

Summer Training at



**Max Hospital, Saket (New Delhi)
(April 1-May 31, 2014)**

- **Planning, Design and Commissioning of New Super Specialty Hospital in tier-II City**
- **Formulation of Marketing Strategies to Promote Healthcare Services for Oncology Department**

**By
Aparna Yadav**

**Under the guidance of
Dr. Arindam Das**

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



**The IIHMR University, Jaipur
2014**

**INSTITUTE OF HEALTH
MANAGEMENT RESEARCH**

1, Prabhu Dayal Marg
Sanganer Airport, JAIPUR - 302 029, INDIA
Tel. : 3924700, 2791431-32
Fax : 91-141-3924738
E-mail : iihmr@iihmr.org
URL : <http://www.iihmr.org>
Gram : HEALTHINST

CERTIFICATE

This is to certify that **Dr.Aparna Yadav** has undergone her summer training in **Max Super Speciality Hospital Saket, New Delhi** from 1st April, 2014 to 31st May, 2014. The candidate herself carried out below mentioned studies related to her summer training. Her approach to the study has been scientific and analytical.

Studies are:-

1. Planning, Design and commissioning of new super speciality hospital in tier –II cities.
2. Formulation of marketing strategies to promote health care services for oncology department in Max hospital Shalimar bagh

The summer training is partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Hospital and Health Management.

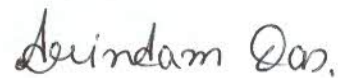
I wish her success in all her future endeavours.



Col.(Dr.) Ashok Kaushik

Dean(Academic & Student Affairs)

IIHMR Jaipur



Arindam Das

Associate Professor

IIHMR Jaipur

ACKNOWLEDGEMENT

For a MANAGEMENT student, power of knowledge is unattainable unless an element of practical observation and practical performance is not added. I consider myself to be fortunate for having been provided an opportunity to undergo summer training at **MAX SUPER SPECIALITY HOSPITAL, SAKET, DELHI**. It is a great pleasure to express my sincere gratitude to **Mr. Anil Vinayak (Director Sales and Marketing)** and **Dr. Sahar Qureshi (Assistant General Manager - Operations)** for providing me an opportunity to undergo training in this highly esteemed organization.

I am highly obliged to **Dr. Sandeep Mor (Assistant Medical Superintendent)** for his keen interest, encouraging appreciation and solemn advice throughout the project.

My special thanks to **Mr. Deepak Fansal (General Manager - Engineering)** for helping me with his valuable suggestions in completion of my report. He has been a constant guiding light and source of illumination for me. It entirely goes to his credit that this report has attained its final shape.

I would also like to thank the **Team of Engineering Department** for clearing my doubts regarding my topic and providing the necessary details whenever was required. I acknowledge them for sparing time out of their hectic schedules and helping me in completion of my report.

Lastly I want to express my gratitude to all those people who took time out from their busy schedules and cleared my queries. I would like to thank my family and friends for being a constant source of inspiration to me.


DR. SAHAR QURESHI
Assistant General Manager
Max Super Speciality Hospital-East Block
Enclave Road, Saket,
(Assistant General Manager)


Dr. Sandeep Mor
(Assistant Medical Supdt.)


Mr. Deepak Fansal
(General Manager Engineering)

ACKNOWLEDGEMENT

For a MANAGEMENT student, the power of knowledge is unattainable unless an element of practical observation and practical performance is not added. I consider myself to be fortunate for having been provided an opportunity to undergo summer training at **MAX SUPER SPECIALITY HOSPITAL, SAKET, DELHI**. It is a great pleasure to express my sincere gratitude to **Mr. Anil Vinayak (Director Sales and Marketing)** and **Dr. Sahar Qureshi (Assistant General Manager-Operations)** for providing me an opportunity to undergo training in this highly esteemed organization.

My very special thanks to **Dr. Shihad Khader (Program Manager-Oncology)** for helping me with his valuable suggestions in completion of my report. He has been a constant guiding light and source of illumination for me. It entirely goes to his credit that this report has attained its final shape.

I would also like to thank the **Team of Oncology Department** for clearing my doubts regarding my topic and providing the necessary details whenever was required I acknowledge them for sparing time out of their hectic schedules and helping me in completion of my report.

Lastly I want to express my gratitude to all those people who took time out from their busy schedules and cleared my queries. I would like to thank my family and friends for being a constant source of illumination to me.



Dr. Sahar Qureshi
(Assistant General Manager)



Dr. Shihad Khader
(Program Manager- Oncology)



Care for life

CERTIFICATE OF COMPLETION



This is to certify that

APARNA YADAV

has been associated as an

INTERN

with the department of

HOSPITAL ADMINISTRATION

for a period of

1st April 2014 To 31st May 2014

at

**Max Super Speciality Hospital
Saket, New Delhi**

"The Internship course is a Max certified course not affiliated to any National/International society".

Sahar Qureshi
Head of the Department

Dr. SAHAR QURESHI

Assistant General Manager-Operations

Max Super Speciality Hospital-East Block

2, Press Enclave Road, Saket,

New Delhi

B. Wadhwa
for Dr. Shubnum Singh

Dean - Nursing, Allied Health, & Wellness Programs
Max Healthcare, New Delhi

Dr. SAHAR QURESHI
Assistant General Manager-Operations
Max Super Speciality Hospital-East Block
2, Press Enclave Road, Saket,
New Delhi-110 017

ACKNOWLEDGEMENTS:

It is indeed a privilege to have got the opportunity to work in a prestigious organization such as Max hospital, Saket (New Delhi). My two month training has been nothing short of extensive learning of the co-ordinated working of a hospital. The exposure I have got on the functioning of various clinical and non clinical departments has been tremendous and has left me with an urge to learn more.

I would like to take the opportunity to thank **Dr. Sahar Qureshi, Assistant General Manager (Operations), Max hospital** for giving me the chance to do my internship at Max Hospital, Saket. . I would also like to thank **Dr. Sandeep Mor, Assistant Medical Superintendent Medical Quality**, for believing in my capabilities and pushing me to the next level.

Mr. Deepak Fansal, Head of Department Engineering Services, Max Hospital for being my mentor and project guide for the entire period of my training, for helping me improve the quality of my work and for helping me identify areas where I lack.

Dr. Shihad Khader, Program Manager, Oncology Department, Max Hospital, for being my mentor and source of continuous guide for my project in the Oncology Department.

Mr. Arindham Das my mentor at IIHMR Jaipur, for his support and guidance, without which this training would not have been possible.

Dr. Ashok Kaushik, Dean, Academic and Student Affairs, for his invaluable inputs and guidance for my projects, as he helped me to develop a line of thought for how to shape my project.

Dr. Vijay Pratap Raghuvanshi, IIHMR Jaipur, for his helpful inputs, which helped improve the quality of my work.

My colleague- **Dr. Pooja Mehta**, at IIHMR Jaipur, for her constant support throughout my training schedule in Max hospital.

TABLE OF CONTENTS

Sr no.	Topic	Page no.
1.	Acknowledgements	3
2.	Abbreviations	4
3.	Organizational learning	5
	Introduction	5
	Organization profile	6
	Data collection process	11
	General findings	12
4.	Specific project findings	39
5.	Project -1 Planning, design and commissioning of new super specialty hospital in tier-II cities.	41
5.1	Introduction	41
5.2	Rationale	41
5.3	Objective	42
5.4	Literature review	43
5.5	Planning and design of ICU	54
5.6	Planning and design of oncology department	57
5.7	Commissioning of hospital	64
5.8	Research methodology	70
5.9	Conclusion	70
5.10	References	69
5.11	Annexure 1-4	70
6.	Project -2 Formulation of Marketing Strategies to Promote Healthcare Services for Oncology Department in Max. Hospital Shalimar Bagh	73
6.1	Introduction	73
6.2	Rationale	75
6.3	Objectives	75
6.4	Marketing strategies	77
6.5	Research methodology	79
6.6	Conclusion	80
6.7	References	80

ACRONYMS/ABBREVIATIONS:

CPVC/UPVC –Chlorinated Poly Vinyl Chloride/ UnPlasticized Poly Vinyl Chloride

HVAC – Heating, Ventilation and Air- Conditioning

CT –Computed Tomography

MRI- Magnetic Resonance Imaging

PET – Positron Emission Tomography

AERB- Atomic Energy Regulatory Board

PAN- Permanent Account Number

LEED – Leadership in Energy and Environmental Design

CGHC- Central Govt. Health Committee

PPP- Public Private Partnership

CTVS- Cardio Thoracic and Vascular Surgery

HDU- High Dependence Unit

MAS-Minimal Access Surgery

2. OBSERVATIONAL LEARNING:

2. A. Introduction:

The summer training is an integral part of the course curriculum of PGDHM at IIHMR Jaipur. As part of the course, students at the end of their first year are required to undergo training of two months to get an in-depth exposure to the various departments in the organization, as well as take up projects as per the requirements of the organization where the students get training. What is most crucial is to build a base of knowledge about the structure and functioning of the hospital, which can be used to understand and apply concepts in the subsequent study tenure at IIHMR Jaipur.

During my summer at Max super specialty hospital, Saket there were numerous learning experiences. These were enhanced due to the projects undertaken at the hospital, which are listed as follows:

- Planning, design and commissioning of new super specialty hospital in tier –II cities.
- Formulation of marketing strategies to promote healthcare services for oncology department in a hospital

A brief report of the training of two months is presented below with the details of tasks undertaken and lessons learnt during the training.

2. B. Organization Profile:



INTRODUCTION TO MAX HOSPITAL, SAKET



MAX AT A GALANCE

Caring for you... for life

Max Super Speciality Hospital, Saket is located in South Delhi is one of the premier names in health care domain in the world. It is designed by internationally renowned architect Mr. Richard Wood and constructed in accordance with globally-accepted standards for hospitals.

Max Super Specialty Hospital is a 540 bedded Hospital and is a part of Max India Limited which is a public limited company founded in 1985 by its current chairman, **Analjit Singh**. Its major shareholders include Singh and the private equity firm **Warburg Pincus**. Max Super Specialty Hospital under the name Max Healthcare commenced operations in 2001 with the intention to provide comprehensive and world-class healthcare services in India. Max Super Specialty Hospital is the country's first comprehensive provider of standardized, seamless and world-class healthcare services. It is committed to the highest standards of medical and service excellence, patient care, scientific and medical education. Max Super Specialty Hospital is located in serene environment of South Delhi, 15 km away from New Delhi railway station and 12 km from domestic airport. It is also easily reachable from satellite town of NCT, Delhi.

Infrastructure of Max Super Speciality Hospital

The infrastructure here offers the followings:

- Novalis Rapid Arc Linac
- Thyroid Uptake
- Institute for Allied Medical Services OPD
- Brachytherapy Suite
- Minor OT
- Nuclear Medicine
- Radiation Oncology
- SPECT-CT
- Treatment Room
- CT Stimulator
- PET-CT
- Mould Room
- Inpatient area
- Radiation Oncology
- Bariatric Surgery
- Economy ward
- Executive Offices
- High dependency unit
- OPD
- Apex coronary care
- Radiology & nuclear medicine
- Dialysis Unit
- OT
- HDU
- ICU
- IP Ward
- Sample Collection
- Cath recovery

Services and facilities at Max Super Speciality Hospital

There are 11 operation theatre and 2 cardiac cath labs. In all there are 17 beds for CTVS ICU, 16 beds for apex coronary care, 11 beds for cath recovery, 9 beds for Onco Surgical ICU, 12 beds for Medical ICU, 11 beds for Minimal Access Surgery recovery, 8 beds for high dependency unit and 17 beds for Dialysis Unit.

VISION MISSION MODEL



Awards and accreditations:



- I. Max Healthcare is **ISO 9001:2000 & ISO 14001:2004** certified organization.
- II. Medical Quality Performance Standards Surpassed International Benchmarks in **Nosocomial infection**.
- III. India's first fellowship in Emergency Medicine Established in conjunction with **George Washington University**.
- IV. American Heart Association recognizes MHC as a training centre.
- V. **–Best Managed Healthcare Program**” awarded at the National level at Express Healthcare Excellence Award.
- VI. Max Institute of Minimal Access recognized as Centre of Excellence in APAC.
- VII. FICC Award for operational Excellence in Healthcare delivery.
FICC Healthcare awards.
- VIII. NABH accreditation for Transfusion Medicine Department.
- IX. NABH accredited hospital.
- X. DL Shah National Awards on **–Economics of Quality**”.

Objectives:

- Satisfying customer needs
- Enhancement of quality systems
- Effective performance measurement & compliance systems
- Continuous Improvement loop
- Engage every employee in quality drive

Hospital Specialties:

- Aesthetic & Reconstructive Surgery
- Audiology & Speech Therapy
- Cardiac Sciences
- Dental Care
- Dermatology
- Ear Nose Throat
- Endocrinology & Diabetes
- Eye Care
- Gastroenterology & Endoscopy
- General Surgery
- Internal Medicine
- IVF
- Mental Health and Behavioural Sciences
- MAMBS (Minimal Access, Metabolic & Bariatric Surgery}
- Nephrology
- Neurosciences
- Nutrition & Dietetics
- Obstetrics & Gynaecology
- Oncology (Cancer Care)
- Orthopaedics and Joint Replacement
- Paediatrics
- Physiotherapy & Rehabilitation
- Podiatry
- Pulmonology
- Urology

Hospital services and amenities:

- Blood bank
- 24*7 Max pharmacy
- Regional translators
- Cafeteria
- Waiting lounge
- Prayer room
- Bank/ATM
- Business associates
- TPAs
- Alliance partner

2.C. Data Collection

- With permission from the **Assistant General Manager Dr. Sahar qureshi**, we created a schedule, which we have followed in order to observe and learn the functioning of all the departments of the hospital.
- After permission was secured and a schedule was made to observe the various departments of the hospital, we went and sought appointments from the concerned personnel in the various departments.
- Once these permissions were obtained, we got the details of personnel who would guide us in these departments.
- The schedule of our rotation is attached as Annexure 1.

