Summer Training at
Care Hospitals,
Hyderabad

Measures to Increase Compliance to Care Bundles

By
Vanamali Pasupuleti

Under the guidance of
Brig (Dr.) S.K. Puri

MBA Hospital and Health Management
2015-2017

The IIHMR University, Jaipur
2016

INSTITUTE OF HEALTH
MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Vanamali.P** student of **MBA Hospital and Health Management** from the IIHMR University; Jaipur has undergone summer training at **Care Hospitals, Hyderabad** from 1st April to 31 st May, 2016.

The candidate has successfully carried out the study designated to his during summer training and his approach to the study has been sincere, scientific & analytical.

The internship is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.

Col. (Dr.) Ashok Kaushik
Dean (Academics & Student Affairs)
IIHMR University, Jaipur

Brig (Dr) S.K. Puri
Advisor, Academics and student affairs
IIHMR University, Jaipur

1, Prabhu Dayal Marg, Near Sanganer Airport, Jaipur-302029, Rajasthan, India.
Ph.: 0141-3924700, 2791431- 32, Fax:0141-3924738,E-mail: iihmr@iihmr.edu.in,Web: www.iihmr.edu.in

Quality Care India Limited

NABH ACCREDITED HOSPITAL
CIN : U85110AP1992PLC014728

CARE® HOSPITALS

TO WHOM SO EVER IT MAY CONCERN

Date: - 31-05-2016

This is to certify that **Dr. Vanamali P** a student of IIHMR, Jaipur has done project on "Measures to increase compliance to care bundles" in the department of Hospital Administration from 01-04-2016 to 31-05-2016.

During the above period his performance and conduct were found to be satisfactory.

We wish him all the best in his future endeavors.

For QUALITY CARE INDIA LIMITED,

SHANTAM SHARMA
Dy. General Manager- HR

QUALITY CARE INDIA LTD. HYD-01.

6-3-248/2, Road No.1, Banjara Hills, Hyderabad - 500 034. Phones: 040-30418888, 23234444, Fax: 040-30418488
Care Out Patient Center, # 8-2-620/A-E, Road No. 10, Banjara Hills, Hyderabad - 500 034.
Phones: 040 - 3931 0444, Fax: 040 - 3931 0772.
Care Hospital: # 5-4-199, Jawaharlal Nehru Road, Hyderabad - 500 001. Phones: 040-30417777, 24735465, Fax : 040-30417488
1-4-908/7/1, Bakaram, Musheerabad Main Road, Musheerabad, Hyderabad - 20. Ph.: 040-30219000, Fax: 040-30219288
Near Clock Tower, Market Street, Secunderabad - 500 003. Phones: 040-30486666, Fax: 040-27717738
Website: www.carehospitals.com, E-mail: info@carehospitals.com

ACKNOWLEDGEMENT

I feel deeply privileged in expressing our deep sense of gratitude to **Dr. Naveen Jain(FacilityCOO)** and**Dr. Gopi Krishna (Medical Superintendent)** Care Hospitals, Banjara Hills, Hyderabad for their expert guidance and encouragement which immensely helped in the process of making this report. Without their support, exploring such a vast organization could not have been possible.

I would like to express my deep sense of gratitude to **Dr.VenkatRaman, Dr.Jhansi Vani** and **Dr. Harish Jawalkar** Who guided and gave this project. I would not have been able to get so much knowledge and experience about the work, analyzing the data preparing the report without their kind support and guidance.

I would also like to express my heartiest gratitude to **Mr.Shantham Sharma, Mr.Manoj Roy**, **Sis.Romila** and **Sis.Manga** for their guidance and help throughout my work.

I would also like to express my gratitude to the doctors, nurses, housekeeping and patients of the CARE Hospitals, BanjaraHills, Hyderabad.

I would also like to thanks to my parents for their blessings and my friends who motivated me and helped for my accommodation.

I again express my heartiest gratitude to all the persons who helped me throughout my work.

Dr.Vanamali Pasupuleti

TABLE OF CONTENTS

1. Acronyms/Abbreviations

CHA- Chief Hospital Administrator

CAUTI- Catheter Associated Urinary Tract Infection

CHR- Chief of Human Resource

CLABSI- Central Line Associated Blood Stream Infection

COPC- Care Out Patient Centre

CSSD- Central Sterile Services Department

ERP- Enterprise Resource Planning

GRN- Goods Receipt Note

HA- Hospital Administrator

HAI- Hospital Acquired Infections

HICC- Hospital Infection Control Committee

HID- Hospital Information Department

HOD- Head Of the Department

HR- Human Resources

HRA- House Rent Allowance

ICCU- Intensive Cardiac Care Unit

ICU- Intensive Care Unit

IP- In Patient

LICU- Liver Intensive Care Unit

MICU- Medical Intensive Care Unit

MLC- Medico Legal Cases

MRD- Medical Records Department

NICU- Neuro Intensive Care Unit

OP- Out Patient

PO- Purchase Order

UPS- Uninterrupted Power Supply

VAP- Ventilator Associated Pneumonia

WHO- World Health Organization

2. ORGANIZATION PROFILE:

The CARE Hospitals Group is a multispecialty healthcare provider, with 16 hospitals serving 8 cities across 6 states of India. The regional leader in tertiary care in South/Central India and among the top 4 pan-Indian hospital chains, CARE Hospitals delivers comprehensive care in more than 30 specialties in tertiary care settings.

Adopting a service-oriented delivery model, CARE Hospitals provides cost-effective medical care, with an uncompromising commitment to its core purpose, "To provide care that people trust." Founded in 1997 by Dr B Soma Raju and a team of India's leading cardiologists, the CARE Hospitals' founders developed Asia's first indigenous coronary stent — the 'Kalam-Raju stent,' named after Dr APJ Abdul Kalam, former President of India, and Dr B Soma Raju, Chairman and Managing Director, CARE Hospitals Group. This is just one of the many innovations developed at CARE Hospitals, which strives to make healthcare affordable for all, while ensuring clinical outcomes at par with international standards.

The CARE team has many firsts to its credit:

- 1st Prospective randomised trial of balloon valvotomy vs. mitral valve replacement in the world
- 1st Coronary Angioplasty in India
- 2nd Balloon Valvuloplasty in India
- 1st Cardiac MRI in India
- 1st Atrial Fibrillation Clinic in India
- 1st Beating Heart Surgery in Andhra Pradesh
- 1st Heart Transplant Performed in a tier-2 town (Visakhapatnam)

Today the CARE Hospitals Group comprises 16 multi superspecialty hospitals offering comprehensive patient-focused care, with 24*7 state-of-the-art infrastructure, medical equipment and facilities, complemented by globally trained and experienced doctors and professional support staff. It is recognized as the most advanced, complete cardiac care centre in the country, powered by cross-functional teams with deeper skill sets and round-the-clock availability of cardiologists, cardiac surgeons, and critical care and emergency medicine specialists. The hospitals are models for high doctor-patient and nurse-patient ratios to ensure patient satisfaction.

CARE Hospitals is a complete healthcare ecosystem, with related components of education/training and research, pursuing innovations that make healthcare more affordable. A network of telemedicine hubs in rural Andhra Pradesh and Maharashtra deliver care at the doorstep to lakhs of people. These activities are managed by its partner CARE Foundation.

CARE Hospitals continually updates medical knowledge and puts it into practice — taking innovations from the bench to the bedside. The Group has a rigorous Clinical Research programme (certified by the Drugs Controller General of India), with advanced infrastructure and trained resources to conduct clinical trials in the areas of drug and medical device development. Both pioneering original research and sponsored clinical trials are conducted at several hospitals and over 40 studies are under way, at any given time.

CARE Hospitals is owned and managed by Quality CARE India Ltd.

PURPOSE: To provide care that people trust.

VISION: To be a trusted, people-centric, integrated health care system as a model for global health.

VALUES:

Honesty & Integrity

The practice of honesty fortifies character. Integrity mean doing right at all times and willingness to live by the standards and beliefs of the organization.

Team Work

A collaborative work ecosystem, where the collective efficiencies are harnessed for delivering the best possible care.

Empathy & Compassion

The ability to understand the feelings of patients as well as employees, so that the services delivered are humane and in a supportive work environment.

Education

Continuous learning for the creation of a sustainable healthcare system, where employees and the organization can grow together.

Citizenship

Good governance and appropriate working relationship with all stakeholders, based on compliance to laws and ethical practices.

Equity

Mutual trust based on fair and impartial consideration of all professional matters so that it fosters positive contribution towards the institutional purpose.

Dignity & Respect

Treat all with utmost regard and esteem so that it enhances respect and , in turn, a sense of belonging.

LOGO:

The base of the logo represents a level field provide to everybody. The column consisting of beams represents the multi-disciplinary teams of care hospitals. The person on the pedestal is a professional like a physician, nurse, or health care professional supported by excellence. The person trying to climb the apex of the pedestal is a patient suffering from illness or a student seeking knowledge and skills. The rectangular box refers to a well-defined framework within which the hospital functions.

CARE HOSPITALS, BANJARA HILLS, HYDERABAD

The CARE Group's flagship CARE Hospitals, located in Banjara Hills - a prime location in Hyderabad, was set up in the year 2000. Today, the multispecialty hospital has 435 beds, including 120 critical care beds, with an annual inflow of 1, 80,000 outpatients and 16,000 in-patients.

The hospital provides specialty medical services in Cardiology, Cardiothoracic Surgery, Paediatric Cardiology, Paediatric Cardiothoracic Surgery, Neurology, Neurosurgery, Nephrology, Urology, etc. The in-patient services include intensive care, cardiac care, neurological care, paediatric care, medical care, as well as surgical, diagnostic and emergency services.

The hospital has 10 Operating Theatres with state-of-the-art equipment. Every year more than 1700 cardiothoracic surgeries and 5000 non-cardiac surgeries are performed. Over 4000 cardiac interventions are carried out in the advanced cath labs every year. The hospital also has the first dual source, 128 slice CT scanner (for high precision cardiac imaging) - the first of its kind in south India.

The hospital offers a wide range of accommodation facilities for the convenience of its varied patient base, ranging from general wards to super deluxe rooms.

SPECIALITIES

- Anaesthesiology
- CardiacSciences
- Critical Care
- Dentistry
- Dermatology
- Dietetics & Nutrition
- Emergency Medicine
- Endocrinology
- ENT
- Gastroenterology
- General Medicine
- General Surgery & Surgical Gastroenterology
- Haematology

- Hepato Biliary Surgery & Liver Transplantation
- Laboratory Medicine
- Laparoscopic & Bariatric Surgery
- Nephrology
- Neuro Sciences
- Nuclear Medicine
- Obstetrics & Gynaecology
- Oncology
- Ophthalmology
- Orthopaedics
- Paediatrics
- Physiotherapy & Rehabilitation
- Plastic Surgery
- Pulmonology
- Radiology
- Rheumatology
- Urology
- Vascular Surgery
- Yoga Therapy

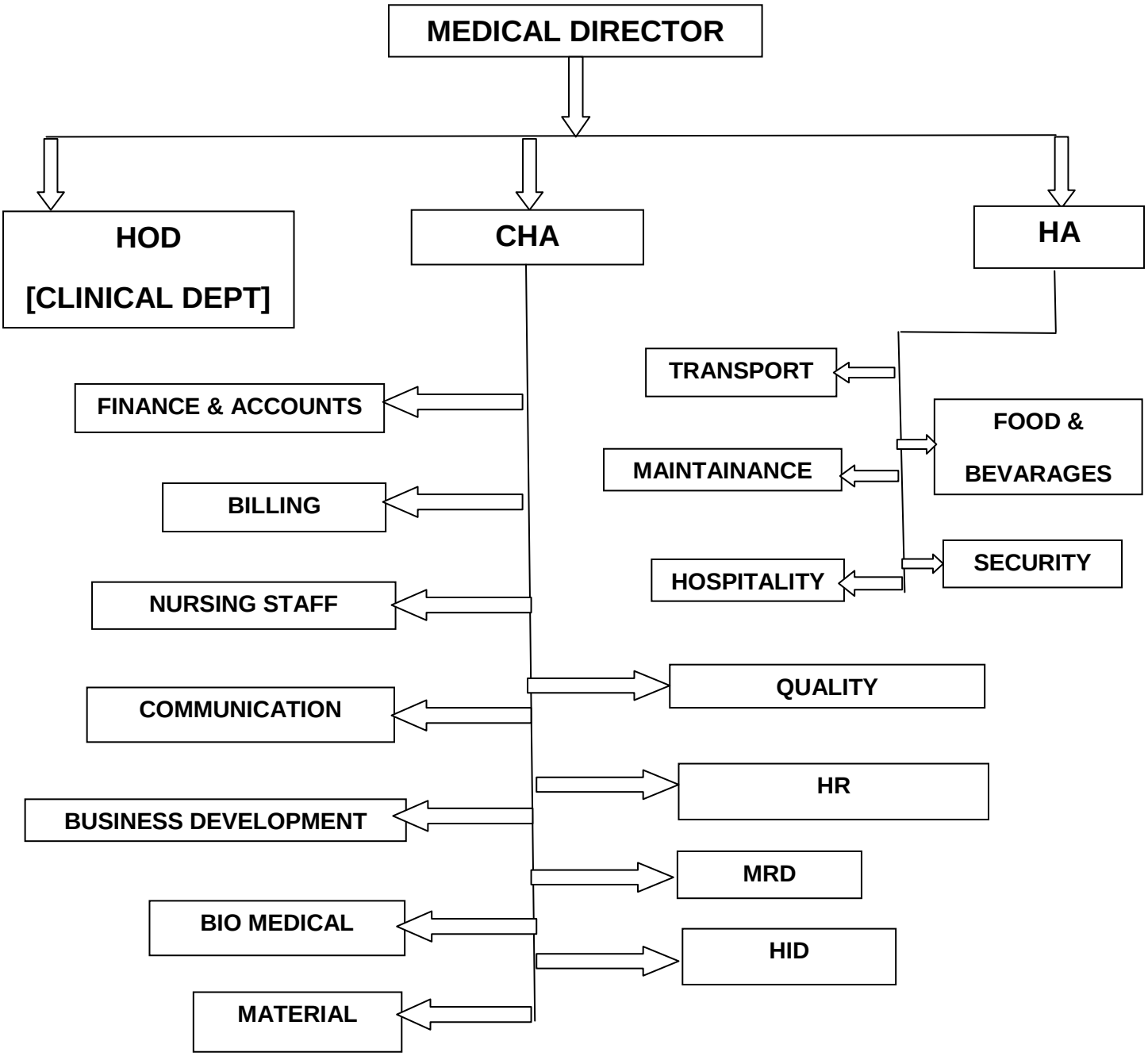
INFRASTRUCTURE

- Operation Theatres
- ICUs
- Endoscopy Suite
- Non-Invasive Laboratory
- Radiology
- Nuclear Medicine
- Catheterization Laboratory
- Dialysis & Department of Nephrology

