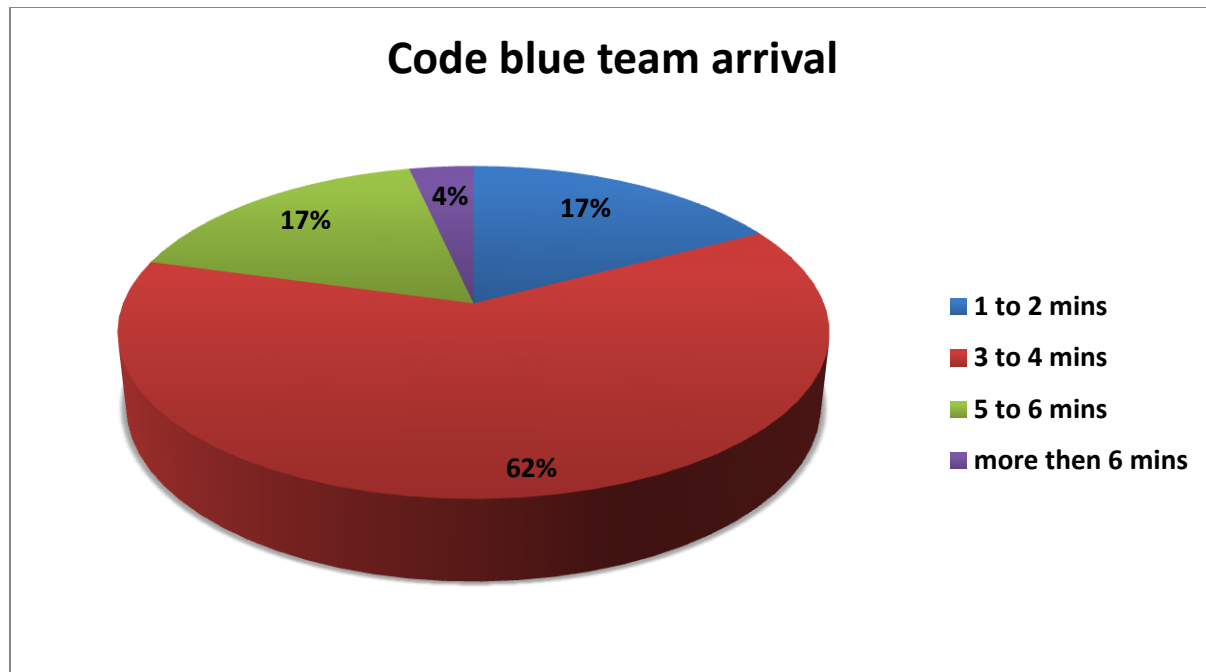
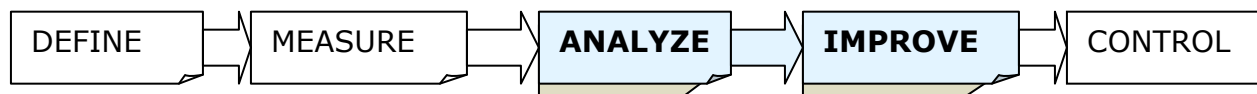


Figure 12

STEP 3



Analyze data to understand problem.

Improve the process by suggestions based on the analysis made.

ANALYSIS

Indication for Code Blue

- 18 out of 30 were aware of emergent cardio respiratory arrest calls for Code Blue.

Time taken for team member/members to reach emergency site

- 17% says response time of code blue team is 5-6 min and 4% said it is beyond 6 minutes.

Medication replacement in Crash cart after code blue

- Only 40 % says that medicines are replaced immediately and 12 %, says it takes more than 9 hrs and 20 % says it takes 5 to 8 hrs to replace medication

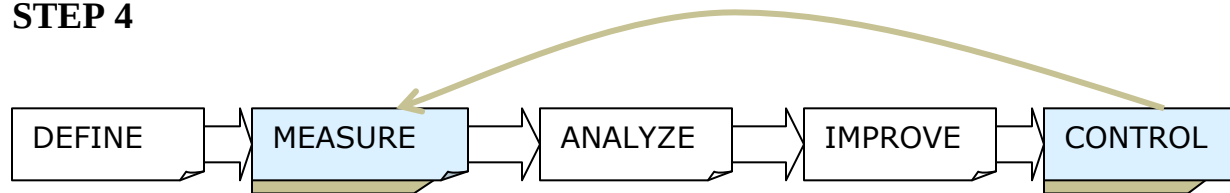
8 % nurses says that they have attended only BLS training

PROPOSED SOLUTION

- Code Blue is called for Cardio respiratory emergency which happens in the premises of Hospital. This idea should be conveyed specifically through training, mock drill and nursing tutorials to avoid unrecognized cases.
- American Heart Association guidelines for CPR suggest that patient should be given advanced life support including defibrillation within 5min of collapse.
- First responders should be trained accurately for advanced life support.
- One male nurse can be placed in each floor for making resuscitation easier.
- Management should look in to the matter with pharmacy

Regular training sessions should be conducted and their training should be reviewed with regular mock drills .

STEP 4



Apply control tools to ensure sustainability.

Performance measurement.

RECOMMENDATIONS

- ACLS and BLS training for persons concerned.
- Mock drills should be conducted at least once in every quarter.
- First responder staff should be well trained for advanced cardiac life support.
- Role clarification among doctor and nurses.
- Periodic assessment of ACLS and BLS training. Involvement of trained nursing personnel in code blue team (at least one or two to attend every code blue call)
- Emphasis should be given for proper documentation during the event
- Monthly evaluation of CPR forms and its up gradation through feedback form and questionnaire.
- Critical evaluation of every CPR event should be done by using scoring system (APACHE and EURO scoring). Proposed form for critical analysis.....

Critical Analysis of CPR Management

Exclusion Criteria :Out of Hospital Cardiac Arrest

Tick the appropriate

In-hospital Cardiac Arrest	
Code Blue Team Response Time	_____ mins (recommendation within 4-6 mins)
CPR to ROSC	
CPR to ROSC till Discharge	To be checked from medical records later

Morbidity level

Risk Categorization (including Risk Score)

CPR Management

Appropriate

Inappropriate

Comments

Rhythm identified			
Shockable/Non shockable rhythm management (<i>as per pathway</i>)			
Energy (J) delivered			
Timing of shock delivery			
Drug/ dose administration			
Timing of intubation (to be considered between 2 nd or 3 rd cycle of chest compression)			

Post Cardiac Care Management

Appropriate

Inappropriate

Comments

Drug management			
Rhythm stabilization			
Airway management			
Neurologic care			
Fluid management			
Glycemic control			
Body temperature control			
Coronary reperfusion therapy			

THE ABOVE ANALYSIS IS AUTHENTICATED BY _____

NAME AND
SIGNATURE

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