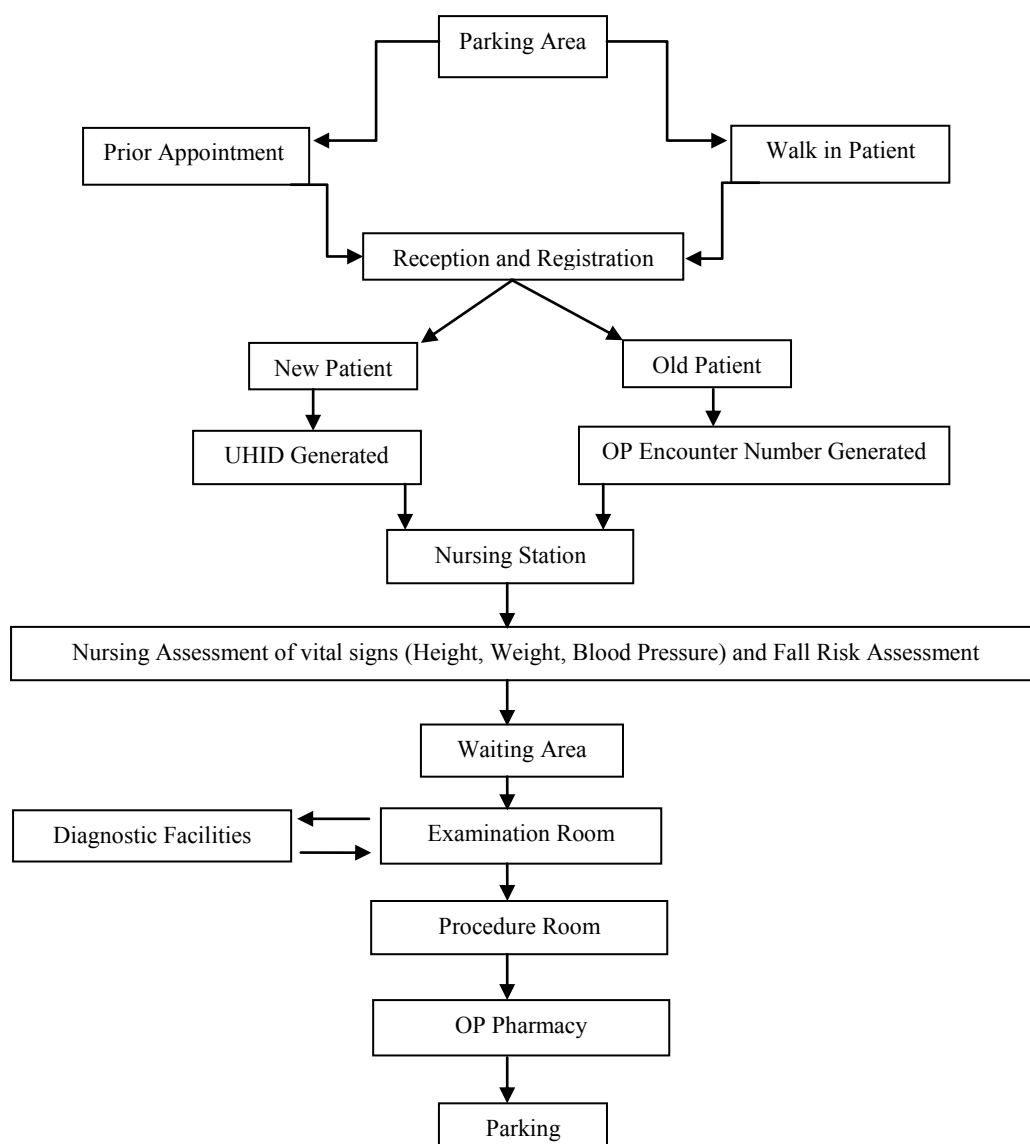
2. D. General Findings

I will attempt to present my general findings in the form of process flow sheets, in the order of my visit to the departments.

1) OUT-PATIENT DEPARTMENT

- Each INSTITUTE of Max saket hospital has its own OPD area as well as IPD area / day-care area wherever applicable.
- Every OPD has a procedure room and its own Front Desk.
- Appointments are centralized and are recorded on the Hospital Information Management System. As soon as appointments are fixed, a text message is sent to the patient confirming the appointment, and a reminder message is sent on the day before the appointment. No walk-in patient is turned away, and the staffs try to accommodate these patients between the appointments already scheduled for the day.
- Each OPD waiting area has the capacity to handle 70-100 patients waiting.
- For Chairpersons and senior doctors, a junior doctor does the initial assessment of the patient, which not only reduces the workload of the senior doctors (whose slots are always overbooked), but it also gives the junior doctors an opportunity to learn from the best brains in the industry.

The general process flow that is followed in all the OPDs is as follows:



2) **IN-PATIENT DEPARTMENT (IPD)**

- IPD is distributed over five floors (2nd-6th) in the east wing of Max hospital including a total number of 201 beds.
- Every bedside has:
 - Details of Consultant, Nurse and Mentor written at the top of every bed
 - Room equipment checklist – side rails, Oxygen, Suction
 - Important Instructions
- The rooms available in IPD have the following structure of beds per room:
 - 6 in 1
 - 4 in 1
 - 2 in 1
 - Single Deluxe
 - VIP suite
- Every floor has a central nursing station with
 - Information Board covering:
 - Designation & Contact numbers of
 - Duty doctor
 - Administration Staff
 - Support Staff
 - Nurses' names with shift timing and designation
 - Crash Cart parked next to the nursing station
 - Computer on wheels (COW) - 4
 - Cupboards with forms- down time form, investigation track sheet, blood request form, PAC sheet, informed consent, inventory files and registers
 - Medication rooms - 2
 - Pantry – 1
 - Records room
 - Biomedical Waste Disposal
- Process for admission & discharge of new patient to IPD:
- IPD receives intimation call from the department from where patient is referred
- Duty doctor is informed
- Room is assigned by the floor mentor
- Patient is admitted and vitals are checked by the nursing staff
- Physical assessment is done
- History is taken
- Concerned doctor is informed and medications & instructions are entered in Computerized Patient Record System (CPRS), reviewed by IPD Pharmacy
- Patient bill is consolidated at IPD billing
- Discharge intimation given by doctor and processed by Nursing staff
- Clearance from pharmacy required
- Discharge process TAT = 30 minutes for cash payment patient
- Nurse to bed ratio = 1:4 or 1:6
- General Duty Assistants (GDAs) = 2-3 in every shift

- Average Length of Stay (ALOS) for normal Laparoscopic surgeries = 2-3 days
- Quality Indicators are:
 - Patient Fall, Hypoglycaemia, Needle stick Injury

3) **EMERGENCY DEPARTMENT**

Due to the unplanned nature of patient attendance, this department provide initial treatment for a broad spectrum of illnesses and injuries, some of which may be life-threatening and require immediate attention, except for major burns. It is located at the ground floor with its own dedicated entrance and operates for 24 hours a day.

Ambulance- 2 ACLS (with CCTV camera for telemedicine) and 4 BCLS

Patients are either transferred to other departments or are discharged within 4 hours. Max Super Speciality Hospital, Saket had made a world record for management of MI patient in emergency department from entrance to the balloon time in cath lab, in less than 35 minutes.

Response time:

- EMO response time <1 min
- Consultant response time <60 min
- Code blue response time <3min
- Ambulance response time <10 min

Infrastructure:

- Total 16 bedded triage
- Resuscitation suite -1 bed
- Urgent care area – 4 beds
- Observation area – 9 beds
- Clinical decision unit – 2 beds
- Doctors work station-is located in the centre of the urgent care area
- Store room- is located behind the reception. Medications are filled twice a day and stock of two days is kept in advance for Sunday. Narcotics are also available and kept in safe.
- Hospital information system and CPRS
- COWS(computer on wheels)
- Waiting area for patient's attendants is outside the department.

Staffing:

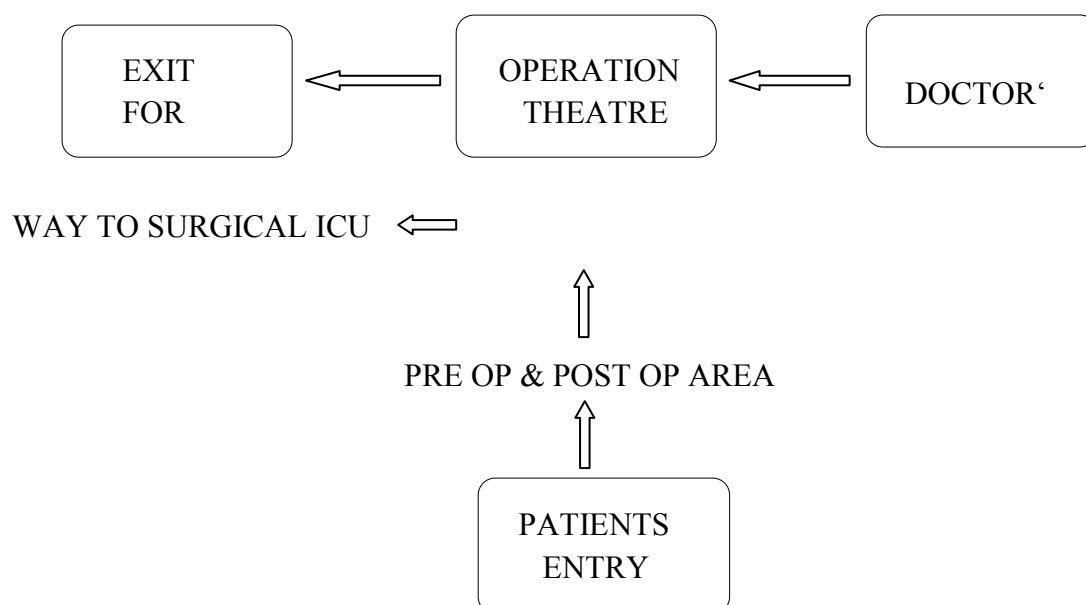
1. Senior consultant (Emergency medical officer)
2. Team leader
3. Emergency physicians - 3
4. Nurses : Male- 4 to 5
Female- 2 to 3
5. 2 personnel at reception
6. Paramedical staff for ambulance
7. 2 GDA

Outsourced staff : security personnel

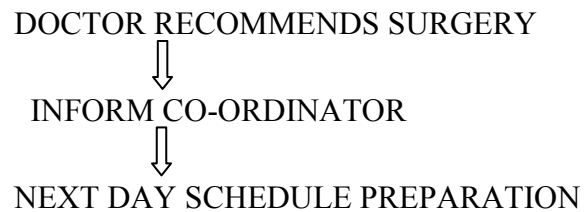
4) OPERATION THEATRE

There are 20 Operation Theatres in Max, Saket. West Block comprises of 10T complex which has 7OTs on 1st Floor and 1 Labour OT on 3rd Floor. East Block has 12 OTs. West Block OT caters to the specialities like Neurology, Orthopaedics, Paediatrics, Urology, Laproscopy, Gyanaecology, Eye and ENT. East Block OTs caters to the specialities like Cardiology, Minimal Access Metabolic Bariatric Surgery, Plastic Surgery and Oncology. For neurology there is a special OT Brain Suite with Installed MRI Machine.

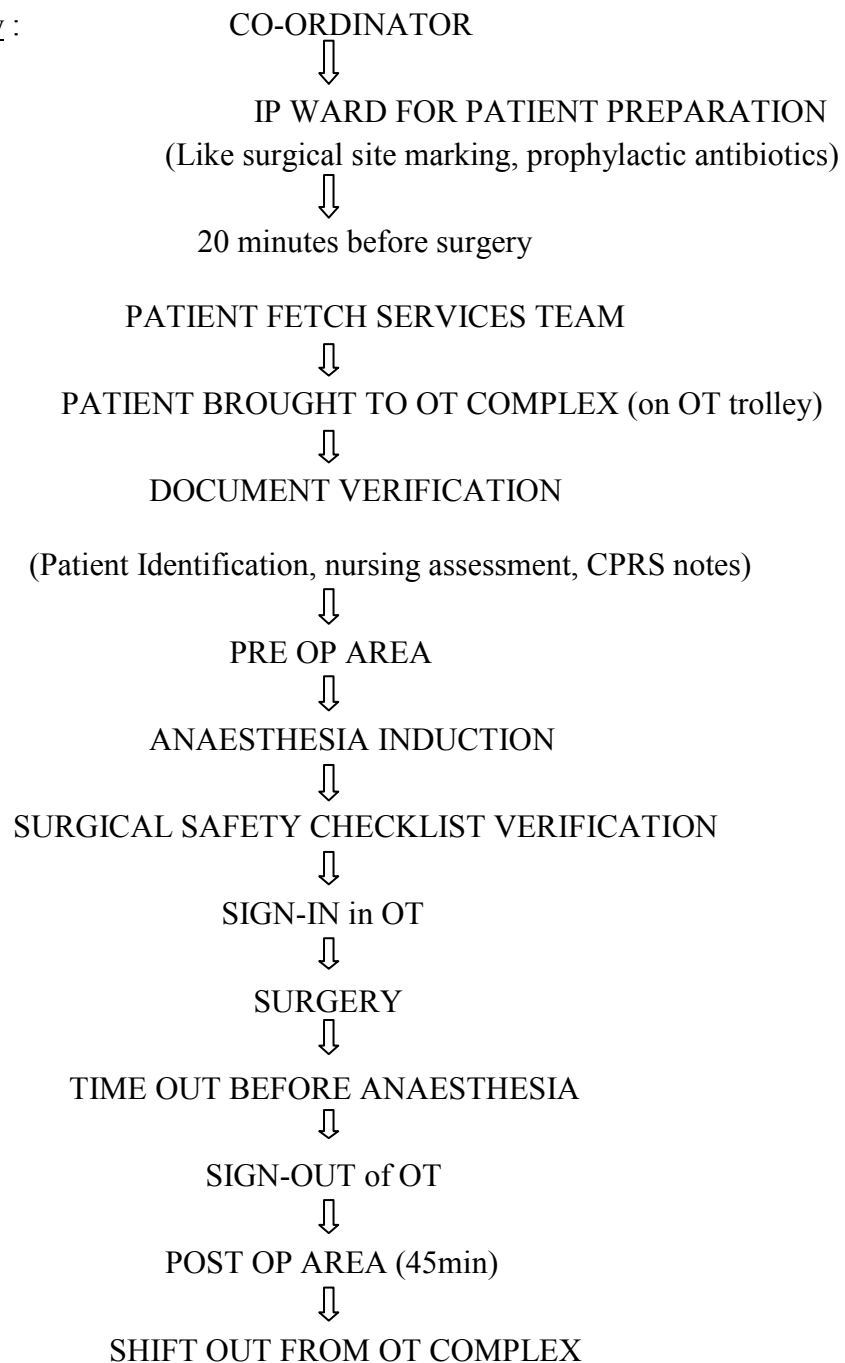
OT LAYOUT:



Process flow for Planned Surgery:



On the day of surgery :



Disinfection of OT:

- In between 2 cases (20 minutes)
- End of Day
- Weekly
- 6 Months
- Annually

Culture Swabs are collected weekly to keep a check on OT sterilisation.