FACILITIES

- Emergency Unit
- Blood Bank
- Ambulance
- Pharmacy
- Laboratory services
- Pathology
- Haematology
- Microbiology
- Biochemistry

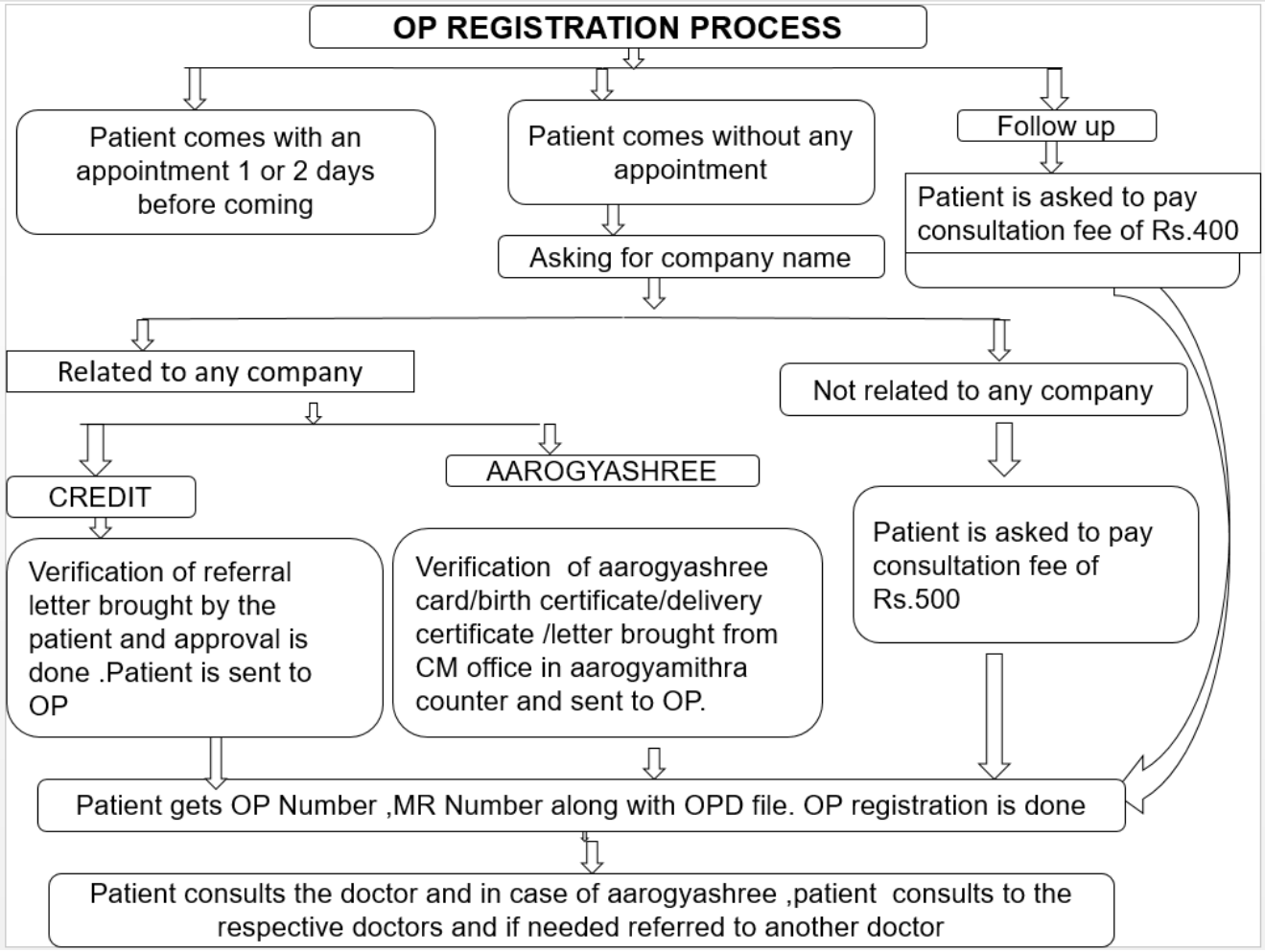
ORGANIZATIONAL STRUCTURE

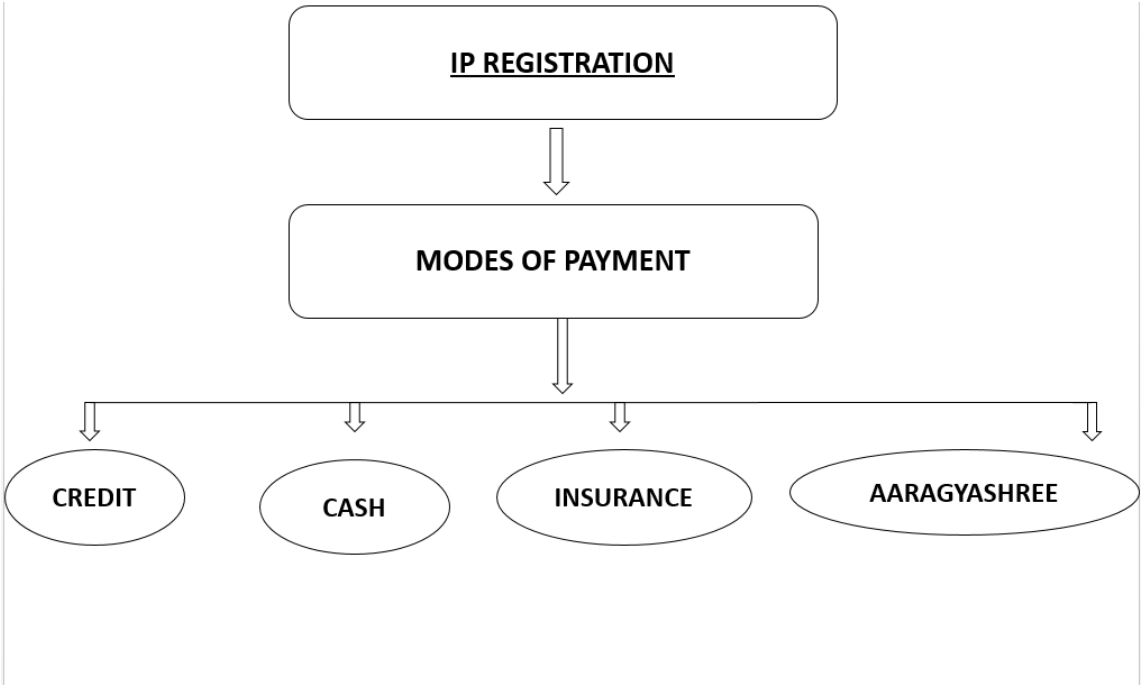


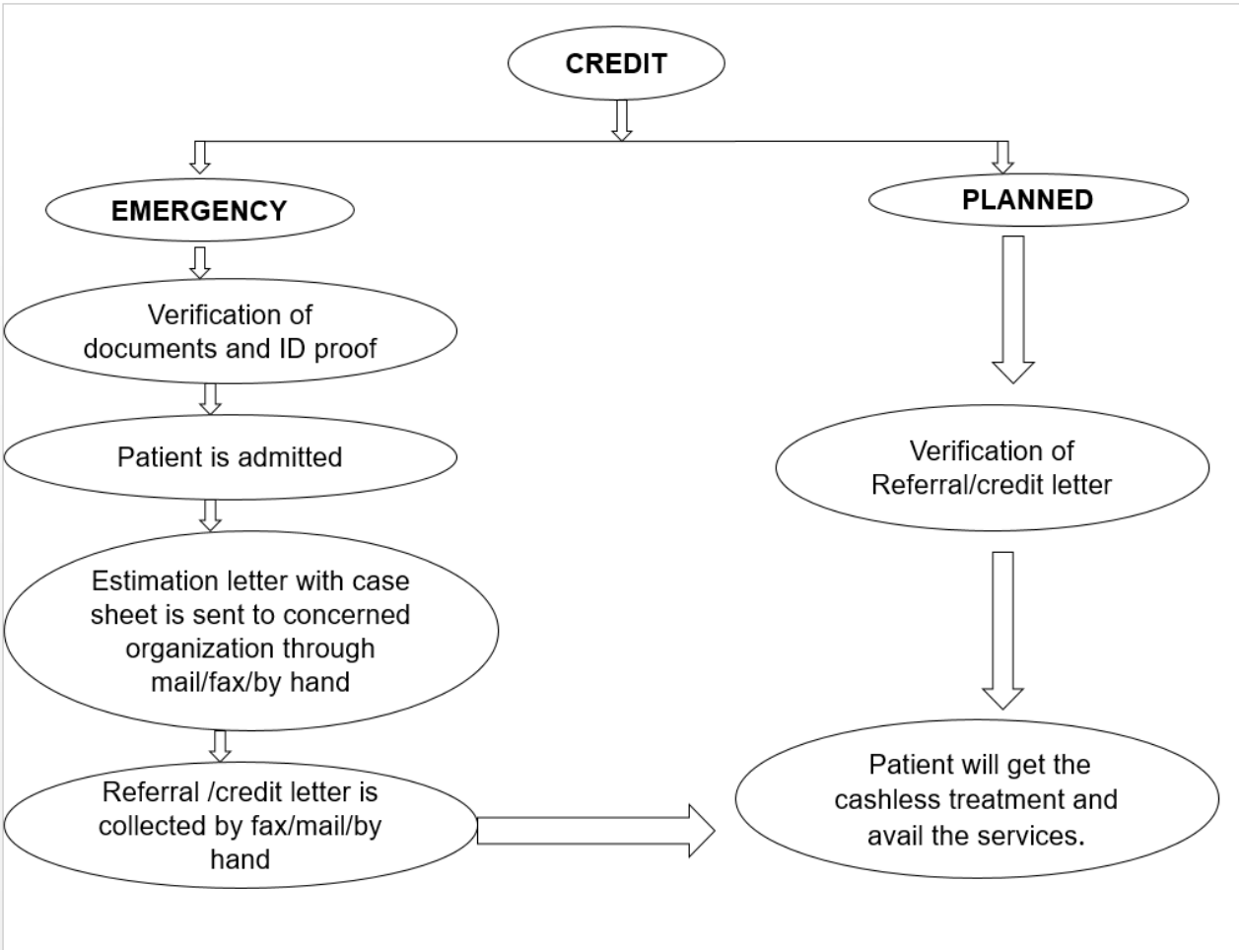
3. OBSERVATIONAL LEARNING

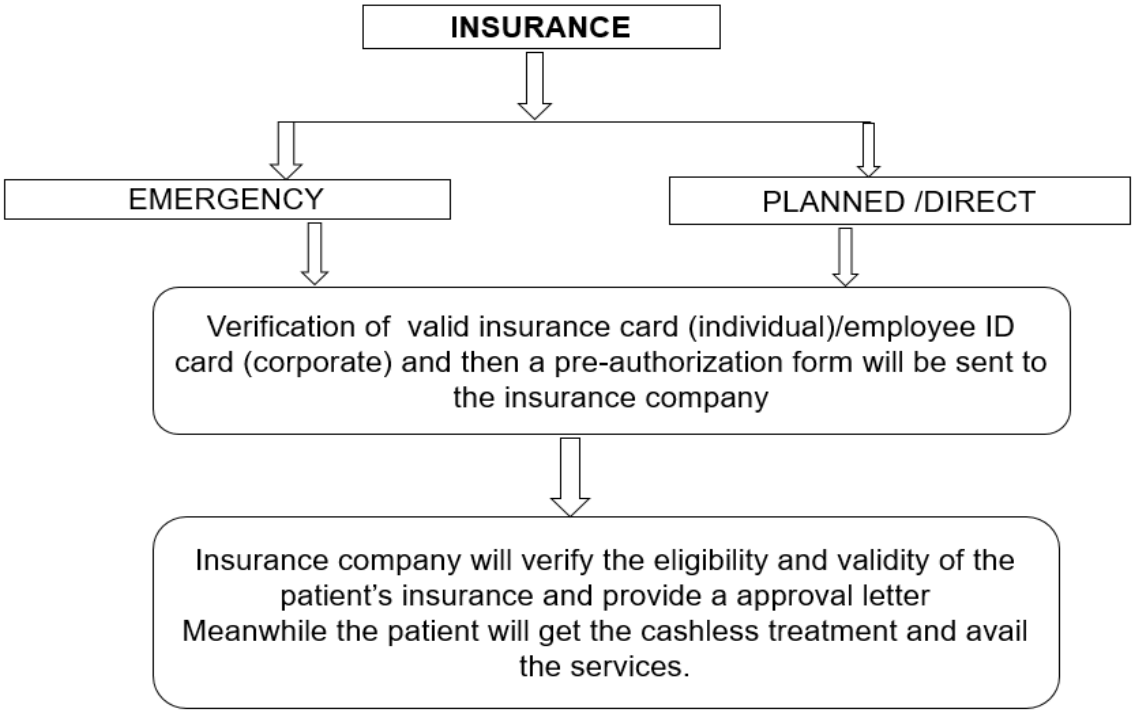
OP&IP Reception: OP reception is situated on right side once we enter the hospital and it is the place where the appointments are given and regular consultations occur.

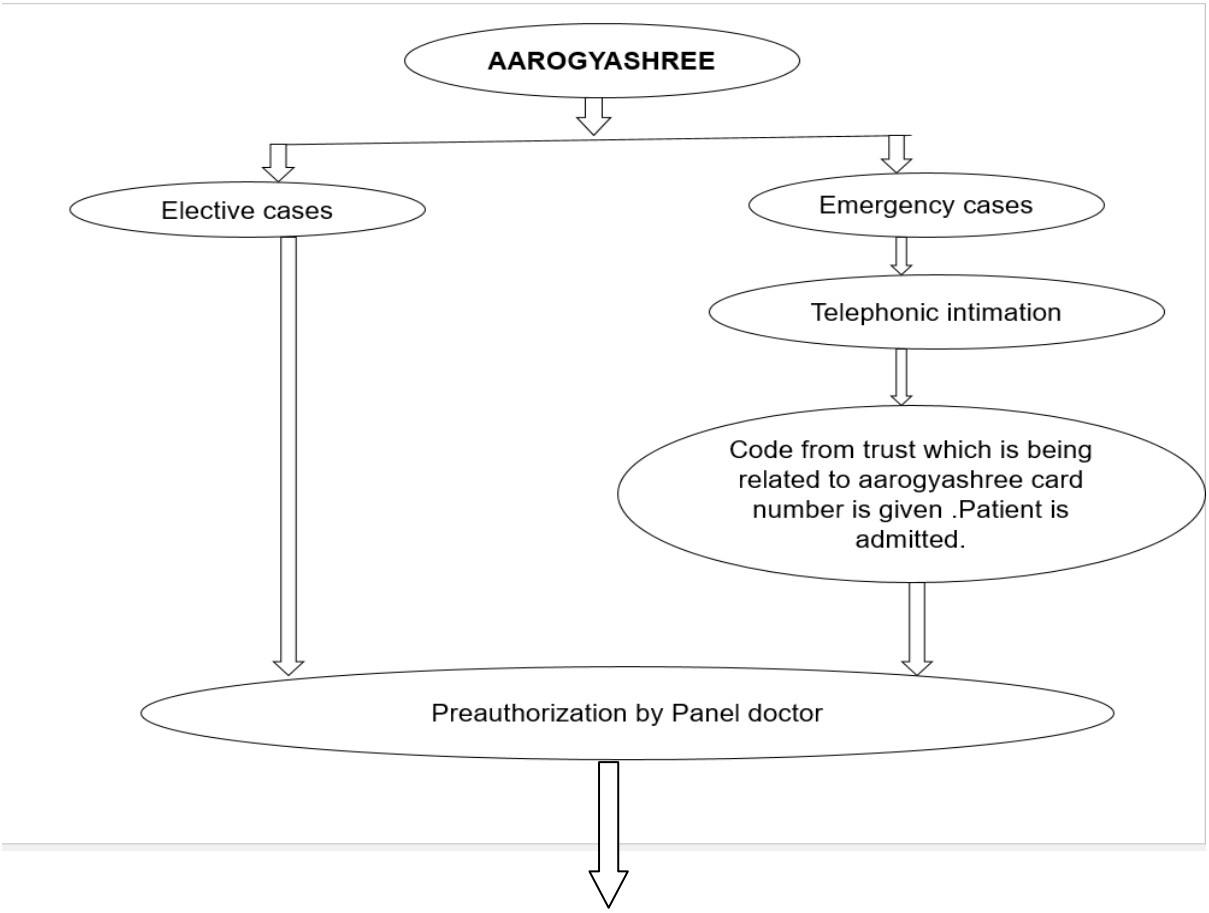
- IP reception is situated on left side and it is the placewhere admission and billing department functions round-the-clock.
- Allotment of a bed/room is based upon diagnosis, preference, eligibility and availability on the day of the admission.
- The inpatient receptionist or Patient Relations Executive (PRE) will assist you in the admission process.

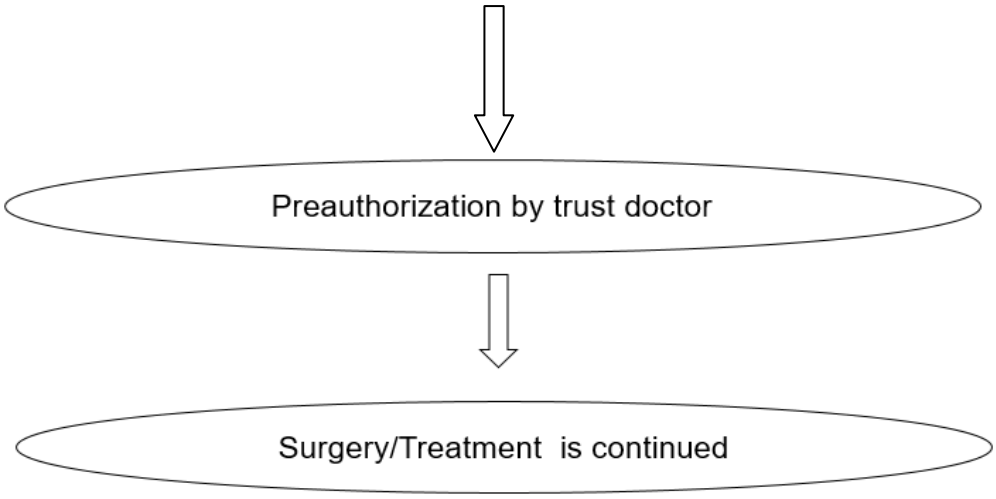



IP REGISTRATION
MODES OF PAYMENT
CREDIT
CASH
INSURANCE
AARAGYASHREE


CREDIT
EMERGENCY
PLANNED
Verification of documents and ID proof
Patient is admitted
Estimation letter with case sheet is sent to concerned organization through mail/fax/by hand
Referral /credit letter is collected by fax/mail/by hand
Verification of Referral/credit letter
Patient will get the cashless treatment and avail the services.


INSURANCE
EMERGENCY
PLANNED /DIRECT
Verification of valid insurance card (individual)/employee ID card (corporate) and then a pre-authorization form will be sent to the insurance company
Insurance company will verify the eligibility and validity of the patient's insurance and provide a approval letter
Meanwhile the patient will get the cashless treatment and avail the services.


AAROGYASHREE
Elective cases
Emergency cases
Telephonic intimation
Code from trust which is being related to aarogyashree card number is given .Patient is admitted.
Preauthorization by Panel doctor



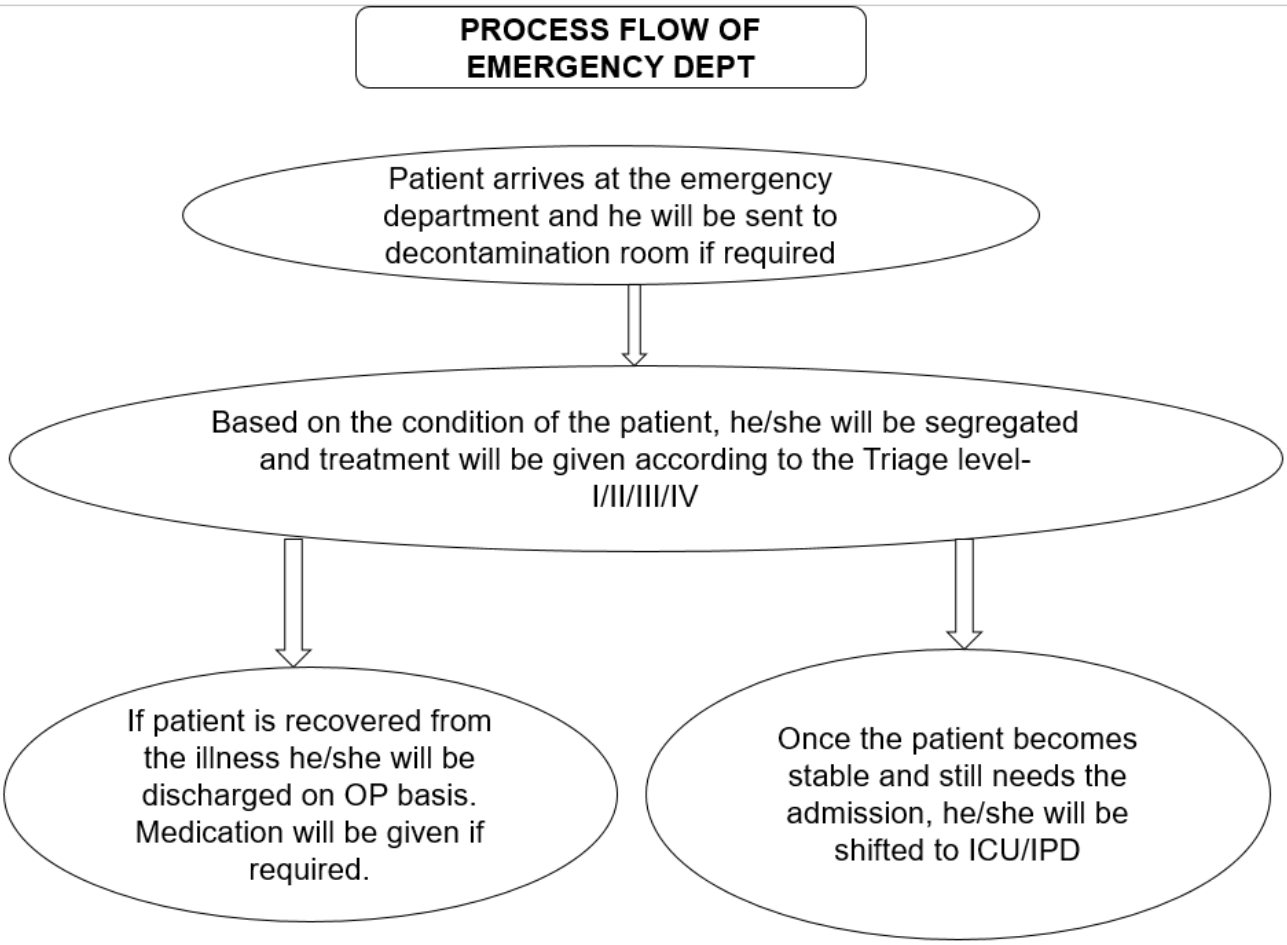
EMERGENCY DEPARTMENT: The Emergency unit at CARE Hospitals, Banjara Hills, Hyderabad, is a 24-hour, state-of-the-art medical centre, which caters to all types of accident victims and emergency cases.

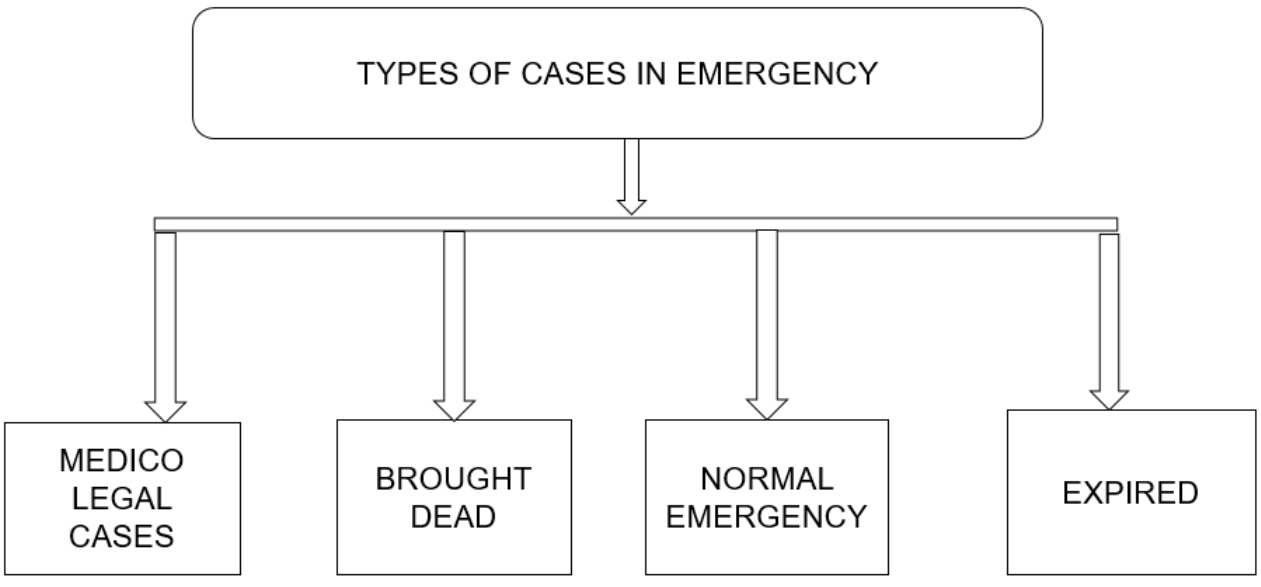
- It is equipped with the latest infrastructure.
- Medical supplies are available at all times from the 24-hour in-house pharmacy, as is blood from the NABH accredited Blood Bank.
- The doctors and other medical staff are highly experienced in emergency care — be it providing urgent medical or surgical care, comforting the patients and their care-givers or providing basic and advanced life support.

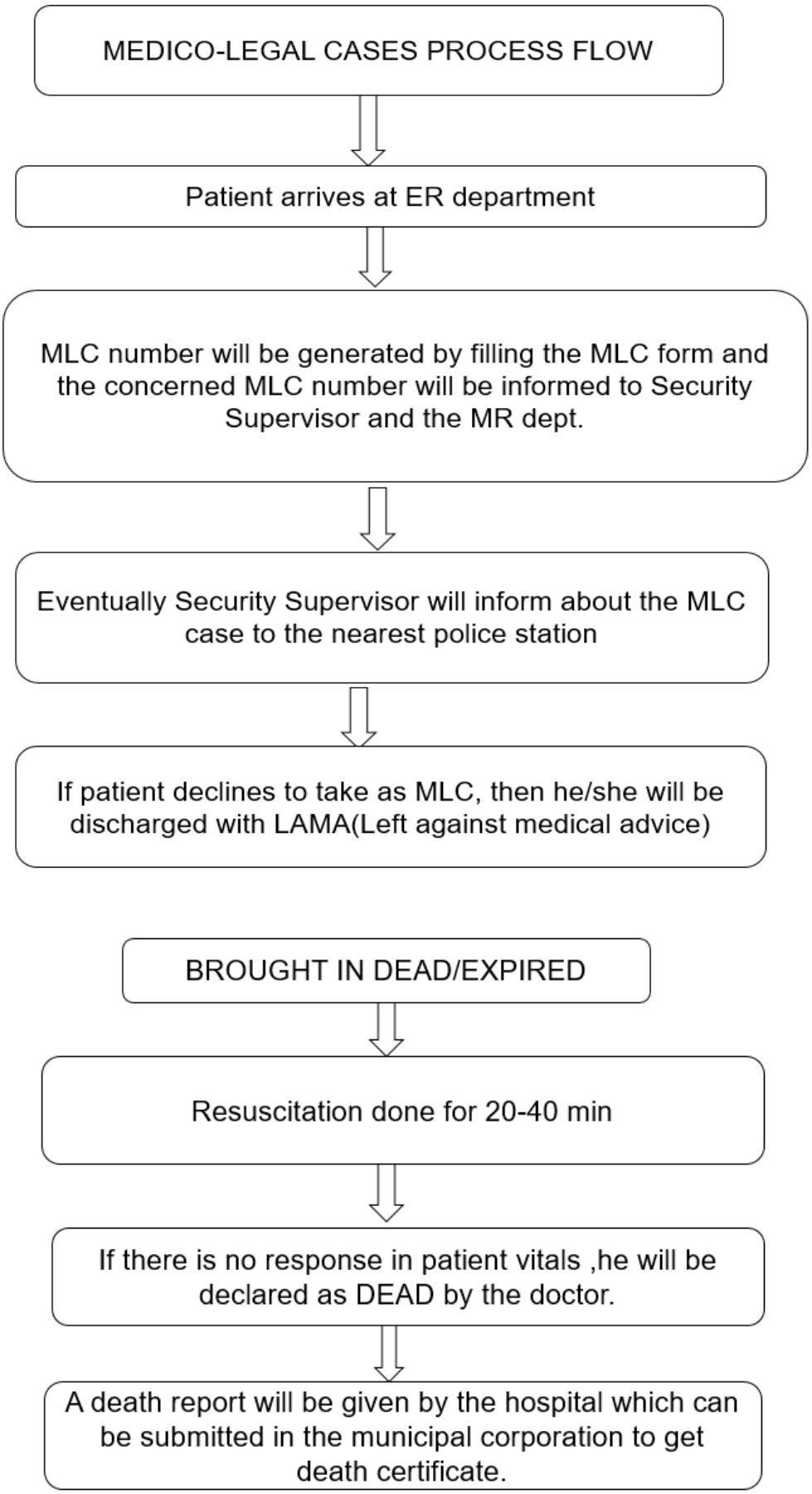
RADIOLOGY DEPARTMENT: The Department of Radiology and Imaging offers the complete range of diagnostic and image-guided therapeutic services. A skilled team of specialists using state-of-the-art equipment provide safe and efficient imaging services, with a human touch. The hospital provides 24*7 emergency and routine diagnostic services.