There is also a BONE BANK and a Mini Pantry within the OT Complex.

Instrument sterilization: After surgery, preliminary washing of instruments is done by nurses and the instruments are sent to CSSD. Sterile instruments are supplied from CSSD to Sterilization room in OT complex. There is also 1 TSSU (Theatre sterile supply unit) which has 2 autoclaves and in case of emergency sterilization is done in there.

Material management: The OT Complex has an individual material store for OT consumables.

Training – conducted weekly for nursing staff, GDAs.

5) INTENSIVE CARE UNIT

There are 99 beds for ICU in East and South wing and 77 beds in West wing. Every ICU is specialized like CTVS Adult-17 beds, ACC-16 beds, CTVS pediatric- 9beds, Medical ICU, Surgical ICU, Oncology Medical ICU and Surgical ICU, Respiratory ICU, Pediatric ICU, Neonatal ICU.

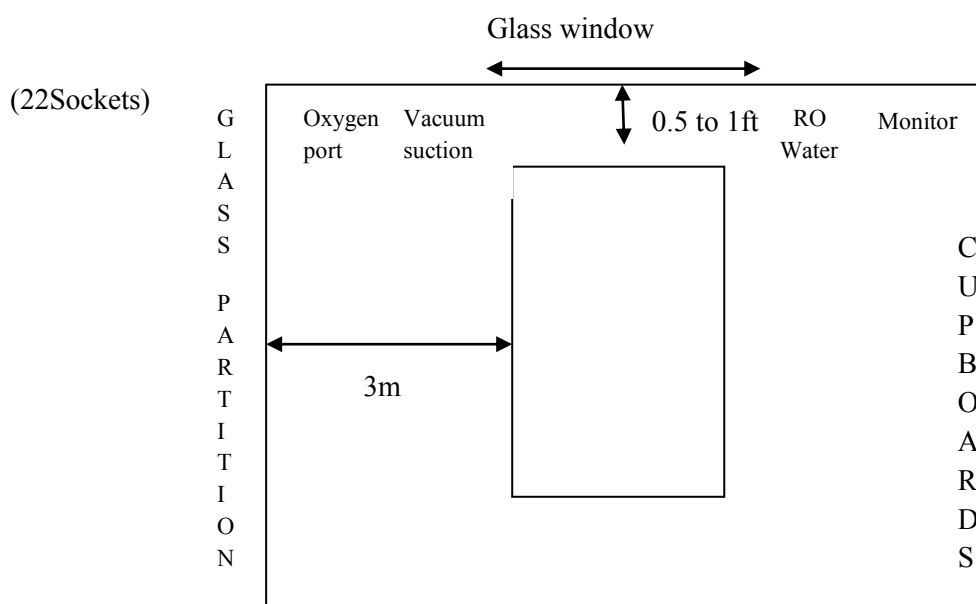
Every ICU has an Isolation Room apart from onco medical ICU. The beds types include alpha beds, nimbus beds, excel beds and normal beds. Every cubicle has a monitor, oxygen pipelines, vacuum line, a Computer on Wheels (COW) and 22 electric sockets. Ventilators are available on demand. The ICUs have syringe pumps.

Areas: Nursing Station, dirty utility room , medication storage room, washroom, clean utility room and pantry.

Nurse: Bed Ratio is maintained as 1:2 normally and 1:1 for critically ill and ventilator supported patients. 2 duty doctors are available in each shift. Visits by consultants and physiotherapists are made as per requirement.

The material is managed by 2 rounds per day by the ICU GDA to and from CSSD.

Layout of ICU Cubicle :



6) CENTRAL STERILE SUPPLY DEPARTMENT

The department is centralized for the hospital and situated in an area of 1500 sq. feet in basement 1 of east wing. The aim is to achieve microbial count in range of 10^6 to 10^{-6} to ensure sterilization.

Process flow: Dirty trays are dismantled → mechanical cleaning done → ultrasonic washing in washers for 1 hour → rinsing → thermal disinfection (hot water wash) → packaging done with different materials (medical grade paper, linen, SMS paper) in the clean area → materials are differentiated → transferred to sterile area (with positive pressure) → sent to issue area.

CSSD has a plasma sterilizer. There was no software or IT involvement for counting of instruments. Bowie Dick Test batch monitoring is followed.

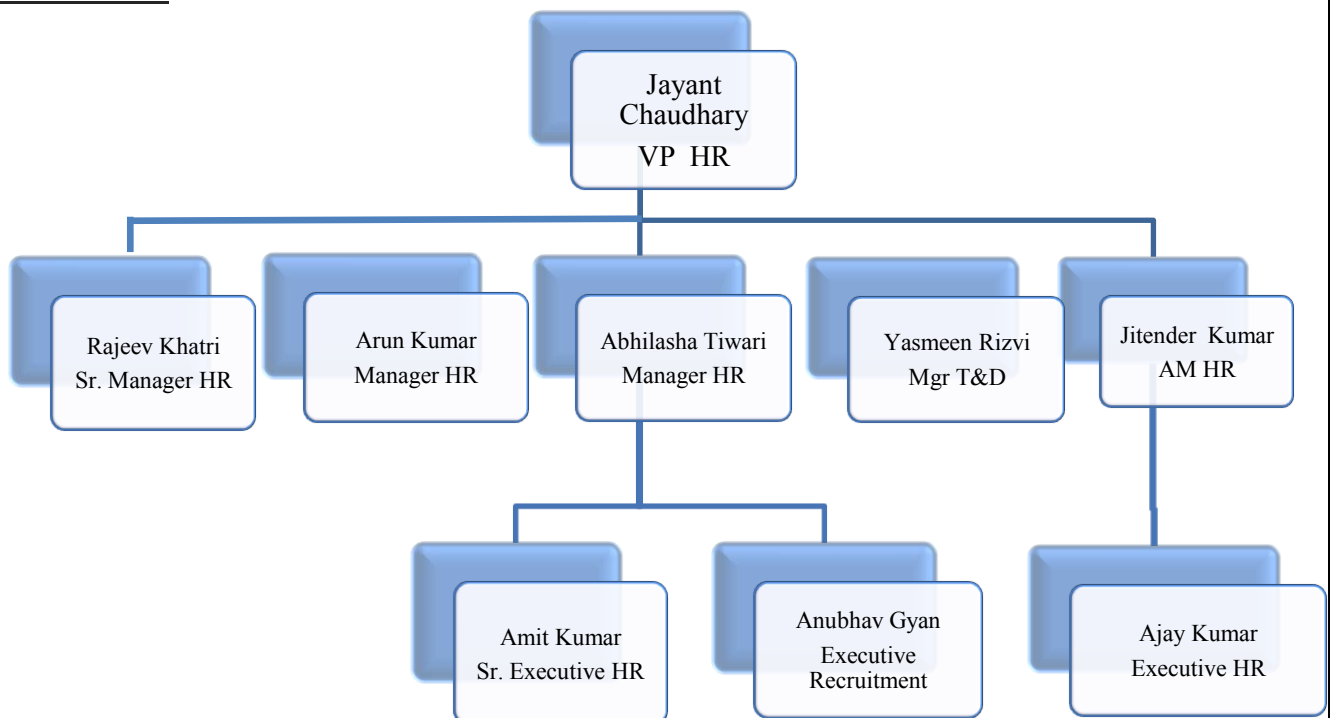
7) HUMAN RESOURCE MANAGEMENT

Human resource management (HRM or simply HR) is a function in designed to maximize employee performance in service of their employer's strategic objectives. HR is primarily concerned with how people are managed within organizations, focusing on policies and systems.

Following are the policies undertaken by the Human Resource Management Department:-

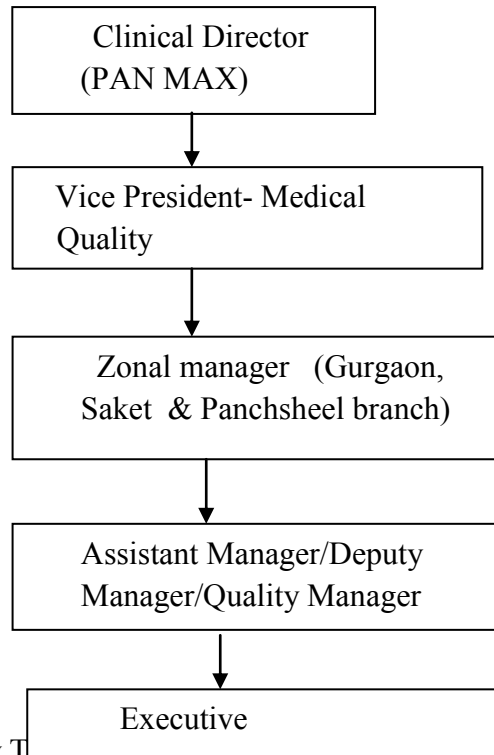
- Human Resource Planning Policy.
- Job Profile Format.
- Recruitment policy.
- Training and development policy.
- Induction and Orientation policy.
- Performance appraisal Policy.
- Complaint & Grievances Redressal Policy.
- Disciplinary Policy.
- Medical Discount Policy.
- Annual Medical Check-up Policy.
- Clinical credentialing and privileging Policy.
- Nursing Credentialing and Privileging Policy.

HR Structure

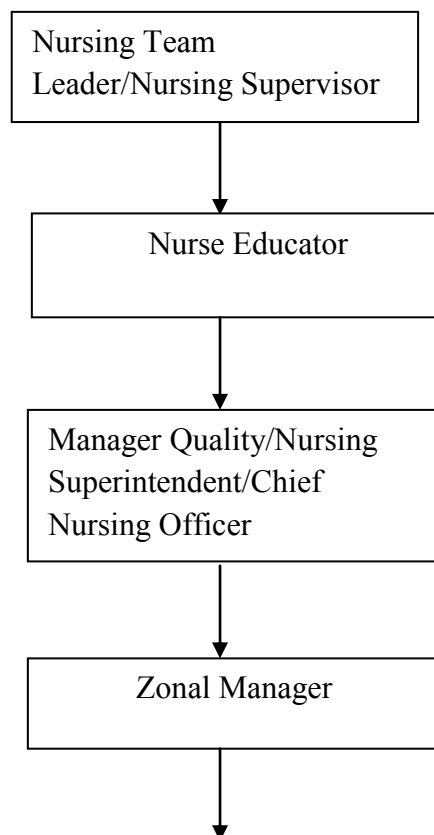


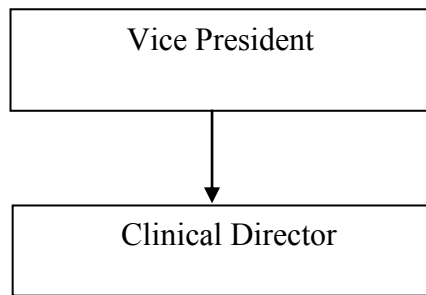
8) MEDICAL QUALITY DEPARTMENT

Organogram of the department



Flow of reporting in the Quality Team





The different **indicators of medical quality** are:-

1. Falls
2. Nosocomial infections
3. Phlebitis
4. Medication errors
5. Near miss(incident might have occurred)
6. Needle stick injury
7. Pressure sores
8. Hypoglycemia
9. Adverse drug reactions
10. Blood transfusion related errors
11. Infection outbreak
12. Notifiable diseases
13. Sentinel events-wrong patient, wrong surgery, wrong side, foreign body left inside cavity.
14. Code blue-Rapid Response Team(RRT)
15. Mortality- data categorized by area, speciality,age
16. Other adverse events
17. Readmission within 14 days of discharge/Return to Emergency within 7 days
18. Return to OT within 7 days
19. Return to ICU within 7 days.

9) NURSING QUALITY DEPARTMENT

There are a total of **seven indicators** of nursing quality:-

1. Patient falls

2. Medication errors:-is of four types:-

- Prescription error-mistake of doctors
- Dispensing error-mistake of pharmacist
- Administration error-mistake of nurses
- Documentation error-mistake of nurses where they fail to document after administration of medicines.

3. Pressure sores: - outside/inside pressure sores

Outside pressure sores means those acquired before admission while inside pressure sores means those acquired post admission. There are special wound care nurses who look after pressure sore dressings and work jointly with plastic surgeon's team.

4. Hypoglycemia-Random blood sugar level falling below 60mg/dl has to be informed. It is called negligence if nurse doesn't inform doctor or fails to recheck the blood sugar.