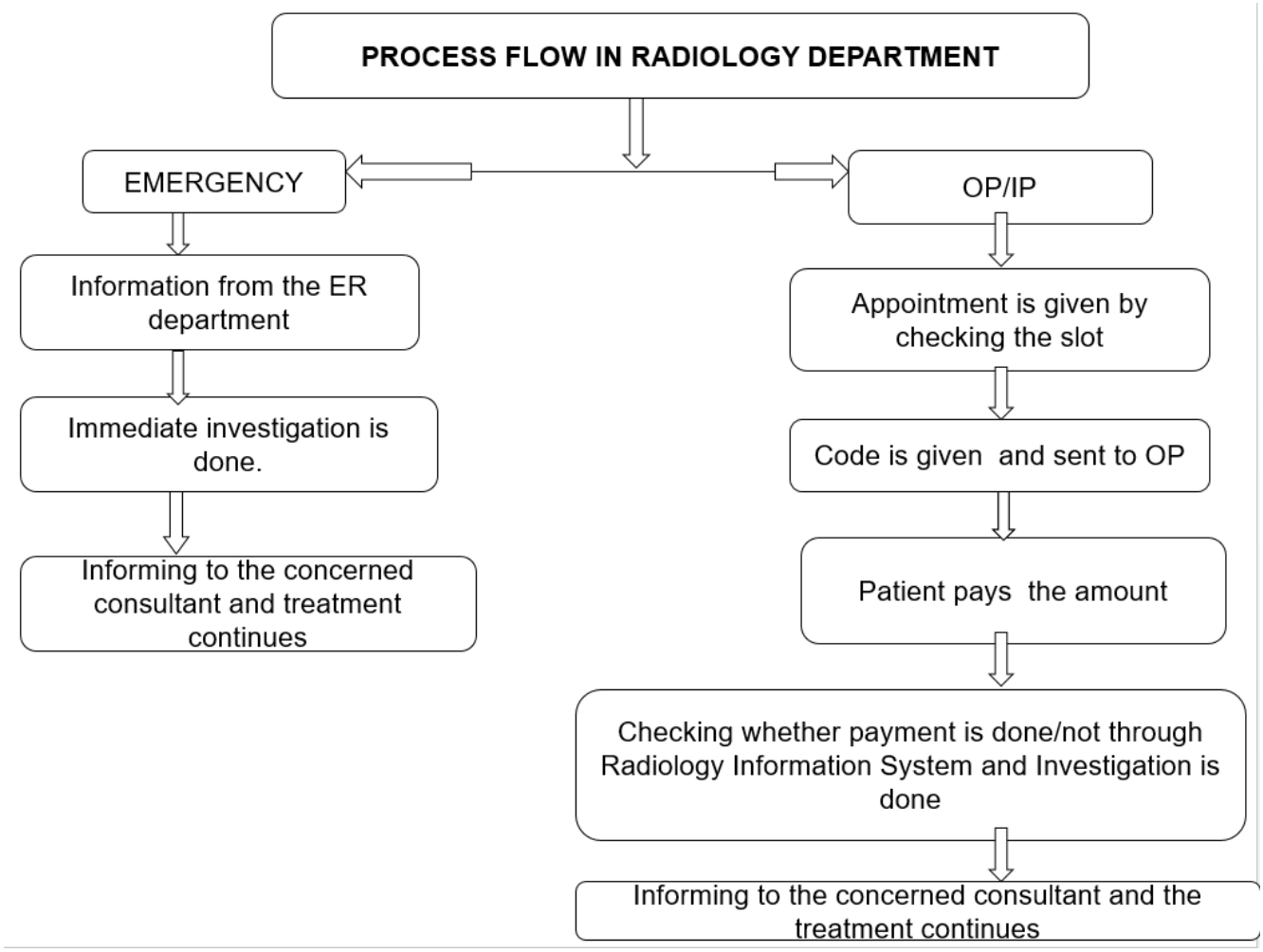
- Advanced imaging services of CT scan for high precision cardiac imaging (CT Coronary Angiogram, etc.)
- MRI (with an add-on facility of cardiac imaging)
- Ultrasonography/Doppler study
- Digital radiography and special radiological procedures
- Teleradiology

The process flow of the emergency and the radiology departments are mentioned below:


PROCESS FLOW OF EMERGENCY DEPT
Patient arrives at the emergency department and he will be sent to decontamination room if required
Based on the condition of the patient, he/she will be segregated and treatment will be given according to the Triage level- I/II/III/IV
If patient is recovered from the illness he/she will be discharged on OP basis. Medication will be given if required.
Once the patient becomes stable and still needs the admission, he/she will be shifted to ICU/IPD


TYPES OF CASES IN EMERGENCY
MEDICO LEGAL CASES
BROUGHT DEAD
NORMAL EMERGENCY
EXPIRED


MEDICO-LEGAL CASES PROCESS FLOW
Patient arrives at ER department
MLC number will be generated by filling the MLC form and the concerned MLC number will be informed to Security Supervisor and the MR dept.
Eventually Security Supervisor will inform about the MLC case to the nearest police station
If patient declines to take as MLC, then he/she will be discharged with LAMA(Left against medical advice)
BROUGHT IN DEAD/EXPIRED
Resuscitation done for 20-40 min
If there is no response in patient vitals ,he will be declared as DEAD by the doctor.
A death report will be given by the hospital which can be submitted in the municipal corporation to get death certificate.



QUALITY DEPARTMENT:

- **PURPOSE:** Getting accreditation and improvement in the system.
- Presently following the NABH standards for Hospitals 4th edition which includes 10 chapters, 70 quality indicators, 105 standards and 683 objectives.
- It mainly works on structure, process and outcome.
- Its main objective is to do analysis and take appropriate and preventive action in a prospective / retrospective manner.
- Conducts 4 quality meetings every month.

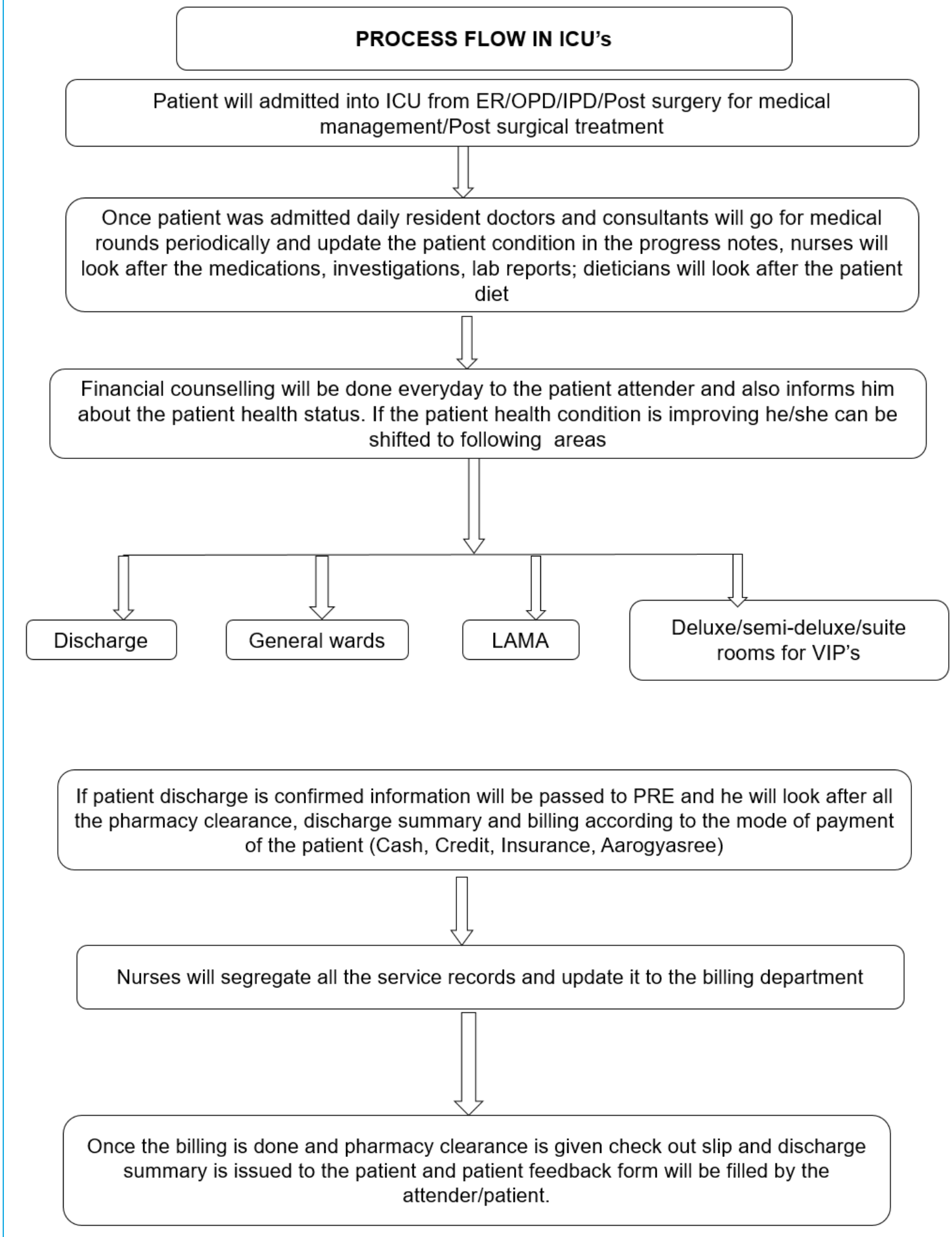
It has 8 committees

1. PQAC-Patient Quality Assurance Committee
2. DQAC-Diagnosis Quality Assurance Committee
3. AQAC-Admin Quality Assurance Committee
4. HICC-Hospital Infection Control Committee
5. CPRC-Cardio Pulmonary Resuscitation Committee
6. BTC-Blood Transfusion Committee
7. Document Committee
8. PTC-Pharmaco Therapeutic Committee

FIRST AND SECOND FLOOR ICU'S

- There are totally six ICU's situated in first and second floor, three in first floor and three in second floor.
- First floor ICU's : NICU, LIVER TRANSPLANT ICU & ICU
- Second floor ICU's : MICU-1,MICU-2 & ICCU
- There are two type of beds in every ICU namely alpha and nimbus beds which were used according to the duration of stay in ICU.
- Each ICU has crash cart, defibrillators, ventilators, dialysis ports, incubators, bed side x-ray machines, vital monitoring, suction apparatus, infusion pumps etc.
- EEG machine, TCD machine and video EEG room are the additional equipment present in NICU.

NUMBER & TYPE OF BEDS	NICU	ICU	MICU-1	MICU-2	ICCU
TOTAL BEDS	12	12	14	12	14
ISOLATION BEDS	4	0	4	2	4
OPEN BEDS	8	12	4	6	10
CUBICLES	0	0	6	4	0


PROCESS FLOW IN ICU's
Patient will admitted into ICU from ER/OPD/IPD/Post surgery for medical management/Post surgical treatment
Once patient was admitted daily resident doctors and consultants will go for medical rounds periodically and update the patient condition in the progress notes, nurses will look after the medications, investigations, lab reports; dieticians will look after the patient diet
Financial counselling will be done everyday to the patient attender and also informs him about the patient health status. If the patient health condition is improving he/she can be shifted to following areas
Discharge
General wards
LAMA
Deluxe/semi-deluxe/suite rooms for VIP's
If patient discharge is confirmed information will be passed to PRE and he will look after all the pharmacy clearance, discharge summary and billing according to the mode of payment of the patient (Cash, Credit, Insurance, Aarogyasree)
Nurses will segregate all the service records and update it to the billing department
Once the billing is done and pharmacy clearance is given check out slip and discharge summary is issued to the patient and patient feedback form will be filled by the attender/patient.

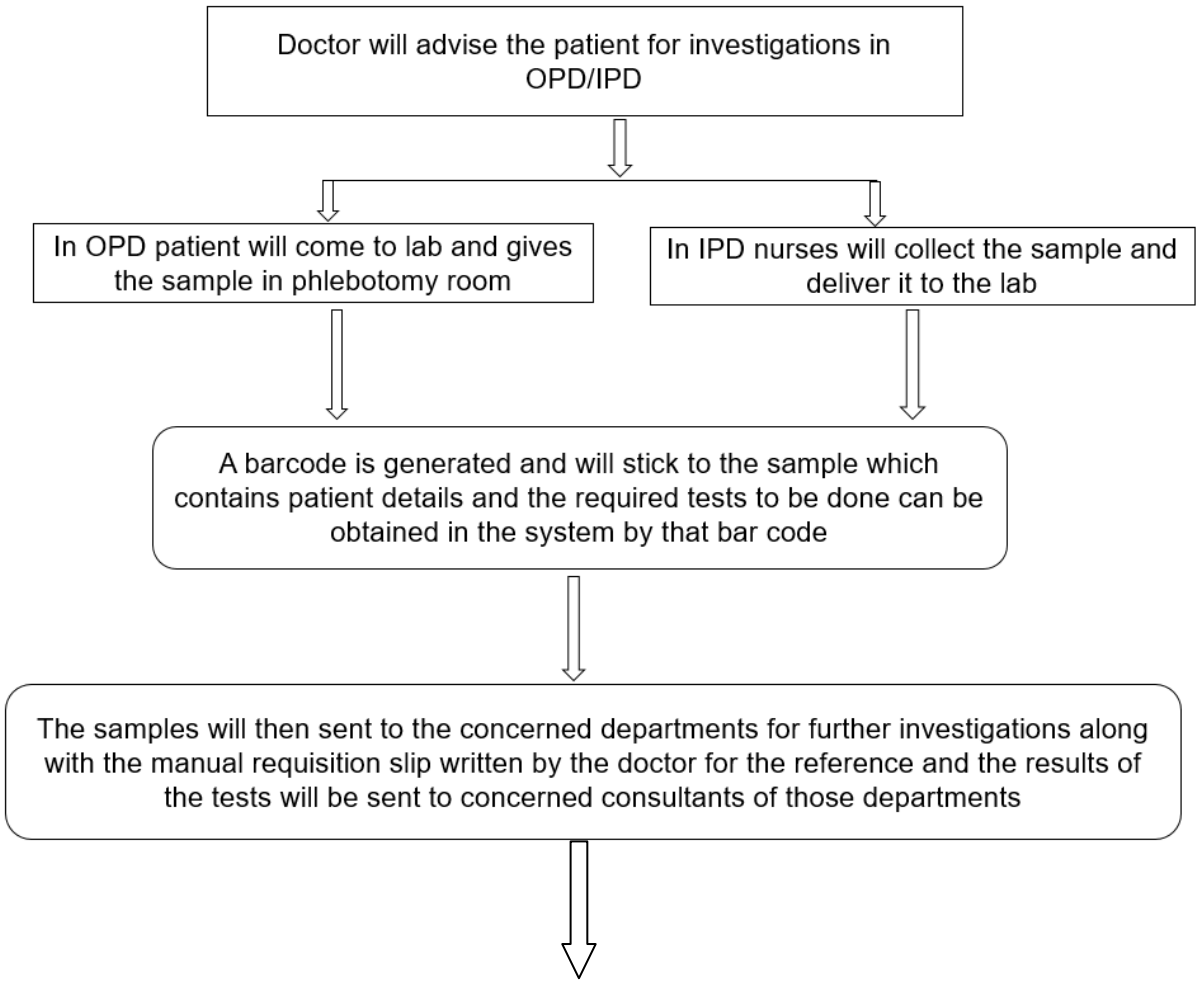
LABORATORY MEDICINE:

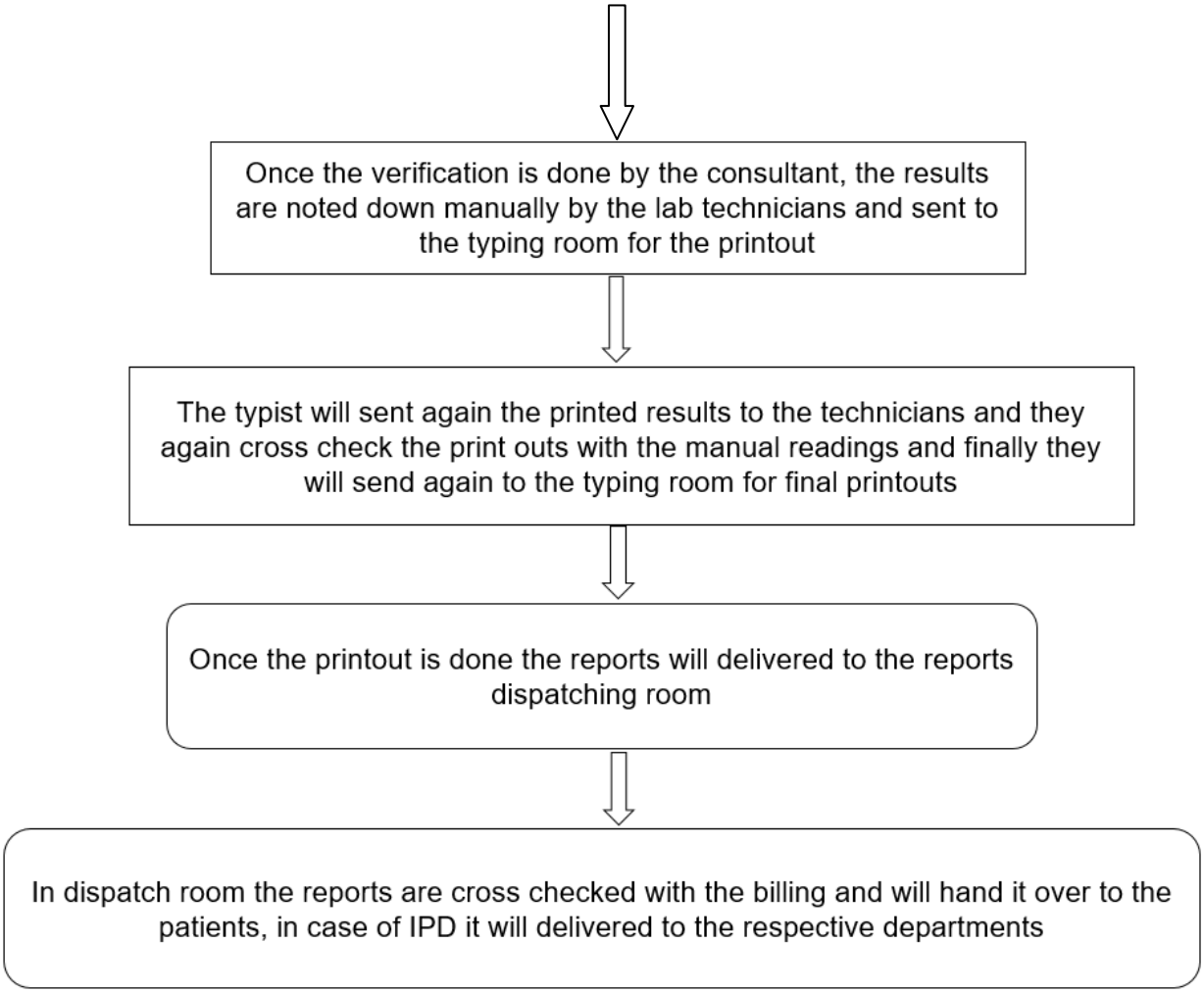
- It consists of

1) Haematology department
2) Biochemistry department
3) Microbiology department
4) Histopathology department (out sourced)

- Each department has a consultant who is the head of that particular department and verifies the test results and gives approvals for those tests.

PROCESS FLOW IN LABORATORY MEDICINE





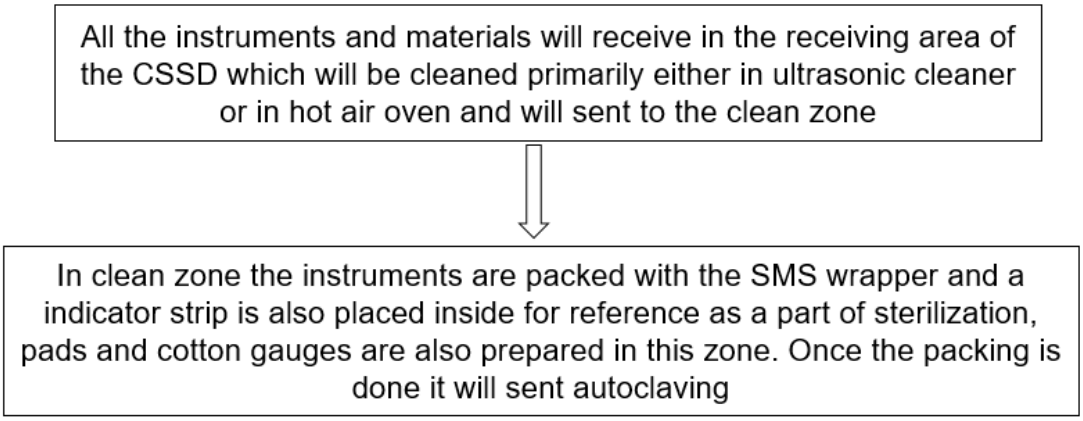
CENTRAL STERILE SERVICES DEPARTMENT:

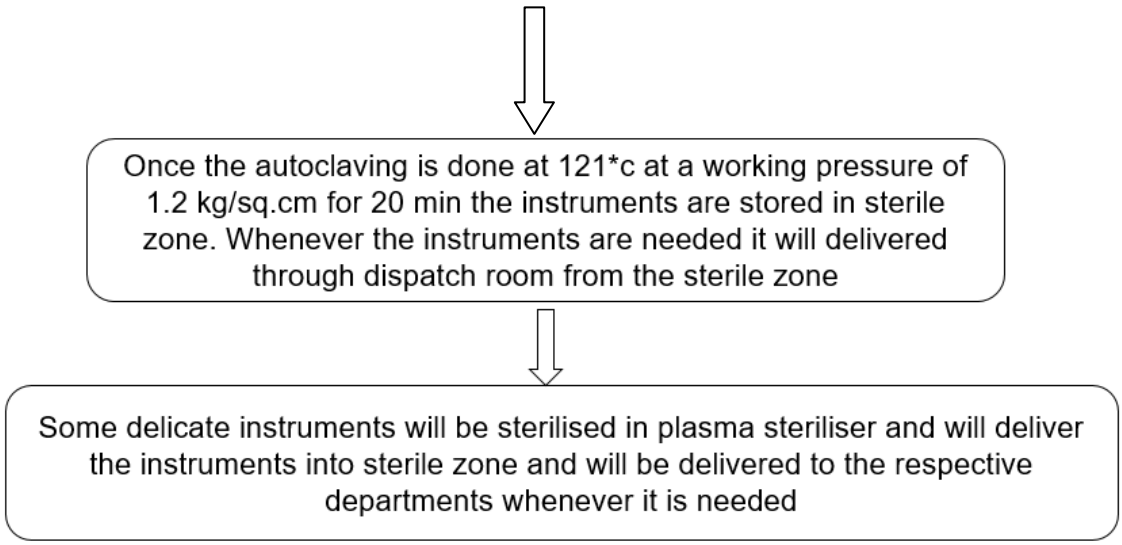
It has 3 zones

1) Receiving zone
2) Clean zone
3) Sterile zone

- It has 6 indicators to verify the sterility level.
- This department consists of 2 autoclaves, 1 plasma sterilizer, 1 ultrasonic cleaner and 1 hot air oven
- An indicator strip will be placed both inside and outside the pack as a level of indicator of proper sterilization.

PROCESS FLOW IN CENTRAL STERILE SERVICES DEPARTMENT [CSSD]





GENERAL STORES:

It deals with the following items with the respective codes:

A – Visiting cards and letter heads

B - Engineering and electrical items

C – Printing stationary

D – General items

E – Housekeeping

F – Bulk items

G – Computer items

- They issue items for different floors in different days
- Audit will be conducted for every 3 months.

HUMAN RESOURCE DEPARTMENT:

RECRUITMENT PROCESS:

- There will be a requisition from concerned department for new manager or forreplacement.
- First screening and initial interview is done.
- Salary is being fixed and selected person will be getting a medical checkup and a joining date is fixed.
- First day all documents are verified and an enterprise resource planning (ERP) number is given.
- Chief of human resource (CHR) will giveapproval.
- Induction program is given at corporate level and continues at unit level.

- Number of days= salary

PAY ROLL:

- Based on qualification, requirement, experience salary is divided.
- Salary is divided into 3 parts –basic (60%), HRA (house rent allowance (25%)), conveyance (15%).
- Deduction is by statutory charges and non-statutory charges

HEAD COUNT:

- There are 26 to 27 departments where 1400 number of employees are working. Among them mostly are nursing others are clinical side technicians, administrative staff, resident doctors, consultant doctors.
- Every HOD is responsible for head count.
- Leave approval is through ERP.

GRIEVANCE HANDLING:

Committees which handle grievance handling are sexual harassment committee, personal issue committee, salary review committee, finance committee.

EMPLOYEE REWARDS SYSTEM:

- Spot award
- Best associate award (monthly)
- Appreciation certificate
- Best employee of the week or in a floor

❖ Types of leaves are sick leaves, earn leaves and casual leaves.

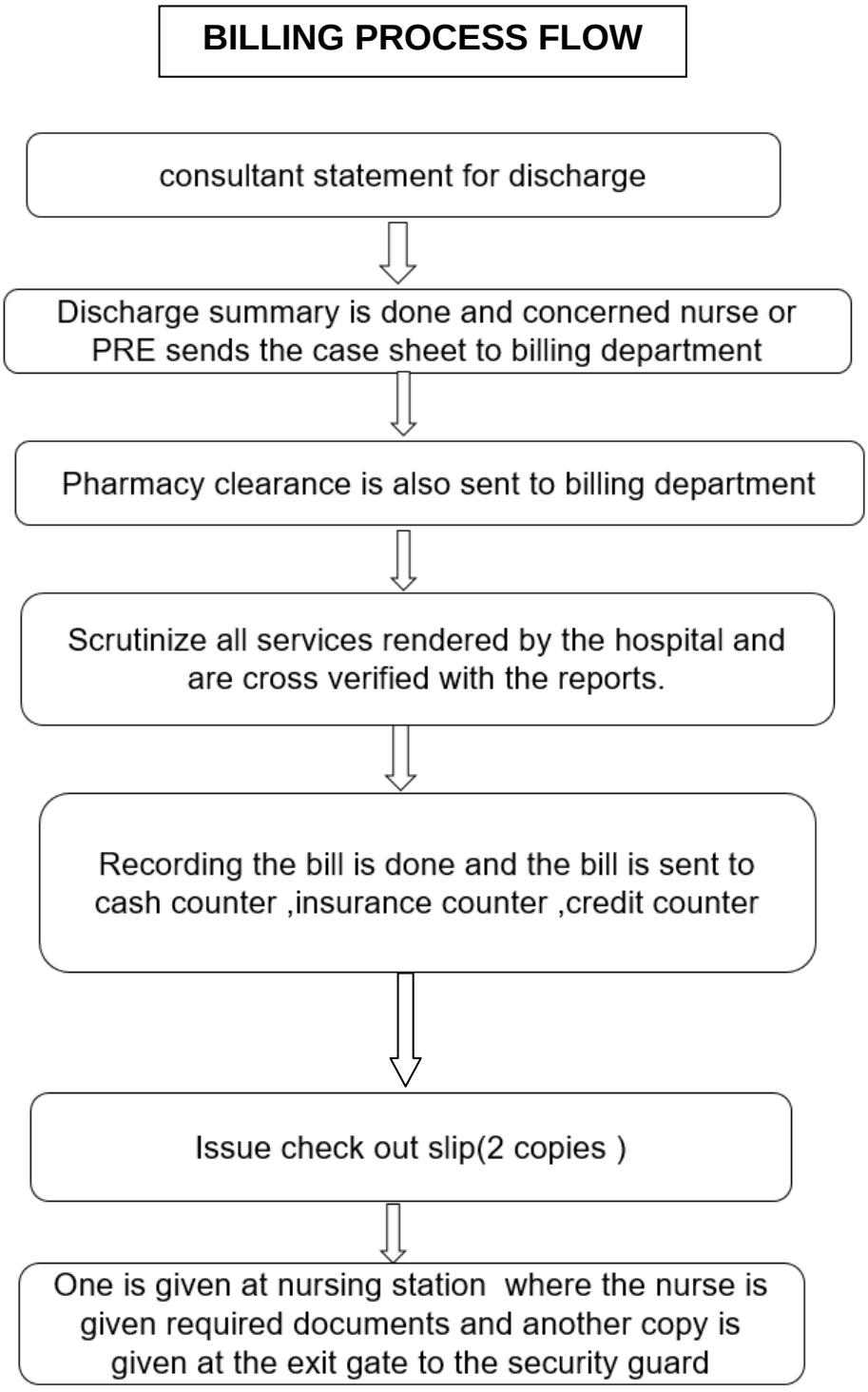
❖ Training is by external /internal by following a training calender

❖ Job description is about target to be achieved, duties to be performed,station standing orders, key result areas, (KRA)key performance indicators (KPI)

❖ Performance appraisal is done yearly.