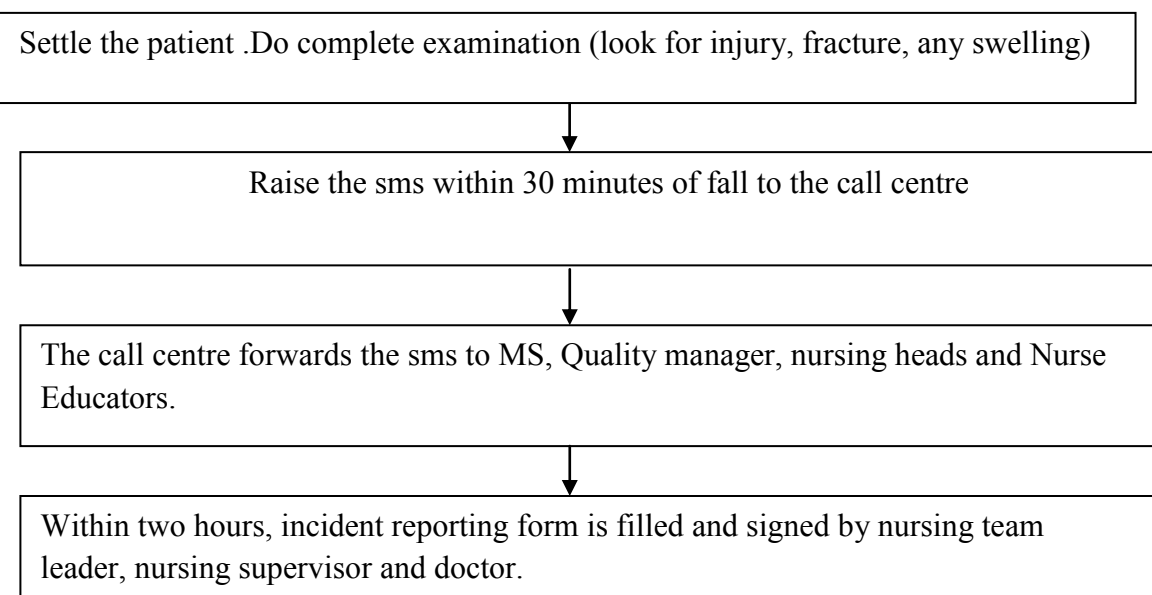
5. Needle stick injury

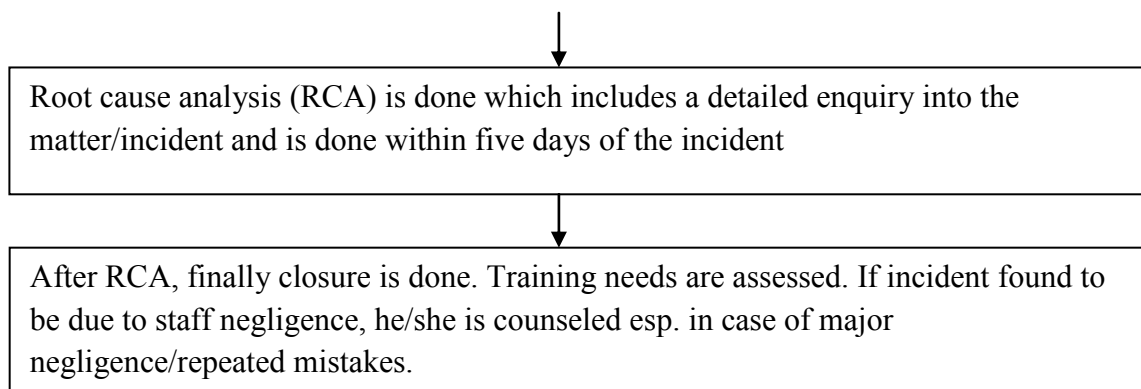
6. Health care associated infection is of four types:-

- CAUTI-Catheter Associated Urinary Tract Infection
- CLABSI-Central Line Associated Blood Stream Infection
- VAP-Ventilator Associated Pneumonia
- SSI-Surgical Site Infection

7. Phlebitis-It is defined as inflammation of vein which has different signs and symptoms like redness, swelling, pain and inflammation. A phlebitis checklist is maintained.

Flow of reporting an adverse event (e.g. falls)





10) CATH LAB

Catheterization laboratory or cath lab is an examination room with diagnostic imaging equipment used to visualize the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.

Diagnostic procedures performed here are:

- Angiography
- Electrophysiology study
- Cath study

Out of these 3 angiography and cath study is done in cath lab 1 and EPS is done in cath lab 2.

Other procedures are:

- Percutaneous Transluminal Coronary Angioplasty
- Peripheral Transluminal Angioplasty
- Radio Frequency Ablation
- Permanent Pacemaker Implantation
- Intra Cardiac Defibrillation
- Cardiac Resynchronisation Therapy Defibrillator Device
- Cardiac Resynchronisation Therapy Pacemaker
- Left and right sided pressure studies
- Closure of some congenital heart defect

Units of cath lab:

1. Cath lab 1
2. Cath lab 2
3. Technical room
4. Observation area
5. Technician room
6. Store room and utility room
7. Observation area
8. Instrument washroom

Location: Cath lab is located on the first floor with the vicinity areas as

- Emergency department
- Operation theatre
- Cath recovery
- Coronary care
- CTVS OT
- SICU
- PICU
- MICU

Staffing:

- 9 interventional cardiologists
- 19 nurses
- 9 technicians
- 1 person from store

11) INTERNATIONAL PATIENT SERVICES (IPS) DEPARTMENT

It takes a lot to be a world-class health care services provider and as per patient registration data, over 11 lac overseas patients have been helped to get back to their normal lifestyle. This department, situated in East wing, is exclusively dedicated for the services of international patients.

Contact Procedure:

- Patient sends a query and/or reports
- IPS Team consults the relevant consultant and provides diagnosis, proposed treatment and estimate
- If required, a telephonic meeting may also be arranged
- Patient confirms if he wants to have treatment at Max Healthcare to provide Visa Facilitation Letter

- Patient confirms the arrival date and time
- IPS Team, in the meantime, books room, OT etc. for the patient
- Patient is received at the Airport and then, brought to the Hospital/Guest House/Hotel

Also, another contact procedure is as follows:

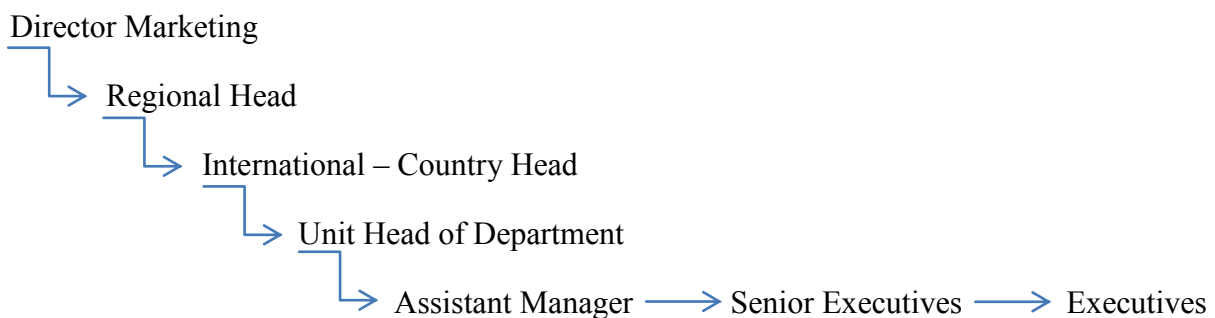
- Max hospital conducts free outreach OPDs in other countries, at least 1-2 per year
- Max hospital also has tie ups with different hospitals in these countries

International patients avail treatment in India mainly because these facilities or treatments are not available in their respective countries, and are available at a much cheaper price in India than other countries such as US, UK or European countries. The countries from where patients come to seek treatment most commonly are Iraq, African countries (Nigeria, Congo), Oman, Uzbekistan, Afghanistan, Nepal, and Bangladesh.

The hospital provides:

- Various Regional Translators such as Arabic, Persian, Iraqi, Bangladeshi and Russian (In house interpreter).
- Assistance in ground transportation such as finding a shuttle, hiring a car or choosing any other mode of transportation within the city.
- Relationship Managers, who closely work with over 50 Diplomatic Missions and numerous Expat bodies to ensure that international patients have a comfortable and memorable stay in India.

Staffing:



12) BLOOD BANK

Max super specialty hospital has its own blood bank. All blood groups are available. But it is preferred that patient arranges blood through his relatives or any friend and should give replacement.

Blood bank consist of

1. Sample collection area / reception area: In reception area a form is given to the attendant of the patient regarding their details before he/ she donates the blood.
2. Apheresis area: blood have several components including red blood cells platelets and

plasma. Donor aphaeresis is a special type of blood donation in which a specific component platelet, plasma is withdrawn from donor

3. Component room: In component room the whole blood is separated into packed cells FFP and platelets.
4. TTI room: it is to diagnose transfusion transmitted infections. If donor is detected positive for TTI status it means donor have the potential to transmit the infection to their partner and children.
5. Issue room: This room is to issue the screened blood bags.

Staff of blood bank consists of 1 HOD, 2 blood bank officer, 1 technician supervisor, 16 technicians, 2 staff nurse, 2 computer executives, 4 GDA.

13) PHARMACY

Max pharmacy is self-owned with Central Pharmacy situated at corporate office, Okhla.

There are 2 In-patient pharmacy stores and 2 Out-patient stores in the hospital.

PURCHASE

Auto purchase requisition is given to central purchasing team which is forwarded to vendor (outsourced). For purchasing the items ABC method is followed. Weekly requisition is done and vendors take minimum 3 days for delivery of drugs to hospital.

STORING OF DRUGS

Medicines are arranged according to VISTA (e-care) in Client patient record system via generic name in alphabetic order in racks, shelves, cupboards and drawers. Oral, parenteral and topical items are stored separately. Near expiry (expiry within 3 months) is stored in separate designated area to expedite the consumptions.

INDENT AND DISPENSE OF MEDICATIONS.

In patient pharmacy-

In CPRS, Medication orders posted by the clinicians is verified by pharmacist on PUTTY System labelled with (patient info, SSN no., drug name,) then the medications are dispatched after Billing via HIS (Hospital information system) and finally handover to GDA to dispense medicines. The Stat orders required immediately are dispensed within 30 minutes.

The normal order is dispensed within 1 hour and routine order is delivered by 1 round per day.

NARCOTICS DRUGS

They are kept in double lock and key system. Documentation of narcotic drugs is appropriately maintained.

Narcotics drugs under statutory regulation being used in max hospitals include: injection and transdermal patch of Fentanyl and injection and tab. of Morphine.

LOOK ALIKE AND SOUND ALIKE DRUGS

Look alike and sound alike medications have high medication error due to similarities in nomenclature and packaging.

In the main pharmacy stores, (SALA Medications) are stored separately in 2 adjacent racks with blue coloured sound alike and pink coloured look alike medications warning stickers to avoid confusion while dispensing.

Medication Recall: If a drug is found to be defective, it is reported to the Okhla office where the records for that particular series of drugs dispensed is checked and verified for medication recall.

Licences acquired by Max hospital pharmacy -

1) Pharmacist License

2) Narcotics License

INVENTORY MANAGEMENT PARAMETERS

I. ABC Class

A Items: 7 days

B Items: 10 days

C Items: 15 days

II. EOQ - (economic order quantity)

- III. LEAD TIME – Time from ordering to delivery of drugs
- IV. VED – Vital Essential Desirable (According To move of drugs)
- V. BULK MEDICINE.

14) DEPARTMENT OF LAB SERVICES

INTRODUCTION-

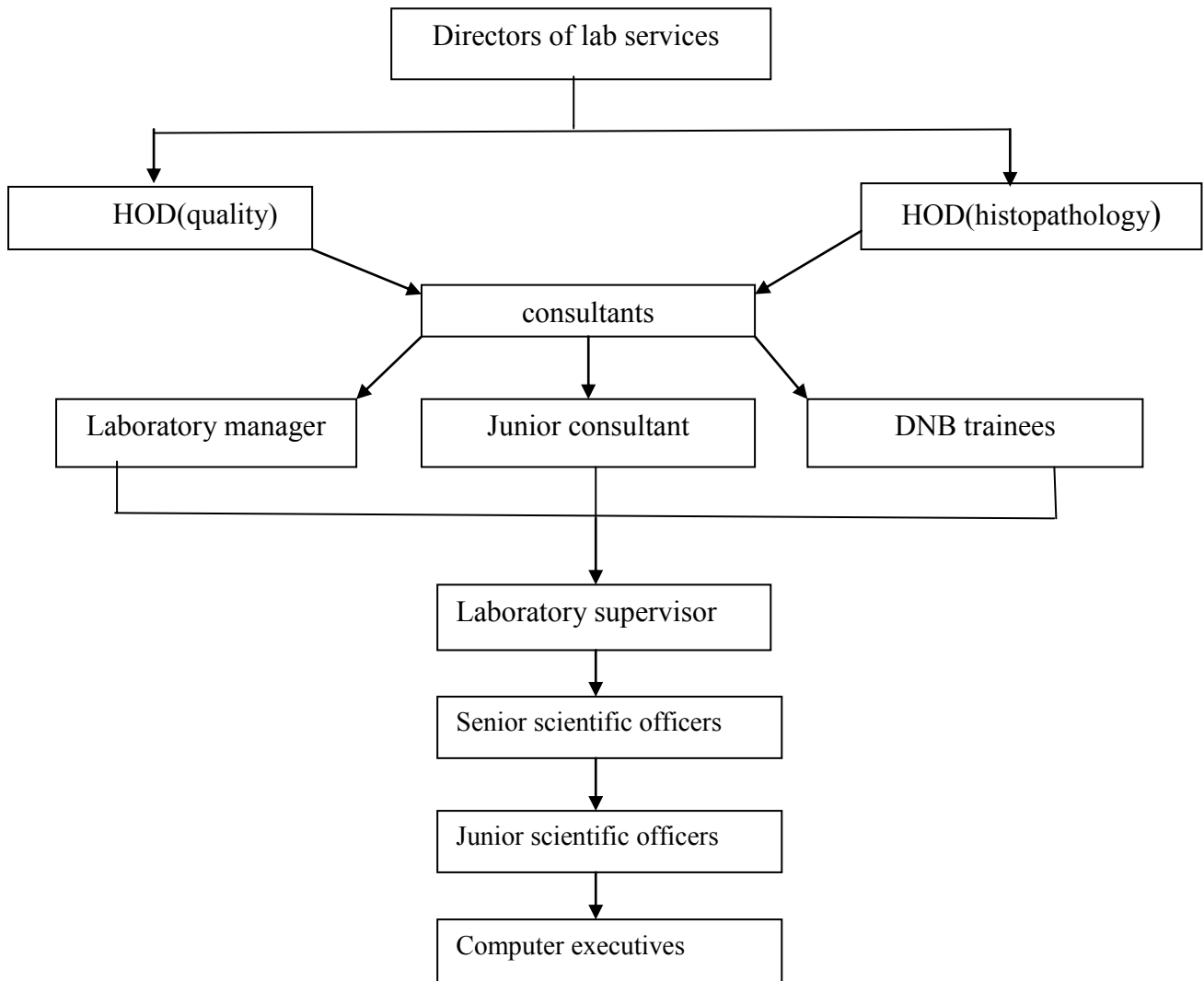
An ISO 9001:2000 certified lab, it is open 24 hrs a day. It's a high-tech lab with fully automated instrument which are directly interfaced with ***hospital information system*** and ***laboratory information system***. Facility of stat tests (emergency) and sample collection from home is also available.