❖ All employees are segregated to

- G1,G2,G3 – entry level
- G4,G5,G6 – middle level
- G4,G5,G6 – middle level
- G4,G5,G6 – middle level

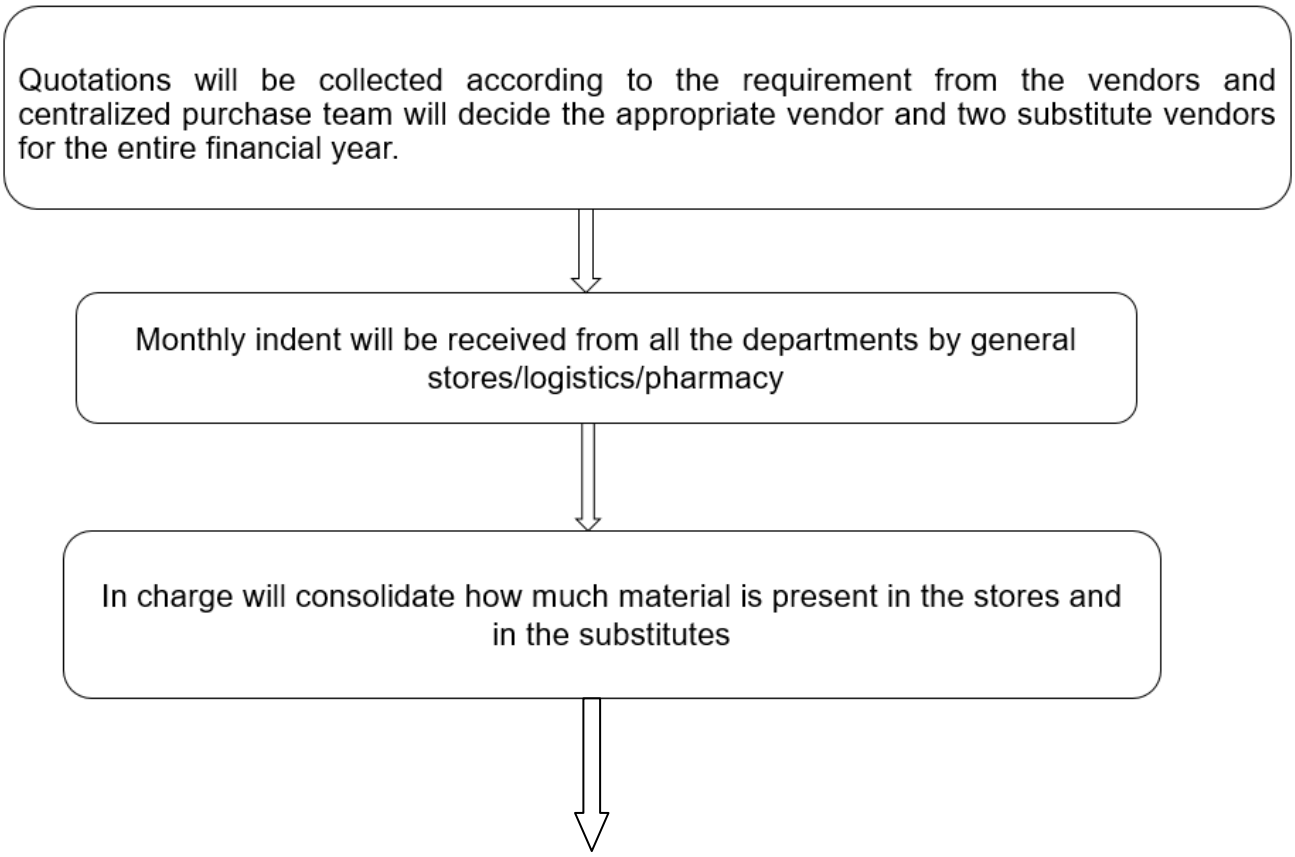


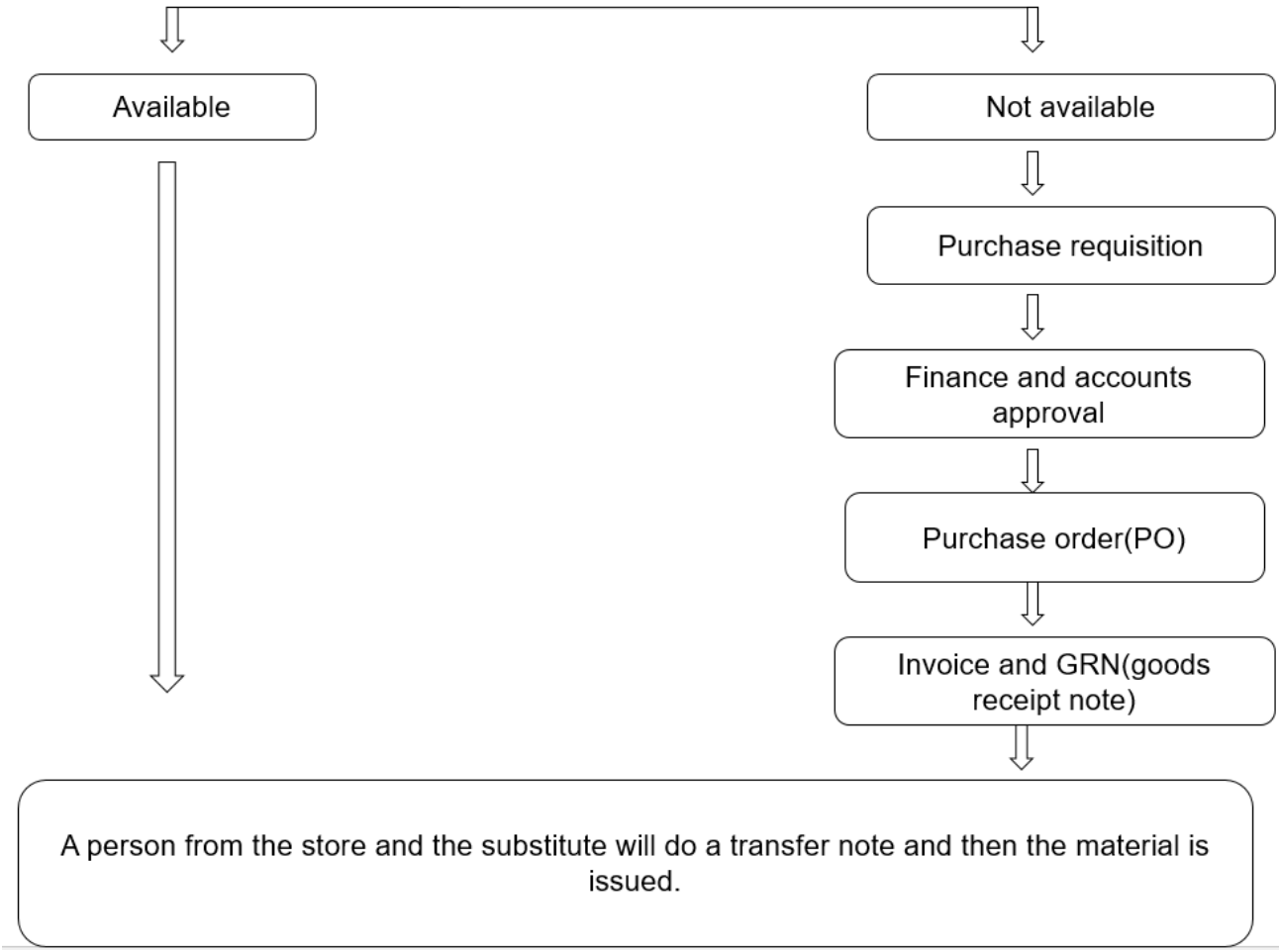
LOGISTICS/PHARMACY:

It has 3 sub departments

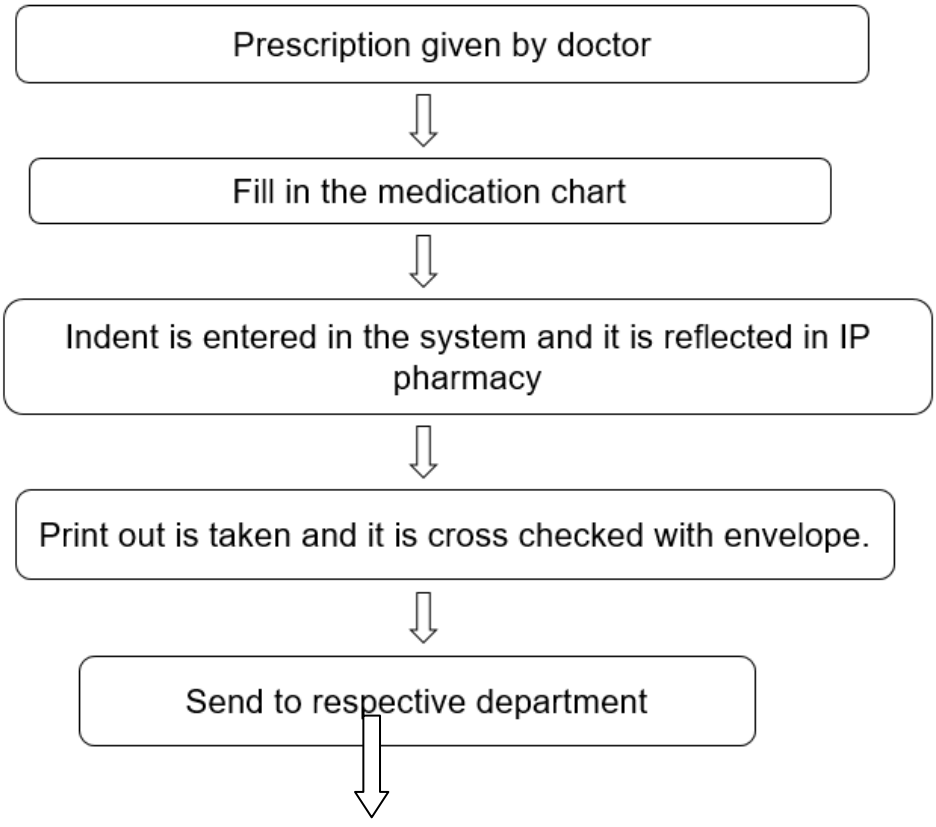
1. Central drug store
2. Central surgical store
3. Pharmacy
   - ER pharmacy
   - IP pharmacy
   - OP pharmacy

PROCESS FLOW





IP PHARMACY PROCESS FLOW:



MEDICAL RECORDS:

TYPES:

1. Discharge
2. Death
3. MLC (medico legal cases)

RETENTION PERIOD:

- Discharge – 3years
- Death – 10 years
- MLC – forever
- According to IP number, medical records are arranged with ICD code generated by them.

RETRIEVAL POLICY:

- Death/ discharge - 1-2min
- MLC- 3-4 min

NURSING DEPARTMENT:

This department mainly focuses on 3 aspects. They are

1. Education
2. Quality
3. HICC

EDUCATION

1. Clinical rounds
2. In-service education
3. Briefing & induction sessions
4. In charge nurses- Training
5. BLS training
6. Bed side teaching
7. Monthly sessions
8. Coordination with CON & SON
9. Manage nursing library
10. Maintain educational data

QUALITY

1. Clinical rounds
2. Tissue viability-nurses
3. BAER programme
4. Transportation –pool
5. Event & code blue/ CPR forms
6. Root cause analysis
7. PQAC presentation
8. Blood transfusion-feedback forms
9. Champions audit
10. Home care

HICC

1. Clinical rounds
2. Data capturing
3. Surveillance
4. Employee vaccination
5. HICC presentation
6. Protocol timing
7. Monthly audit

4. SPECIFIC PROJECT LEARNING

INTRODUCTION

The word hospital is closely related to the word hospitality and is derived from the word “HOSPICE” which means “a house for rest”. Various functions of hospital are as follows.

1. Care of sick and injured.
2. Education of physician, nurses, paramedical and others.
3. Public health- disease prevention and health personnel.
4. Research works.

The word Nosocomial comes from the Greek word “NOSOKOMEION” means “take care of disease” therefore Nosocomial infection is defined as infection which is a result treatment during the taking care of a disease in hospital or health care services unit. It is also known as Hospital Acquired Infections. Infections are considered Hospital Acquired Infections when it first appear 48 hours or more than after hospital admission or within 30 days after discharge. According to WHO “HAI is an infection acquired in hospital by patient who was admitted for a reason other than that infection”. An infection occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility.

Hospital-acquired infections add to functional disability and emotional stress of the patient and may, in some cases, lead to disabling conditions that reduce the quality of life. Nosocomial infections are also one of the leading causes of death. The economic costs are considerable. The increased length of stay for infected patients is the greatest contributor to cost. Prolonged stay not only increases direct costs to patients or payers but also indirect costs due to lost work. The increased use of drugs, the need for isolation, and the use of additional laboratory and other diagnostic studies also contribute to costs. Hospital-acquired infections add to the imbalance between resource allocation for primary and secondary health care by diverting scarce funds to the management of potentially preventable conditions.