LABORATORY COMPRISES OF THE FOLLOWING DEPARTMENTS-

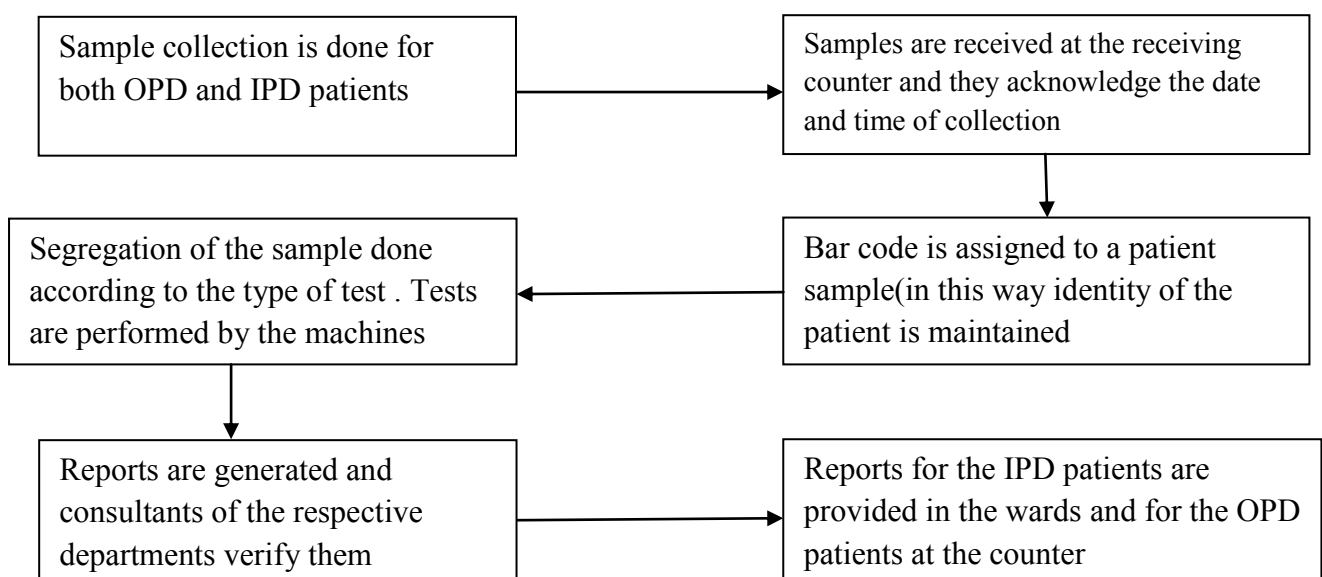
- Biochemistry
- Haematology
- Immunoassay
- Histopathology
- Clinical pathology
- Serology
- Microbiology

HIERARCHY- The Department Of Lab Is Broadly Divided In Two Departments

- Lab medicine
- Histopathology



PROCESS FLOW-



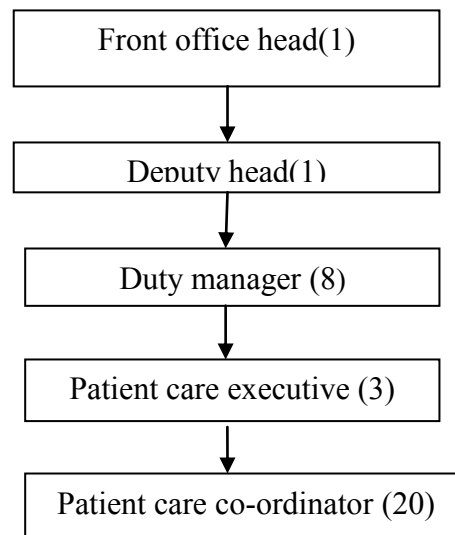
LABORATORY INFORMATION SYSTEM- It is connected with with hospital information system

- Sample received-red color
- Samples acknowledged-yellow color
- Test done-blue color
- Result verified-green color
- Billing done-pink color

15) FRONT OFFICE

Front office is the first point of contact between the hospital and its customer.

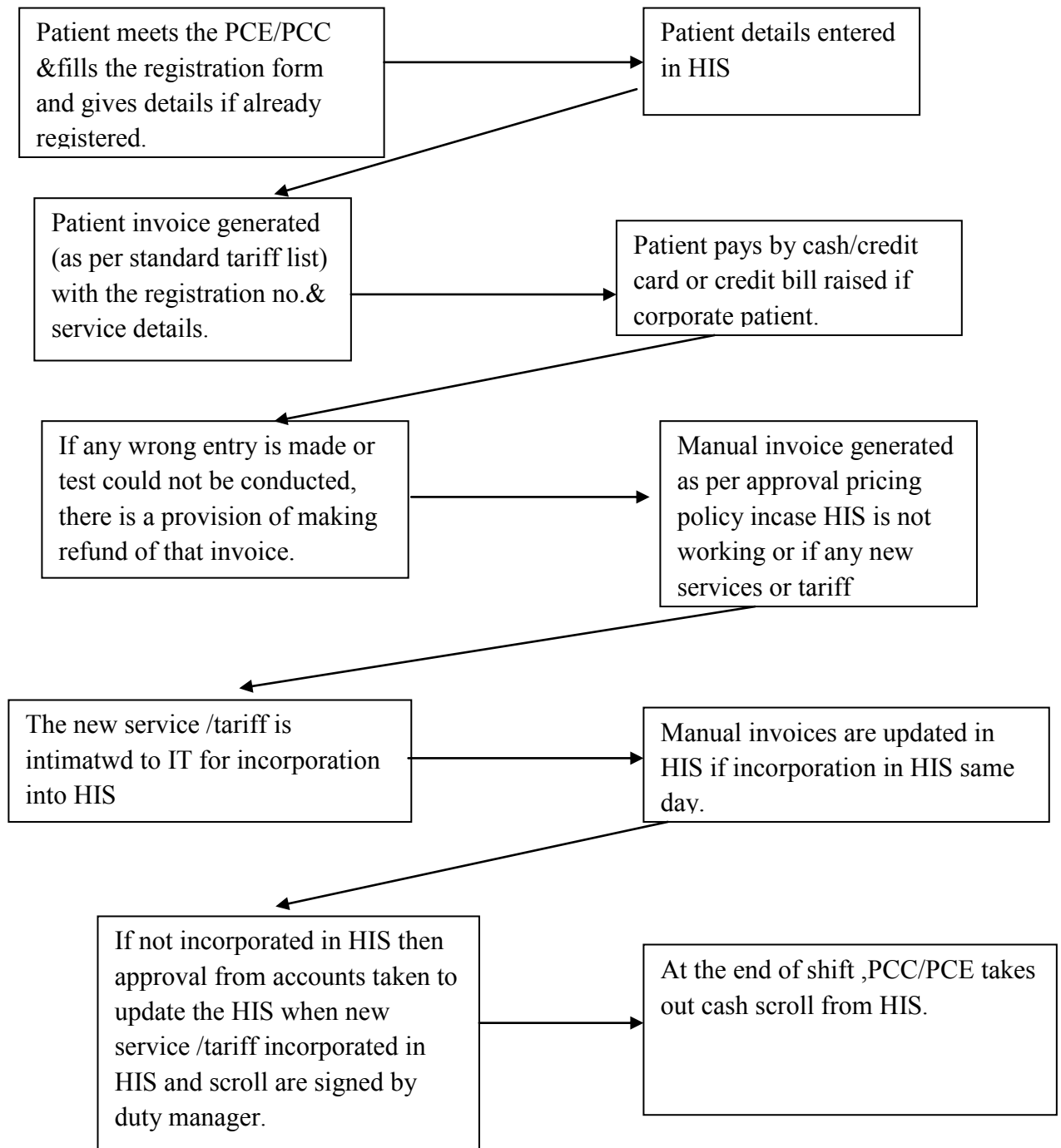
Organization chart of the dept.

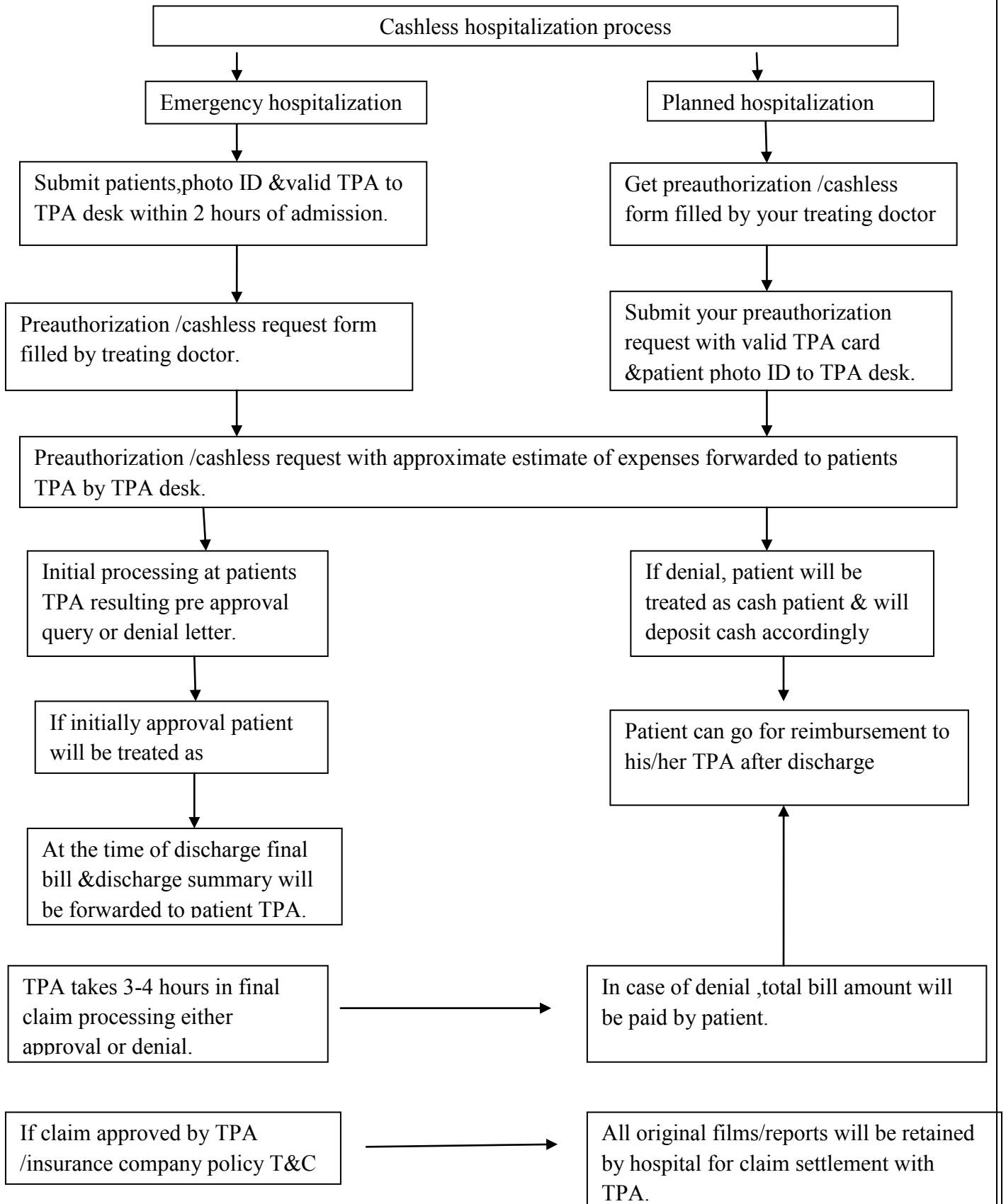


Services provided by front office

- | | |
|---|--|
| 1) Inpatient and Outpatient registration. | 7) Insurance management |
| 2) IP admission and discharge | 8) Patient visit history |
| 3) Medical alert details | 9) Medical records movements |
| 4) Appointment scheduling | 10) Appointment for diagnostic tests |
| 5) Doctors schedule summary | 11) preventive health program registration and scheduling. |
| 6) Patient billing (IPD, OPD) | |

Patient registration process





16) RADIOLOGY

The radiology department is divided into 2 sections:

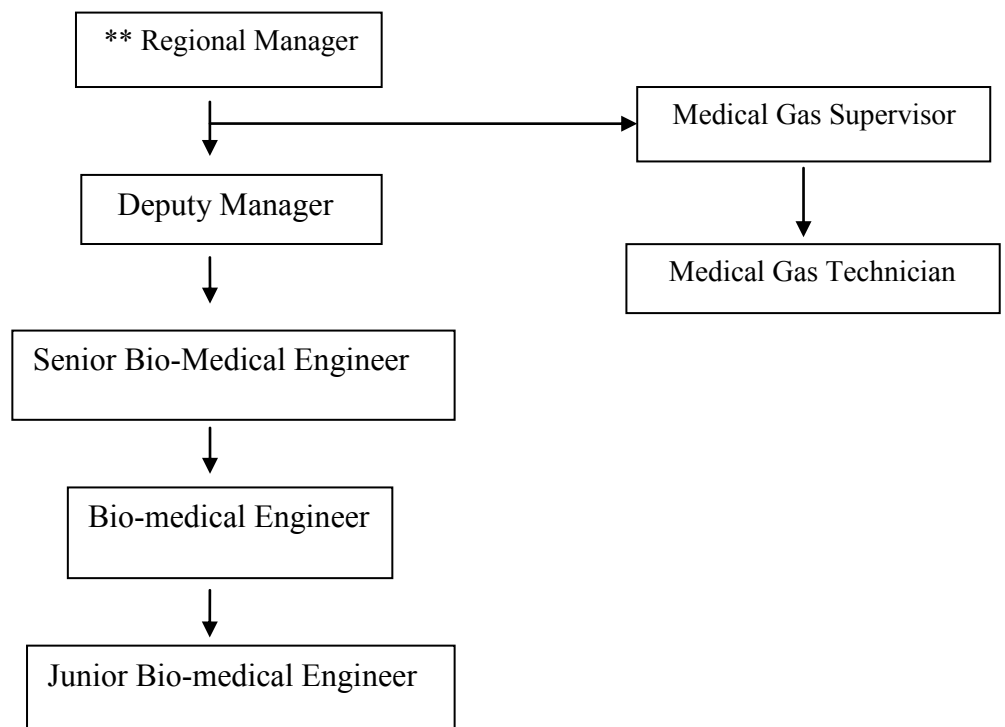
1. One section has a reception counter, 4 ultrasound rooms, 1 mammography room, 1 bone densitometry room, reporting room and conference room.
 - The reporting room has computer systems for the doctors to study images and reports are hand-written by the radiologists in the reporting room. These reports are then sent to the typists and final printed reports are delivered to the patients from the dispatch window. The reports for an x-ray done in morning till 12pm are dispatched in evening and those done in afternoon are delivered next day morning.
2. Second section has reception counter, X-ray room, MRI room along with a change room and waiting area, interventional radiological suite, fluoroscopy room and CT Scan room. There are 2 MRI machines – 1.5 Tesla and 3 Tesla and 2 fixed and 2 portable X-ray machines.

17) BIOMEDICAL ENGINEERING

- The department of biomedical engineering deals with the purchase, installation & commissioning, training on operating, handling and maintenance of all the medical equipments in all the areas and departments of the hospital.
- Also deals with the in-house calibration of equipments.
- Gas manifolds are also handled by the biomedical department.
The areas included are:
 - All wards
 - All operation theatres
 - All ICUs
 - Patient rooms
 - Radiology
 - Triage
 - Blood Bank
 - Nuclear medicine
 - Cardiac non invasive diagnostics
 - Medical Gases
 - Medical Furniture
 - LINAC

Objectives:

- To maintain assets list
- To conduct preventive maintenance for biomedical equipments.
- To ensure timely repair of biomedical equipments medical furniture.
- To conduct calibration/validation of biomedical equipments.
- Preventive maintenance for Medical Gas equipments.

Organizational chart

**showing – Department head

18) CALL CENTRE

Call centre of Max hospital, saket operates at 24*7. It is centralized patient contact centre for saket. It can be used as an information centre for all customers.

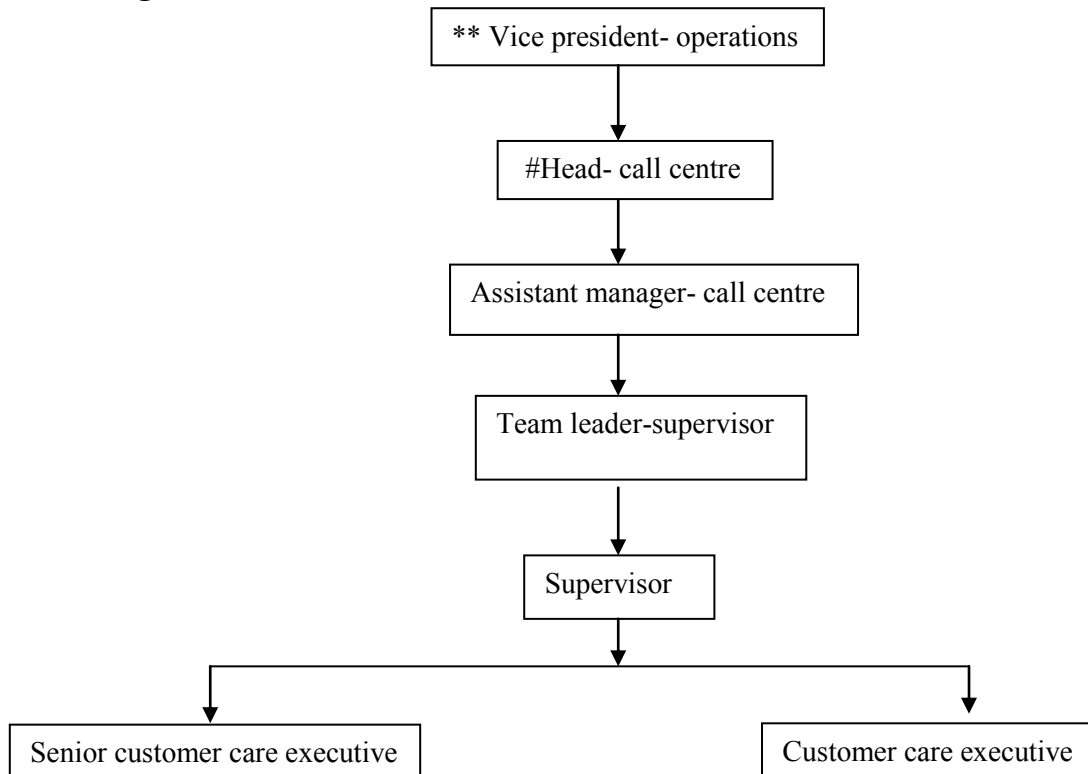
Call centre deals with:

- Doctor's appointment
- Health check ups
- Radiology and diagnostic appointments
- Patient's information

- Doctor's information
- Employee's information
- Speciality information
- Other department information
- It handles internal emergency e.g. Blue code

Main board line number is: 26515050

Organization chart:



** indicates administrative head

#indicates functional head

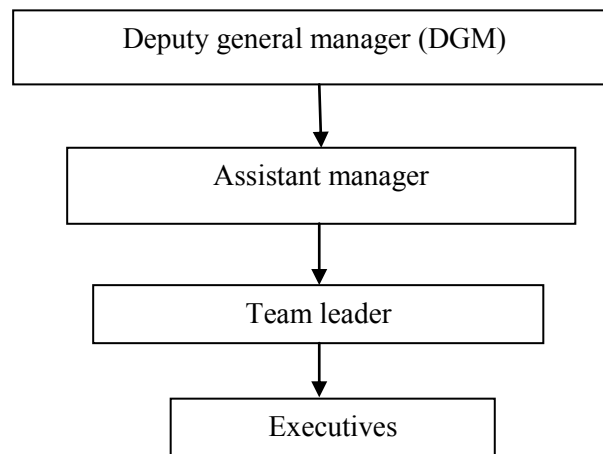
19) FOOD AND BEVERAGES

Introduction

Food and beverages department deals with supply of food to the patients sometimes to the patients attendant and during the various conferences and meeting in the organization.

Although food and beverages dept at the max healthcare centre is outsourced to the sodexo food services but controlling power is with **max employee**.

Organization chart

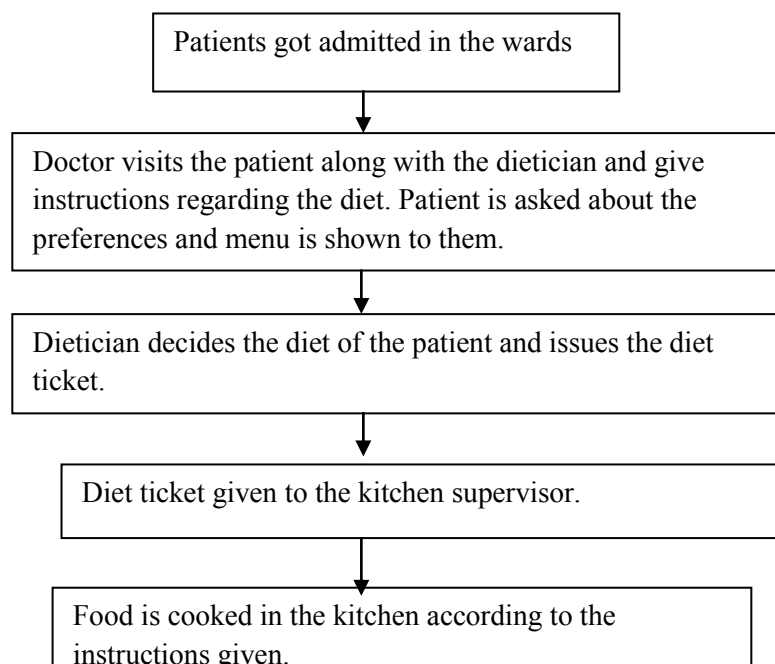


- The department consist of one head chef from Max , 26 chefs are from sodexo,72 stewards from sodexo.
- Dietician -25 of Max.
- Max chef keeps check on quality of food provided to the patients.
- The task of the sodexo is to provide food to ipd patients , max staff and visitors.
- Other then sodexo there are various food outlets which are as follows
 - Sagar ratna
 - Café coffee day
 - Subway
 - Quality express

Royalties are being charged from these outlets.

Process flow

Supply of food to the patients



↓

Food is given to the steward and food is distributed bed wise.
--

Time table for the diet of the patient

7-8AM	Breakfast
10:30-11:30AM	Soup/Beverages
1-2PM	Lunch
4-5PM	Evening tea
6-7PM	Soup
8-9PM	Dinner

- Dinner of the same day, breakfast and lunch of the next day are decided prior in the evening and diet tickets are issued by the dietician and given to the chef.
- Apart from these if patients wants to have something extra ,those can be provided to the patient after consulting dietician ,but for an extra charges.

Different menu offered are –

- Indian menu
- Afgani menu for middle east patients.
- Continental menu
- No onion and no garlic menu for jain patients

20) HOUSE KEEPING

The manpower in housekeeping is outsourced with a number of 230, of which 6 are in-house employees. Service level agreement is followed i.e. the out sourcing company charges the hospital for per square feet of area. The department has a nerve centre, which is a centralized system for complaints concerning housekeeping. Any patient complaint is closed within 15 minutes. If it is not possible to solve the complaint within this time, the patient is communicated about the delay.

21) SECURITY DEPARTMENT

The security department is an eye and ear of every organization acting as a liaison between management and staff. The control room of Security Department is located on B1 (basement) of East Wing, Max Saket.

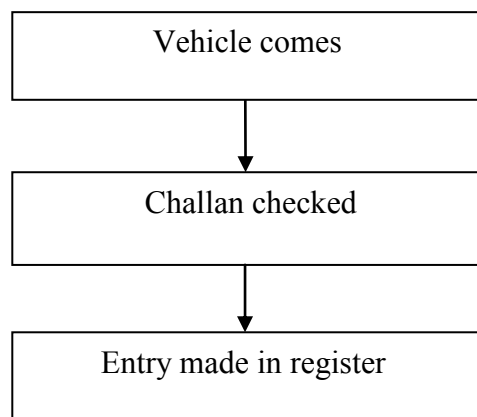
Functions of Security Department:-The security department performs four main functions as discussed below.

1. Security management:-

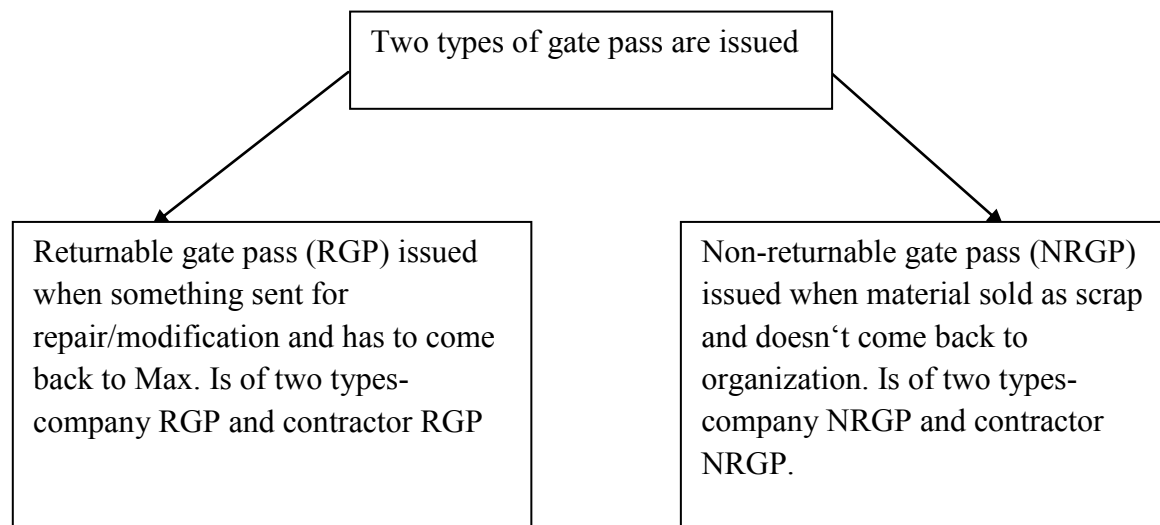
- Selection of people(guards and supervisors)
- Deploying of security staff to different floors and departments
- Checking of people entering hospital
- Turnout and grooming of security staff
- Training of security staff
- MLC handling
- Dispute handling

2. Material management:-It includes management of both incoming and outgoing materials.

a. Flow for incoming materials:-The incoming materials are received either from a company or a contractor to Max. The process flow is as under:-



b. Flow for outgoing materials



3. Disaster management:-

There are six emergency codes:-

1. Red- Fire
2. Black- Bomb threat
3. Blue-Cardiac arrest
4. Yellow- External disaster like earthquake
5. Violet-Violent patient
6. Pink- Missing patient

The SOP's and disaster management plans are prepared by the Security Department. Fire management system includes smoke detectors, sprinklers fitted on ceiling and fire shafts in all corridors.

Walkie talkies are an important source of communication.

Other disasters include floods, water logging, terrorist attacks.

4. Valet management:-

- Helps to optimally utilize the parking space.
- Within a time frame of maximum 7 minutes, vehicle is handed over to customer when asked for in porch.

PROJECT -`1

PLANNING, DESIGNING AND COMMISSIONING OF A NEW SUPER SPECIALITY HOSPITAL IN TIER 2 CITIES.