Factors influencing the development of nosocomial infections

1. The microbial agent

The patient is exposed to a variety of microorganisms during hospitalization. Contact between the patient and a microorganism does not by itself necessarily result in the development of clinical disease — other factors influence the nature and frequency of nosocomial infections. The likelihood of exposure leading to infection depends partly on the characteristics of the microorganisms, including resistance to antimicrobial agents, intrinsic virulence, and amount (inoculum) of infective material. Many different bacteria, viruses, fungi and parasites may cause nosocomial infections. Infections may be caused by a microorganism acquired from another person in the hospital (cross-infection) or may be caused by the patient's own flora (endogenous infection). Some organisms may be acquired from an inanimate object or substances recently contaminated from another human source (environmental infection). Before the introduction of basic hygienic practices and antibiotics into medical practice, most hospital infections were due to pathogens of external origin (foodborne and airborne diseases, gas gangrene, tetanus, etc.) or were caused by microorganisms not present in the normal flora of the patients (e.g. diphtheria, tuberculosis). Progress in the antibiotic treatment of bacterial infections has considerably reduced mortality from many infectious diseases. Most infections acquired in hospital today are caused by microorganisms which are common in the general population, in whom they cause no or milder disease than among hospital patients (Staphylococcus aureus, coagulase-negative staphylococci, enterococci, Enterobacteriaceae).

2. Patient susceptibility

Important patient factors influencing acquisition of infection include age, immune status, underlyingdisease, and diagnostic and therapeutic interventions. The extremes of life — infancy and old age — are associated with a decreased resistance to infection. Patients with chronic disease such as malignant tumours, leukaemia, diabetes mellitus, renal failure, or the acquired immunodeficiency syndrome (AIDS) have an increased susceptibility to infections with opportunistic pathogens. The latter are infections with organism(s) that are normally innocuous, e.g. part of the normal bacterial flora in the human, but may become pathogenic when the body's immunological defences are compromised. Immunosuppressive drugs or irradiation may lower resistance to infection. Injuries to skin or mucous membranes bypass natural defence mechanisms. Malnutrition is also a risk. Many modern diagnostic and therapeutic procedures, such as biopsies, endoscopic examinations, catheterization, intubation/ventilation and suction and surgical procedures increase the risk of infection. Contaminated objects or substances may be introduced directly into tissues or normally sterile sites such as the urinary tract and the lower respiratory tract.

3. Environmental factors

Health care settings are an environment where both infected persons and persons at increased risk of infection congregate. Patients with infections or carriers of pathogenic microorganisms admitted to hospital are potential sources of infection for patients and staff. Patients who become infected in the hospital are a further source of infection. Crowded conditions within the hospital, frequent transfers of patients from one unit to another, and concentration of patients highly susceptible to infection in one area (e.g. newborn infants, burn patients, and intensivecare) all contribute to the development of nosocomial infections. Microbial flora may contaminate objects, devices, and materials which subsequently contact susceptible body sites of patients. In addition, new infections associated with bacteria such as waterborne bacteria (atypical mycobacteria) and/or viruses and parasites continue to be identified.

4. Bacterial resistance

Many patients receive antimicrobial drugs. Through selection and exchange of genetic resistance elements, antibiotics promote the emergence of multidrugresistant strains of bacteria; microorganisms in the normal human flora sensitive to the given drug aresuppressed, while resistant strains persist and may become endemic in the hospital. The widespread use of antimicrobials for therapy or prophylaxis (including topical) is the major determinant of resistance. Antimicrobial agents are, in some cases, becoming less effective because of resistance. As an antimicrobial agent becomes widely used, bacteria resistant to this drug eventually emerge and may spread in the health care setting. Many strains of pneumococci, staphylococci, enterococci, and tuberculosis are currently resistant to most or all antimicrobials which were once effective. Multiresistant Klebsiella and Pseudomonas aeruginosa are prevalent in many hospitals. This problem is particularly critical in developing countries where more expensive second-line antibiotics may not be available or affordable.

Epidemiology of Hospital Acquired Infections

Studies throughout the world document that nosocomial infections are a major cause of morbidity and mortality. A high frequency of nosocomial infections is evidence of a poor quality of health service delivery, and leads to avoidable costs. Many factors contribute to the frequency of nosocomial infections: hospitalized patients are often immunocompromised, they undergo invasive examinations and treatments, and patient care practices and the hospital environment may facilitate the transmission of microorganisms among patients. The selective pressure of intense antibiotic use promotes antibiotic resistance. While progress in the prevention of nosocomial infections has been made, changes in medical practice continually present new opportunities for development of infection.

Nosocomial infections may also be considered either endemic or epidemic. Endemic infections are most common. Epidemic infections occur during outbreaks, defined as an unusual increase above the baseline of a specific infection or infecting organism.

This project will cover 3 types of infections namely

1. Ventilator Associated Pneumonia [VAP]
2. Catheter Associated Urinary Tract Infections [CAUTI]
3. Central Line Associated Blood Stream Infections [CLABSI]

1.VENTILATOR ASSOCIATED PNEUMONIA [VAP]

Ventilator-associated pneumonia is pneumonia that develops 48 hours or longer after mechanical ventilation is given by means of an endotracheal tube or tracheostomy. Ventilator-associated pneumonia results from the invasion of the lower respiratory tract and lung parenchyma by microorganisms. Intubation compromises the integrity of the oropharynx and trachea and allows oral and gastric secretions to enter the lower airways.

Signs / symptoms:

For ANY PATIENT, at least ***one*** of the following:

- Fever (>38.0°C or >100.4°F)
- Leukopenia (≤4000 WBC/mm3) or leucocytosis (>12,000 WBC/mm3)

- For adults >70 years old, altered mental status with no other recognized cause

And at least ***two*** of the following:

- New onset of purulent sputum or change in character of sputum, or increased respiratory secretions, or increased suctioning requirements
- New onset or worsening cough, or dyspnoea, or tachypnea
- Rales or bronchial breath sounds
- Worsening gas exchange (e.g., O^2 desaturations (e.g., PaO^2/FiO^2 <240), increased oxygen requirements, or increased ventilator demand)

- **Laboratory findings**:

At least ***one*** of the following:

- Organism identified from blood
- Organism identified from pleural fluid
- Positive quantitative culture from minimally-contaminated LRT specimen (e.g., BAL or protected specimen brushing)
- ≥5% BAL-obtained cells contain intracellular bacteria on direct microscopic exam (e.g. Gram's stain)
- Positive quantitative culture of lung tissue
- Histopathologic exam shows at least ***one*** of the following evidences of pneumonia:
- Abscess formation or foci of consolidation with intense PMN accumulation in bronchioles and alveoli
- Evidence of lung parenchyma invasion by fungal hyphae or pseudo hyphae

2.CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION

A laboratory confirmed blood stream infection where central line or umbilical catheter was in place greater than 2 calendar days on the date of event, with day of line placement being day 1 and line was in place on the date of the event or day before.

Symptoms

1. Initial assessment no fever
2. Fever greater than 38 degree Celsius
3. Chills
4. Fast heart rate
5. Redness, swelling, or tenderness at the catheter site
6. Drainage from catheter site
7. Positive blood culture post procedure

Key Trigger points

1. Trend in temperature chart
2. Rise in TLC count
3. Drop in Platelet count

3.CATHETER ASSOCIATED URINARY TRACT INFECTION

A confirmed Urinary tract infection from microbiology lab. The indwelling catheter was in place greater than 2 calendar days on the date of event, with day of catheter placement being day 1 and indwelling catheter was in place on the date of the event or day before.

Symptoms

1. Pain or burning sensation during micturition
2. Feeling of urination
3. Pain in lower belly
4. Cloudy urine with smell
5. Fever and chills.

Identifiable parameters

1. Fever >38 degree Celsius
2. Suprapubic tenderness
3. Positive urine culture

Key Trigger points

1. Documentation of malodorous urine
2. Pyuria

Hospital Infection Control Committee in Hospital

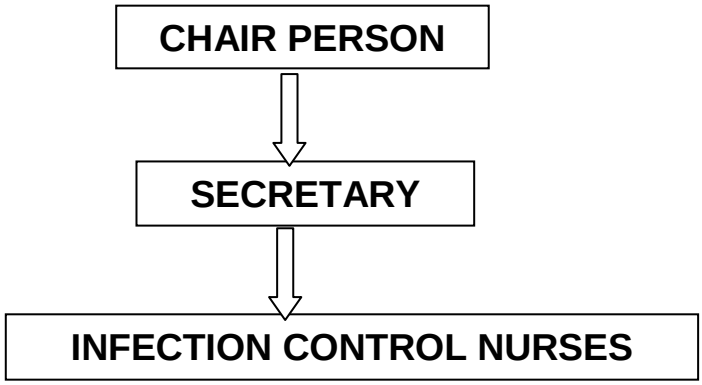
During my summer training project I studied the HICC of hospital which work for the prevention of hospital acquired infections among the patients and staff of hospital those are prone to get infection. This committee works to provide help in preventing the hospital acquired infections by:

- Providing advice services for the staff to help and prevent and manage infection.
- Conduct the program of audit and surveillance
- Produce guideline on the prevention and management of infection

This committee monthly reviews its infection incidence rate for different critical care areas for different infections. Formulas to calculate infection incidence rate:

- Catheter associated UTI rate (CAUTI)= no. of UTI cases / no.of catheter days×1000
- Ventilator associated pneumonia rate (VAP)= no. of VAP cases / no. of ventilator days×1000
- Central line associated infection rate (CLABSI)= no. of CLABSI cases / no. of central line days×1000

ORGANOGRAM OF HICC



Responsibility of Infection Control Nurses

- Checking nursing records and files.
- Periodically audit of critical areas and other wards of hospital.
- Monitoring and supervision of infection among hospital staff.
- Conducting awareness on hand hygiene and aseptic techniques.

Guidelines for nursing care

- Ventilator tubing (ET) should be changed every 72 hourly.
- Central line should be changed on 14th day after insertion.
- Catheter should be changed every 15th day.
- Urobag should be changed every 7th day.
- Urobag empty- every 8 hourly.

OBJECTIVE: To determine the percentage of bundle documentation compliance in critical care areas of 1st and 2nd floors of hospital.

METHODOLOGY

1. Duration of study: Two months from 1st April to 31st May 2016

2. Sample: The sample includes bundle check list of VAP, CAUTI and CLABSI in files of the patient who were admitted in the critical care areas of 1st and 2nd floor of the hospital.

- Inclusion criteria: Patients who were on ventilator, central line and Foley's Catheter.
- Exclusion criteria: Patients who doesn't have any catheter and central line.

3. Sampling method: Random sampling

4. Sample size: To determine the compliances I have taken bundle check list of all the patients who were on ventilator, central line and Foleys catheter in critical care areas.

5. Area of study: Critical care areas of 1st and 2nd floors of the hospital

1. MICU-1
2. MICU-2
3. NICU
4. ICCU
5. ICU
6. LICU

6. Type of data: Primary data

7. Tool and technique for data collection:

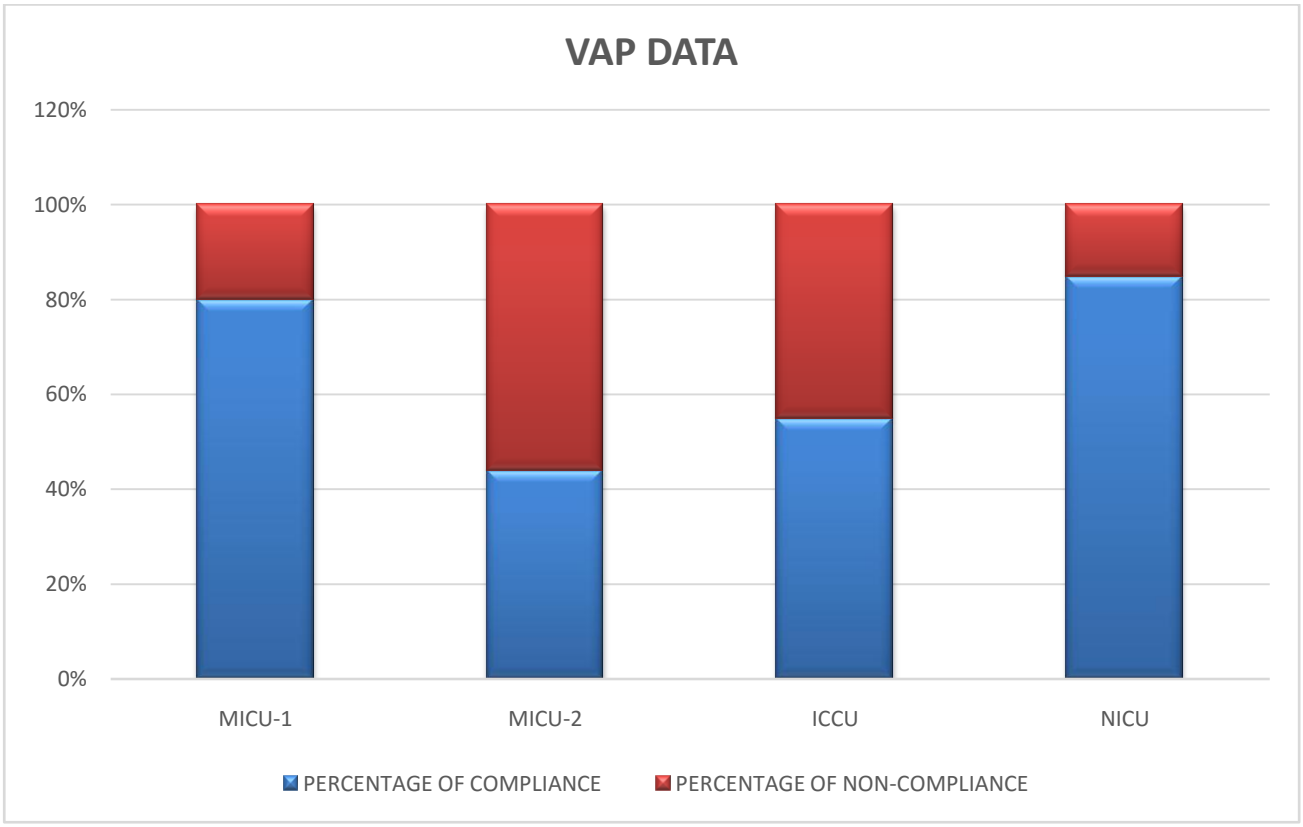
- Bundle check list which was specifically designed to record the details of inserted devices to the patients including their duration such as intubation and extubation date and time.
- It focuses mainly on documentation of check list of VAP, CAUTI, and CLABSI within stipulated time.
- Observations are done according to the timings that is followed to record the checklist.
- For assessment of the checklist only morning and evening data has been taken till 4 pm.