INTRODUCTION

Super Speciality Hospital is an institution that has a highly organized medical and other paramedical staff, inpatient facilities, and it delivers tertiary care medical, nursing and related services 24hours a day, 7 days a week.

Health is a natural human right and has been accorded due importance in our Constitution, though its delivery to masses still remains daunting despite more than 60years of independence. After Various committees recommendations ever since, government has been trying to meet health needs of masses but factors like rising population and rapid urbanisation rendering health needs uncompensated.

Making healthcare affordable and accessible for all its citizens is one of the key focus areas of the health policies of the country today. Fruitful medical research and health facility planning is an emerging sector of health infrastructure development forming the pillars of achieving this difficult but doable endeavour. Slowly but steadily metropolitan cities have better scenario in terms of population & bed ratios and availability of tertiary care. As healthcare is improving in tier-1 cities, now the focus has been slowly shifting to tier- 2 cities which are facing rapid population growth and unplanned expansion, there lies scope of tremendous improvement in healthcare. I would like to work further on this paradigm shift.

It is essential to develop super speciality hospital in tier 2 cities due to substantial demand for high-quality and speciality healthcare services attributable to multiple factors such as growing population, enhanced affordability and spurt in life style induced diseases and penetration of health insurance. The numbers — estimates for January 1, 2013 —. As per the goals of the 12th Plan, India needs another 5, 96,589 hospital beds to reach the target of 500 beds per 10,00,000 population. This goal is far below the world average of **30 hospital beds per 10,000 populations**. Despite being burdened by 20 per cent of the world's disease burden, we only have **six per cent of the world's hospital beds**. Even the infrastructure that exists is highly fragmented and disproportionately distributed. It is dominated by public healthcare facilities having 62 per cent of the beds while private players account for just 38 per cent of the beds. A skew is also seen between urban and rural areas with urban areas having concentration of beds per 1000 population, which is **eight times** that of rural areas

Improvements in qualitative aspects of healthcare, exponential escalation in the cost of construction of hospitals and resource constraints, provide new challenges in effective utilization and conservation of resources in building Super Speciality hospital in tier-2 cities.

It is thus imperative that planning, designing and commissioning of hospitals is done holistically and scientifically thus making best possible of super specialized services available to door steps of inhabitants of tier-2 cities.

RESEARCH QUESTION

What are the various steps involved in planning, design and commissioning of a super speciality hospital in tier-2 cities of India.

OBJECTIVES

- To identify the need of qualitative secondary and tertiary healthcare services in tier II cities.
- To study incorporation of building principles/ policies in hospital planning and design.
- To establish efficacy and install systems/provisions in hospital commissioning

RATIONALE

NEARLY 73% of the country's population lives in tier-II and tier-III cities. However most of the organized SUPER SPECIALITY HOSPITALS are confined to the state capitals or Tier I cities. Very few have made their presence felt in Tier II and Tier III cities. This presents the country with both a challenge and opportunity to make health care services ACCESSIBLE AND AFFORDABLE in these cities. There is substantial number of population in surrounding rural areas who are persistently looking for a better option for health care.

Communicable diseases have always been there among populace but steep rise in lifestyle diseases like diabetes, obesity, and cardiovascular ailments has cropped up due to sedentary life style. Provision of health care to such a vast population needs meticulous planning, detailed designing and early implementation of Super speciality hospitals in tier II CITIES.

RECENT estimates show that India needs to build about 270,000 hospital bed every year for the next decade to reach the target of 2beds/1000(population) which currently is 0.7beds/1000(population) and super speciality hospital requires all inclusive construction cost Rs1crore per bed .Therefore there is a long felt need to build and expedite commissioning of tertiary care hospitals with so much price escalation in market.

More than 5, 56,000 cancer deaths occurred in India in 2010 and 71.1 per cent of those who died were aged between 30 and 69 years. Many cancer deaths before the age of 70 are avoidable, most notably through prevention of cervical, liver and tobacco-related cancers, and with early diagnosis of oral, cervical and breast cancers that enable effective treatment. This indicates a significant demand for super speciality healthcare facilities like Oncology, Nephrology and Ophthalmology in smaller cities not only for early diagnosis but also for prompt treatment which is within reach.

LITERATURE REVIEW

Definitions:

Planning- Is the process of thinking about and organizing the activities required to achieve a desired goal. Planning involves the creation and maintenance of a PLAN.

Designing IS defined as a plan or drawing produced to show the look and function or workings of a building before it is made.

Commissioning - Is defined as bringing into use, on time, a facility that has been designed in consultation with those who will use it

The hospital planning, design and commissioning process has 6 distinct phases.

Phase 1- PLANNING –It includes master planning and pre- design efforts.

Phase 2 – SCHEMATIC DESIGN –It involves drawing an basic outline of the project.

Phase 3 – DESIGN AND DEVELOPMENT – It includes fixtures, furniture location, a Decor

Phase 4 – CONSTRUCTION DOCUMENT- Detailed construction plan inclusive of work related to various engineering services and final finishes.

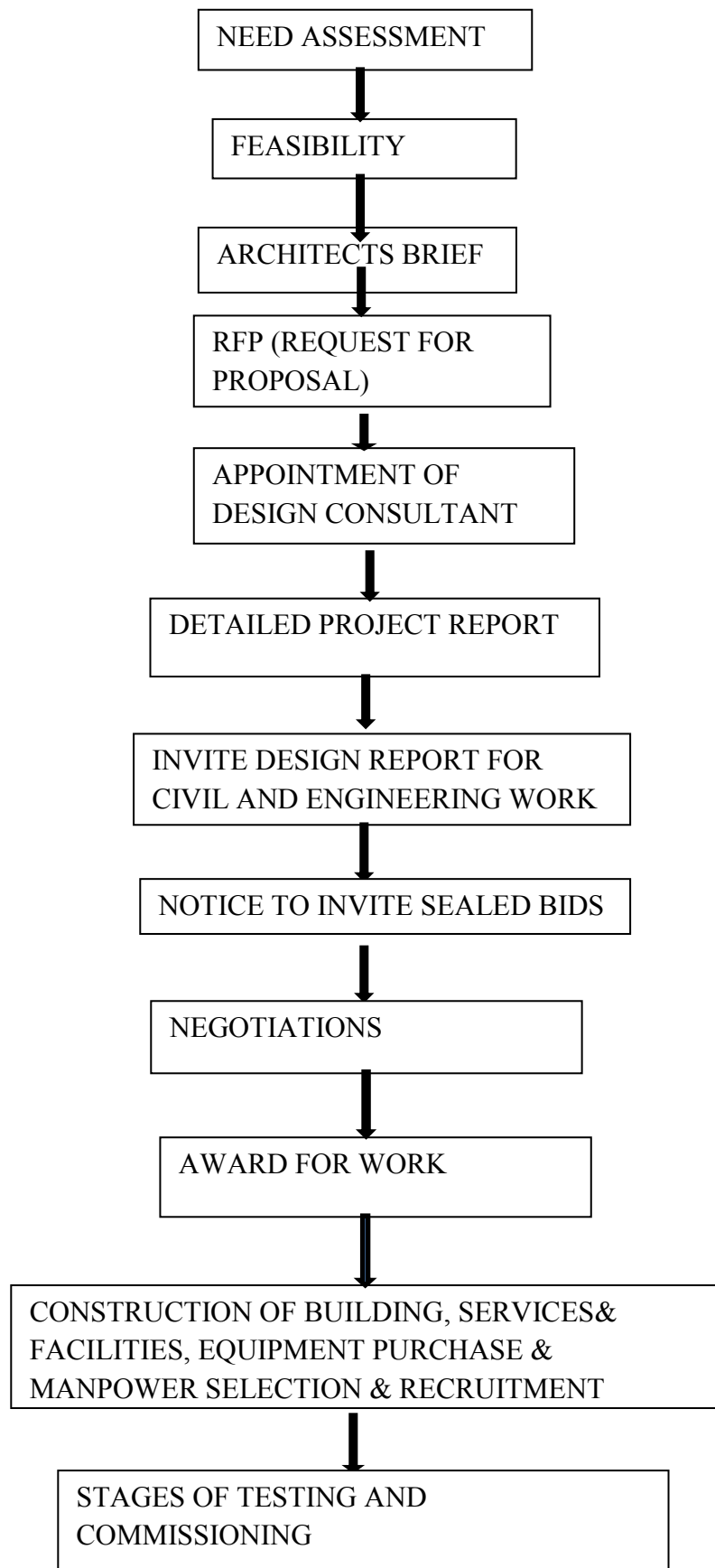
Phase 5 – CONSTRUCTION - In this phase the building is actually built.

Phase 6 – COMMISSIONING - It starts at the onset of a project, i.e. before building on site commences and finishes with evaluation after the project has been completed and the facilities brought into use and involves final operating parameters of equipment/system and instruments are within prescribed limits.

PROJECT PLANNING

Hospital planning is structured to integrate Technology, Cultural Practices with Immediate and Long Term Objectives which it has to serve. Hospital planning phase starts from feasibility study of the project, preparing request for proposal (RFP) for strategic planning of the project.

HOSPITAL PROJECT: PLANNING TO COMMISSIONING



❖ MAJOR COMPONENT OF HOSPITAL PLANNING ARE

I. NEED SURVEY-

It is done to assess the specific need for SUPER SPECIALITY HOSPITAL in tier II cities, in terms of felt need or actual need by the medical in charge of hospital project.

It is in form of regional survey, community survey and demographic study. The ENVIRONMENTAL studies include Political, Analytical, Socio-Cultural, Technological, Economic and Legal conditions that may affect an Organisation.

II. FEASIBILITY STUDY-It evaluates the project objectives and tangible and non-tangible benefits of the healthcare industry for the promoters and the community. Feasibility study has three major components.

- A) Technical evaluation
- B) Process evaluation
- C) Financial evaluation

A) Technical evaluation – this evaluates all the technical aspects of the proposal. It involves-

- Geographical location of project – **In relation to** the demography of the population it has to serve. The study must estimate site characteristics, suitability for location of hospital, availability of various external services like power, water sewage disposal and telephone.
On the basis of following factors location of hospital project should be made-
 - Accessibility for the target segments by road/rail/air.
 - Short time delivery of effective healthcare.
- Pattern of healthcare delivered. Feasibility study requires evaluation of the impact and importance of trends in the hospital care services to be delivered. These trends may be technologically based and impact a hospital's need for capital equipment, or reflect social changes that affect the need for a service or the way it is delivered.
- Availability of medical staff and technical staff – the hospital must recruit skilled staff for the project. The hospital must offer handsome salary to physicians and nurse referral network, administrative support etc.
- Organisational stability – the study must evaluate the organisational structure, resource plans and operational policy to establish org. strengths.

B) Process evaluation – It involves studying the population needs, demands, and preferences.

C) Financial evaluation –It generally evaluates the following

- Position in the market.

- Propensity to pay
- SWOT analysis
- Economic status of the population
- Source of earning of the defined population

I. **REQUEST FOR PROPOSAL (RFP):** It is a document describing details of the project.

II. **DETAILED PROJECT REPORT (DPR) -** This document provides the objectives, project formulation and program conclusions. It is then submitted to the Hospitals Governing Board.

This DPR consists of following:

- Background of the project ,
- Demography and statistical indicators
- Scope of services provided by the hospital -Work flow chart of different departments
- Financial statement – Pay back, ROI, etc.
- Manpower planning
- Material management including sourcing
- Local regulations
- All detailed drawings
- Detail estimate of project
- List of medical equipment
- Resource Planning: manpower recruitments, running ,maintenance and operational cost

III. **APPROVAL OF PROJECT-**

Once the report is prepared it should be sent to Hospital Governing Board for administrative approval indicating the CAPEX (CAPITAL Expenditure)

IV. **ARCHITECTS BRIEF**

It is the written document which explains operational policies, scope of services to be provided, interrelationship and inter dependency of each facility

Contents of architect brief

I. **SITE INFORMATION -** it include

- Boundaries, topography and surface area of proposed hospital in tier 2 city
- Landmarks
- Weather and climate pattern (including annual range of temperature ,rainfall etc)

II. **Soil information -** Soil sample samples should be taken from suitable locations on project site and should be submitted to accredit Lab for geotechnical report. This

review will determine seismic zones for the site and will confirm the criteria for the structural design of the building and electrical requirements detailed floor plans, wall and Water.

III. LAND PROCUREMENT- This is a major step for construction of any hospital building. It consists of from the beginning of land purchase, getting land clearance and non- encumbrance certificate, change of land use (CLU) (agricultural/residential/rural/urban), registration and transfer and departmental clearance for land use like:

- a. Environment & Forest Department
- b. Rural Development Authority
- c. Urban Development Authority
- d. State Pollution Control Board
- e. Local Municipal Corporation
- f. Electricity Board/ Jal Board
- g. Fire & safety service

SPACE	SQ/METRE
Corridors for access by patient and equipment	2.44 meters wide
Corridors in areas not commonly used for bed, stretcher and equipment transport may be reduced in width to	1.83 meters wide
Gradient of ramps	1:12 AND 1:20.
Width of ramps	1.6 meters
Patient bed carrying lifts width with the capability of carrying medical equipment and attendants.	2.35 metres
A level space of closing /opening of door way for wheel chaired patients.	152 cm wide
Piping material should be made of	CPVC/UPVC

CONSTRUCTION PLAN- PLANNING OF SOME BASIC REQUIREMENTS IN HOSPITAL

WATER: In any super speciality hospital water conservation and utilization of rain water harvesting must be ensured. Approximately 450 litre of water per bed per day are required excluding fire fighting, gardening and HVAC

FLOORING: It is one of the most important components of speciality hospital. Floor finishing's such as wear resistance; clean ability should be taken into account. FOR selecting -flooring of hospital following factors should be considered:

- Floor should not remain **wet and slippery**
- **Covered skirting** should be done to prevent dust accumulation.
- **Abrasion and acid-alkali resistant, Seam less PVC flooring** – in critical care and Laboratory
- **Anti-static flooring** - In **operating rooms** where flammable agents are used. ie during walk electrostatic charge on the floor.