8. Data Analysis: By using MS Excel

5. FINDINGS

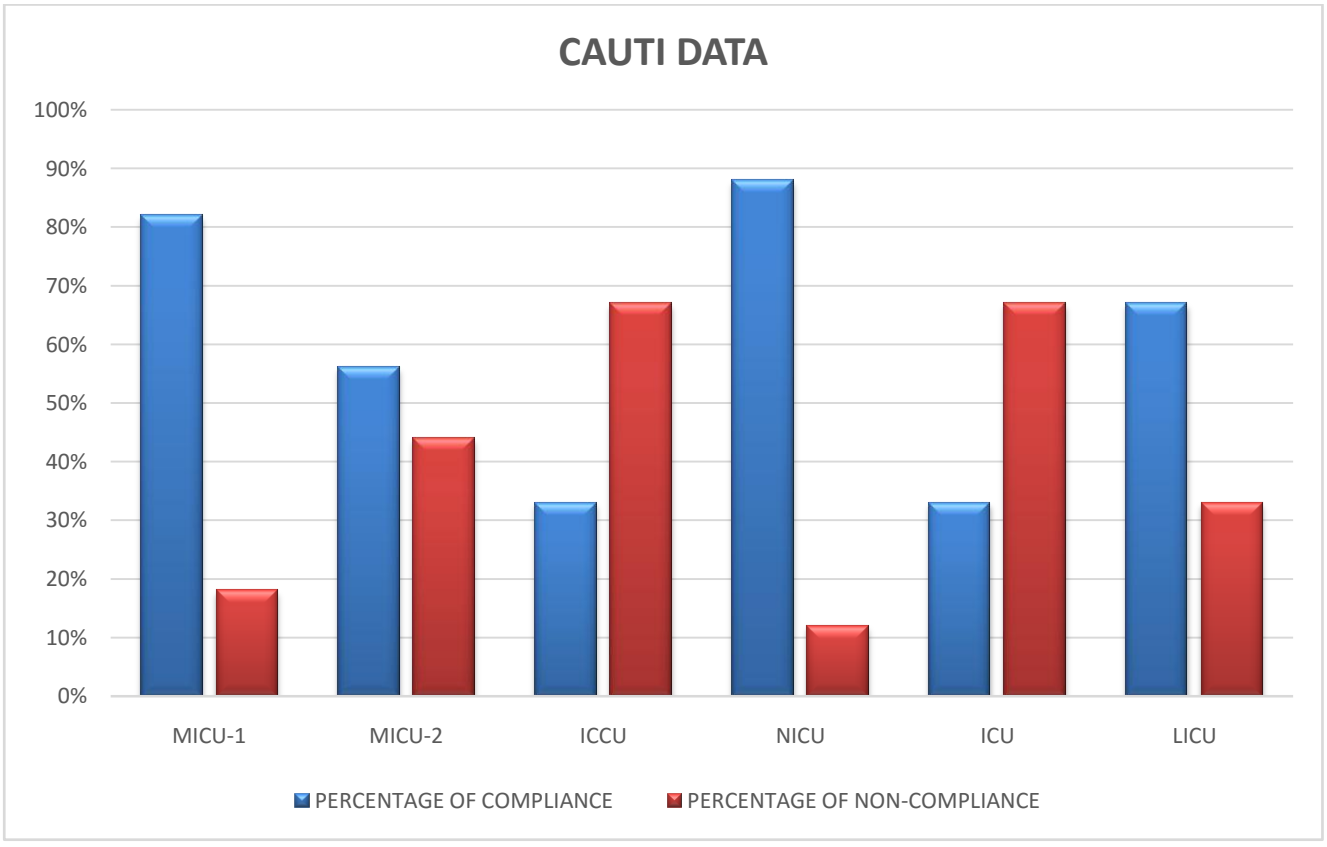
PERCENTAGE OF BUNDLE DOCUMENTATION COMPLIANCE- VAP

DEPT	TOTAL BUNDLES	NO.OF BUNDLE COMPLIANCE	NO.OF BUNDLE NON-COMPLIANCE	PERCENTAGE OF COMPLIANCE	PERCENTAGE OF NON-COMPLIANCE
MICU-1	15	12	3	80%	20%
MICU-2	32	14	18	44%	56%
ICCU	31	17	14	55%	45%
NICU	47	40	7	85%	15%



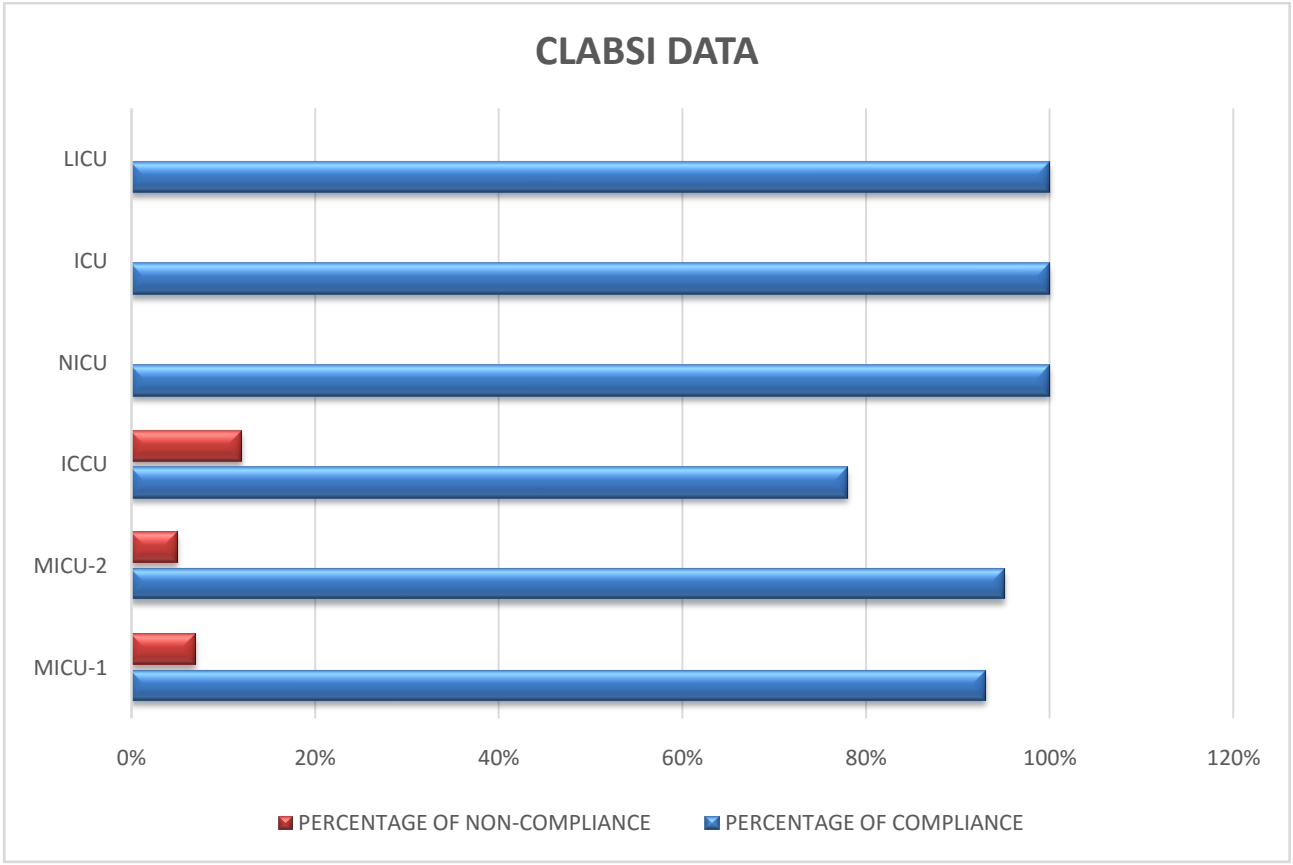
PERCENTAGE OF BUNDLE DOCUMENTATION COMPLIANCE-CAUTI

DEPARTMENT COVERED	TOTAL BUNDLES	NO.OF BUNDLE COMPLIANCE	NO.OF BUNDLE NON-COMPLIANCE	PERCENTAGE OF COMPLIANCE	PERCENTAGE OF NON-COMPLIANCE
MICU-1	76	62	14	82%	18%
MICU-2	99	55	44	56%	44%
ICCU	79	26	53	33%	67%
NICU	100	88	12	88%	12%
ICU	18	6	12	33%	67%
LICU	3	2	1	67%	33%



PERCENTAGE OF BUNDLE DOCUMENTATION COMPLIANCE-CLABSI

DEPARTMENT COVERED	TOTAL BUNDLES	NO.OF BUNDLE COMPLIANCE	NO.OF BUNDLE NON-COMPLIANCE	PERCENTAGE OF COMPLIANCE	PERCENTAGE OF NON-COMPLIANCE
MICU-1	46	43	3	93%	7%
MICU-2	43	41	2	95%	5%
ICCU	50	39	11	78%	12%
NICU	32	32	0	100%	0%
ICU	1	1	0	100%	0%
LICU	3	3	0	100%	0%



6. OBSERVATIONS:

- Few bundles [7.2%] were observed to be documented till 8 pm.
- Catheter is not checked properly and urine is stagnated in the tube [3.5%] and sometimes nurses are recording without checking the checklist.
- Remnants of blood[2%] is seen in some central line cannula
- Handling the lines and ports of central line without gloves sometimes.
- Bundle(s) was not found in the place where it should be in patient case sheet.
- In NICU, time discrepancies were observed in documentation of bundles during evening hour as few staff are documenting CAUTI bundle at 12 noon, few at 3 pm and so on.

7. RECOMMENDATIONS

- Proper timings should be maintained in each and every department and the check list should be placed in proper place.
- Nurses who will be on night duty should monitor all the check list regarding catheter, central line and ventilator before they leave in the morning.
- If a night duty nurse didn't document the morning parameters of the check list before she leave then the morning duty nurse has to document the check list.
- The check list has to be documented at particular timings with a grace time of 30-40 min.
- In some critical areas beds doesn't have indicators to measure the angle of the bed head for intubated patients and it should be properly maintained.
- Some beds doesn't have clamp to hang the Urobag and it has to be maintained.
- One nurse has to be allotted as supervisor for HAI and he/she is responsible for the maintenance of proper check list and look after all other nurses in the dept.
- Check list should be updated and make some necessary corrections.
- Proper training classes should be conducted to all the nursing and housekeeping staff regarding Hospital acquired infections and its prevention.
- In some critical areas some beds doesn't have a clamp to hang the Foley's catheter and in those cases the catheters are placed in some higher level which is not below the bladder level of the patient.

8. REFERENCES

- World Health Organization. WHO Global Strategy forContainment of Antimicrobial Resistance. WHO/CDS/CSR/DRS/2001.2.
- Struelens MJ. The epidemiology of antimicrobial resistance in hospital-acquired infections: problems and possible solutions. BMJ, 1998, 317:652–654.
- Magill SS., Edwards, JR., Bamberg, W., et al. "Multistate Point-Prevalence Survey of Health Care-Associated Infections, 2011". New England Journal of Medicine. 370: (2014): 1198-1208.
- Scott Rd. The Direct Medical Costs of Healthcare-Associated Infections in U.S.

- Hospitals and the Benefits of Prevention, 2009. Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention, February 2009.
- Klevens, RM., Edward, JR., et al. “Estimating Healthcare-associated Infections and
- Deaths in U.S. Hospitals”. Public Health Reports 122: (2007):160-166.
- Gould, CV., Umscheid, CA. Agarwal, RK. Kuntz, G., Pegues, DA. “Guideline for
- Prevention of Catheter-associated Urinary Tract Infections”. Infection Control Hospital Epidemiology. 31: (2010): 319-26.
- Klevens, RM., et al. “Sampling for Collection of Central Line Day Denominators in
- Surveillance for Healthcare-associated Bloodstream Infections”. Infection Control Hospital Epidemiology. 27: (2006):338-42.
- Thompson, ND. et al.” Evaluating the Accuracy of Sampling to Estimate Central Line–
- Days: Simplification of NHSN Surveillance Methods”. Infection Control Hospital Epidemiology. 34(3): (2013): 221-228.
- See, I., et al. ID Week 2012 (Abstract #1284): Evaluation of Sampling Denominator
- Data to Estimate Urinary Catheter- and Ventilator-Days for the NHSN. San Diego, California. October 19, 2012.
- Dudeck, MA. Horan, TC. Peterson, KD. National Healthcare Safety Network (NHSN)
- Report, Data Summary for 2009, “Device-associated Module”, American Journal of Infection Control 39: (2011): 349-67.
- Dudeck, MA., et al. National Healthcare Safety Network (NHSN) Report, Data
- Summary for 2013, Device-associated Module. American Journal of Infection Control 43(3): (2015): 206-221.

9. ANNEXURE

S.NO	NAME OF THE DEPARTMENT	DATE OF VISIT	TIME SPENT	NAME OF THE CO-ORDINATOR
1.	IP & OP Reception	01-04-16 to 05-04-16	9 AM TO 6 PM	Ms. Sujatha
2.	Emergency	06-04-16	9 AM TO 6 PM	Mr. Harikrishna
3.	Radiology	07-04-16	9 AM TO 6 PM	Mr. Mansoor
4.	Ni Lab	09-04-16	9 AM TO 1 PM	Mr. Mansoor
5.	Dialysis	09-04-16	2 PM TO 6 PM	Dr. Harish
6.	2nd Floor ICU’s	11-04-16	9 AM TO 6 PM	Dr. Shameem
7.	1st Floor ICU’s	12-04-16	9 AM TO 6 PM	Dr. Shameem

8.	Quality	13-04-16	9 AM TO 6 PM	Ms. Preeti Patel
9.	6th Floor	14-04-16	9 AM TO 6 PM	Ms. Sridevi
10.	Pharmacy	16-04-16	9 AM TO 11 AM	Mr. Taher
11.	Stores	16-04-16	11 AM TO 1 PM	Mr. Sudhir
12.	Logistics	16-04-16	2 PM TO 6 PM	Mr. Taher
13.	Medical Records	18-04-16	9 AM TO 1 PM	Dr. Gopikrishna
14.	Food & Beverages	18-04-16	2 PM TO 6 PM	Mr. Thomas
15.	Maintenance	19-04-16	9 AM TO 6 PM	Mr. Ramana Reddy
16.	Discharge Pool	20-04-16	9 AM TO 6 PM	Dr. Jyothi
17.	House Keeping	21-04-16	9 AM TO 1 PM	Mr. Saleem
18.	CSSD	21-04-16	2 PM TO 6 PM	Mr. Mansoor
19.	Blood Bank	22-04-16	9 AM TO 1 PM	Dr. Harish
20.	Biomedical	22-04-16	2 PM TO 6 PM	Mr. Balaji
21.	Laboratory Medicine	23-04-16 to 25-04-16	9 AM TO 6 PM	Dr. Harish
22.	HR	26-04-16	9 AM TO 6 PM	Mr. Shantham Sharma
23.	COPC	28-04-16	9 AM TO 6 PM	Mr. Deepak Chaitanya
24.	Nursing	29-04-16	9 AM TO 6 PM	Sis. Romila
25.	Billing	30-04-16	9 AM TO 6 PM	Mr. Jameel