WALLS AND CEILINGS: Wall materials in operating area should **be impervious, non-absorbent, joint less and easy to clean**. Corners of the wall should be protected against physical impact by trolleys and stretchers. Electrical plugs/switches should be impinged into the wall for better cleaning.

FIRE PROTECTION: Super speciality hospital should have measures for detecting fire such **as fire alarms in walls, peepholes and sprinkles in doors or smoke detectors in ceilings**. There shall be devices for quenching fire such as **fire extinguishers or fire hoses** that are easily visible and accessible in strategic areas.

ZONING: The different areas of a hospital shall be grouped according to zones as follows:

- 1) Outer Most Zone – areas that are immediately accessible to the public:
 - Emergency service,
 - Outpatient service
 - Administrative service.
 - Admitting office ,reception
- 2) Second Zone – areas that receive workload from the outer most zone
 - Laboratory
 - Pharmacy
 - Radiology
- 3) Middle zone – areas between outer and inner zones
 - Operating departments
 - Intensive care unit
 - Nursery

4) Inner Zone – areas that provide nursing care and management of patients. They shall be located in private areas but accessible to guests.

- Wards and nursing units

5) Deep Zone – areas that require asepsis to perform the prescribed services

- Dietary services
- Laundry and house keeping
- Storage
- Maintenance and engineering
- Mortuary
- Motor pool

Example – Design of 250 bed hospital

Gross building space required is 35,000 SM,(approx.) at 140 SM /bed. Space needs were estimated by type of space, plus provision of 50 indoor parking spaces for physicians and key staff:

Emergency	60,000	visits/yr.
Surgery	15,000	cases/yr.
Imaging	50,000	procedures/yr.
Outpatient	200,000	visits/yr.
Inpatients,	18,000	admissions/yr., 5 day Avg. Length of Stay
	228 Beds	Medical, Surgical, OB/G, Peds 1, 2, 4 bed rooms
	22 ICU Beds	Medical/Surgical/Cardiac ICU, all private rooms

Hospital Building program

SPACE	Department gross	% of gross
Inpatient Nursing	7,000	26%
Outpatient	3,800	14%
Emergency	1,400	5%
Diagnostic/treatment	2,200	8%
Surgery/ PACU/ICU	3,200	12%
Clinical Support Services	2,400	9%
Operational Support Services	4,00800	15%
General Support Services	800	3%
Lobby, Public Amenity,	800	3%
Training & Education	800	3%
Staff Welfare	600	2%
Net Floor Area (dept. gross w/o factor)	27,000	100%
MEP Services	3,200	12%
Inter-dept. Circulation	4100	15%
Total Dept. Gross Area (w MEP and Circ)	34,300	127%
Total Building Gross Floor Area -GFA	34,300	GSM
Basement parking @	2,500	GSM

50 SM/ Car 2,500 GSM		
Number of cars	50	Cars
Gross Floor Area per Bed including parking	147	GSM

Hospital Construction technology of the future super speciality building may include some of the advanced technologies to improve quality and productivity such as

- ❖ **3D MODELLING,**
- ❖ **PREFABRICATION,**
- ❖ **MODULARIZATION,**
- ❖ **MECHANIZATION,**
- ❖ **AUTOMATION AND COMPUTERIZATION.**

3D MODELLING - There are many tools used to support integrated project delivery and lean project delivery approaches to healthcare construction projects. 3-dimensional computer modelling technology can improve the collaboration and performance of project delivery team. Using **BIM** (BUILDING INFORMATION MODELING) technology for virtual design coordination of building systems, visualization and populating the models with schedule and cost information are the most common uses today. Information of equipment specifications, operations and maintenance information and other building related information relevant to project can be included in a model.

PREFABRICATION - To improve the delivery of hospital projects via 3-d modelling tech. involves prefabricating sections structure with due incorporation of provisions for MEP (Mechanical, electrical and plumbing) systems in fabrication shops and then connecting them in units in the field. This approach improves quality and safety and reduces manpower peak demands and schedules. It has a advantages of magnitude -9 earthquake resistance , 5 times the energy efficiency of conventionally built hospital and 10% - 30% lower cost.

V. **FUNCTIONAL CONTENT** – It is a single document that sets the projects basic character and scope. It includes sizes, function and contents of departments along with Number of beds in wards, number of OTs, Critical Care beds, Step-down beds, Isolation rooms, major diagnostic equipment planned, and traffic flow.

VI. **EQUIPMENT's** – type and number of equipment's should be listed

Built in equipment	Equipment included in the construction contract and the planning of them is the architects' responsibility. Like work counters and cabinets in laboratory, pharmacy and other parts of hospital, Elevators, incinerators, fixed sterilizing equipment.
Depreciable equipment	Equipment that has a life of five years or more and is not purchased through construction contracts.eg-diagnostic and therapeutic equipment, laboratory instruments, office furniture
Non –depreciable equipment	Equipment with low unit cost and life span of less than 5 yrs.eg- surgical instruments, linen, kitchen utensils

VII. POLICIES AND PROCEDURES : This should include policies and procedures related to

- Different departments / services
- Patient and staff movement
- Supply delivery
- Services –laundry, CSSD, food and beverages
- Fire services
- HVAC
- Lighting
- Infection control and Pollution control

VIII. RESOURCE ALLOCATION- Once the administrative approval is received than the project is made for financial sanction by the Hospital governing board.

❖ STRATEGIC PLANNING

The plan should address the patient care and community service goals for at least 5 years.

While the construction of hospital is on progress strategic planning is started simultaneously for the following:

- VISION –MISSION POLICY OF HOSPITAL

Vision- It's a future oriented, detailed description of outcomes an organization wants to accomplish in future.

Mission – it accomplishes what a hospital currently does and how it plans to achieve its vision.

- BUSINESS PLANNING –

The strategic planning phase of the project requires a technology needs assessment to ensure treatment cost remains affordable.

- PLAN OF RESOURCES

Includes staffing, equipment, machineries and furniture

Staffing –adequate number of Specialised medical doctors, nurses, technicians, house-keeping, catering staff, and administration staff are selected and recruited as per the need of super specialized hospital in tier 2 cities.

Material planning - of heavy equipment, investigation machines, drugs and disposables / consumables, stationaries and reagents, linen and furniture are done as per formalities

❖ Impact of Excellence in Services Management in Areas of Support Services In Hospital PLANNING.

Service excellence is an integral part of hospital success, both in terms of patient satisfaction and financial viability. It plays a critical role in meeting mission-related and financial goals at hospitals

Hospitals recognize that the key to their survival in an increasingly competitive and shrinking market lies not only in the medical treatment, but also in the SERVICE they give to people who come through their doors.

Most institutions adopt guiding principles for their service excellence programs, and these principles should be present in everyday work and thus ingrained in the hospital's culture during PLANNING.

❖ DESIGN AND DOCUMENTATION

As a place dedicated to health, a hospital building must first be a healing, life-affirming space that plays an active role in helping patients and their families return to health. Hospitals of the future will need to plan for **higher patient acuity, shorter stays**, and must deal with aging patients (and staff). Because of their long term operational costs and long lifecycle, hospitals have to be designed for improved **performance and work flow, and with a high degree of flexibility and adaptability for constant adaptation and improvement**. The facility design has to provide **a safe, comfortable and humane environment** which is patient friendly, along with caring of patient's psychological needs, such as **providing quality air, better views and more pleasant colour schemes using lead free paints**.

The design team needs from the outset to plan for sustainable design and efficient energy usage, which in a building that operates continuously is a major opportunity for lowering the carbon footprint of the service. The hospital must also have clear, intuitive way finding and an easily understood layout

PLANNING AND DESIGN OF INTENSIVE CARE UNIT

- ICU (Intensive Care Unit) refers to a highly specified and sophisticated area of a hospital in terms of Infrastructure, Technology and Manpower dedicated to the treatment of critically –ill patients.

LOCATION – It should be chosen so that the unit is adjacent or in direct reach for emergency department, operating room and radiology dept. There should be single entry/exit point to the ICU which is manned all times.

NUMBER OF BEDS- No. of beds in ICU depends on the type and services provided in the hospital. It is recommended that at least 5% of total hospital beds may be designated ICU beds

.no. of beds in the unit should range from 8-12. THE planning should support 1-2 isolation rooms for the infected/immune-compromised patients.

Space	Square ft/bed
Area in open wards	150
Isolation room	225
Clear room	15
Distance b/w head end and wall	1.2
Distance b/w beds	8
Width of entrance	8
Medication area	50

LIGHTING

- 300 lux light illumination for patient area
- 100 lux for corridor
- 150 lux for staffing
- Room should have sound alteration

AIR CONDITION FACILITY

- 50-55% humidity
- 20-25⁰ celcius temp.
- Noise level -35-50 decibels

DOORS

- Double doors with easy passage of stretcher ,equipment, and beds
- Min.1.25 meter are recommended

BEDS

Mechanically and electrically operated beds

Area b/w head end and wall	0.9m
Area b/w foot end and wall	1.2m
Area b/w centres of 2 adjacent beds	3.5 m

BED HEAD PANEL

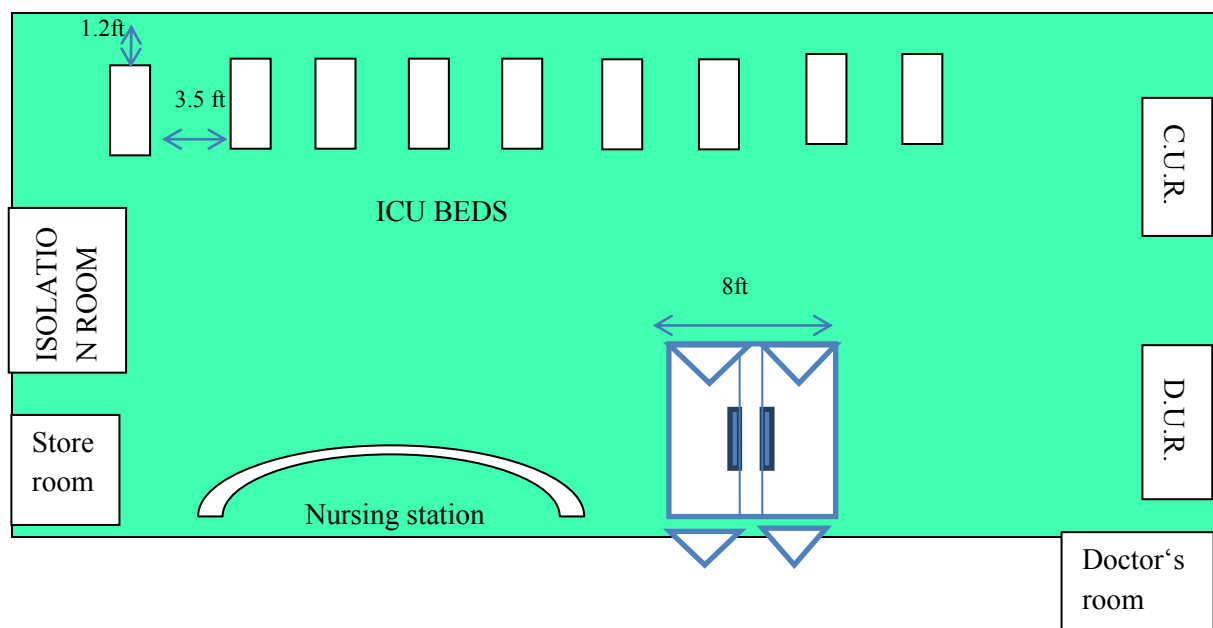
- Infusion pumps to be mounted on stand/pole in ICU.

Oxygen outlets	2
Suction inlets	1
Compressed air outlets	1

ELECTRICAL PLANNING

- Minimum 6 power socket (15amp)/bed
- Separate uninterruptible power supplies (UPS) or emergency generator may be required for individual items of equipment. Each bed area requires uninterruptible supply, preferably on all sockets.

LAYOUT OF ICU



LIST OF EQUIPMENTS USED IN ICU ANNEXURE 1

PLANNING AND DESIGN OF ONCOLOGY DEPARTMENT

- **Oncology** is a branch of medicine that deals with cancer.

Oncology is concerned with:

- The diagnosis of any cancer in a person (pathology)
- Therapy (e.g. surgery, chemotherapy, radiotherapy and other modalities)
- Follow-up of cancer patients after successful treatment
- Palliative care of patients with terminal malignancies

- **Diagnostics** include

Diagnostic methods include:

- Biopsy or Resection
- Endoscopy, either upper or lower gastrointestinal, cystoscopy, bronchoscopy, to localise areas suspicious for malignancy and biopsy when necessary
- X-Rays, CT scan, MRI scan PET scan, Ultrasound and other radiological techniques to localise and guide biopsy.
- Scintigraphy, Single Photon Emission Computed Tomography (SPECT), and other methods of NUCLEAR MEDICINE to identify areas suspicious for malignancy.
- The Oncology and Cancer Care department has separate centres for Medical Oncology, Radiation Oncology and Surgical Oncology.
- The comprehensive treatment planning system involves a Tumour Board which consists of a panel of competent medical, surgical and radiation oncologists.
 - **Medical Oncology-** Involves the treatment of cancer with chemotherapy or other medications, such as targeted therapy and oral (in pill form) chemotherapy.
 - **Surgical Oncology-** Involves surgical procedures in dealing with cancer including biopsy, staging and surgical resection of tumours
 - **Radiation oncology-** Involves treating cancer with radiation therapy (the use of high-energy x-rays or other particles to kill cancer cells)

LOCATION- Oncology centre should be located near ICU.

NUMBER OF BEDS- NUMBER of beds will depend on the total no .of beds of hospitals. In 400 bed hospital oncology department alone will have 100 beds including wards and ICU.(65 beds in ward and 35 beds in Surgical and medical ICU)

Space	Sq. ft. /bed
-------	--------------

Radiation therapy space requirement	500*2
Waiting area	500
Console room area	75*2
Medical record room	100
Circulation area	30%
Area for brachytherapy	250
Control room	100
Minor OT	200
Day care space requirement	
Area in wards	125*9
AREA for recliners	125*8
Nursing station area	300
Admixture lab	300
Circulation area	30%
Total	5025.3

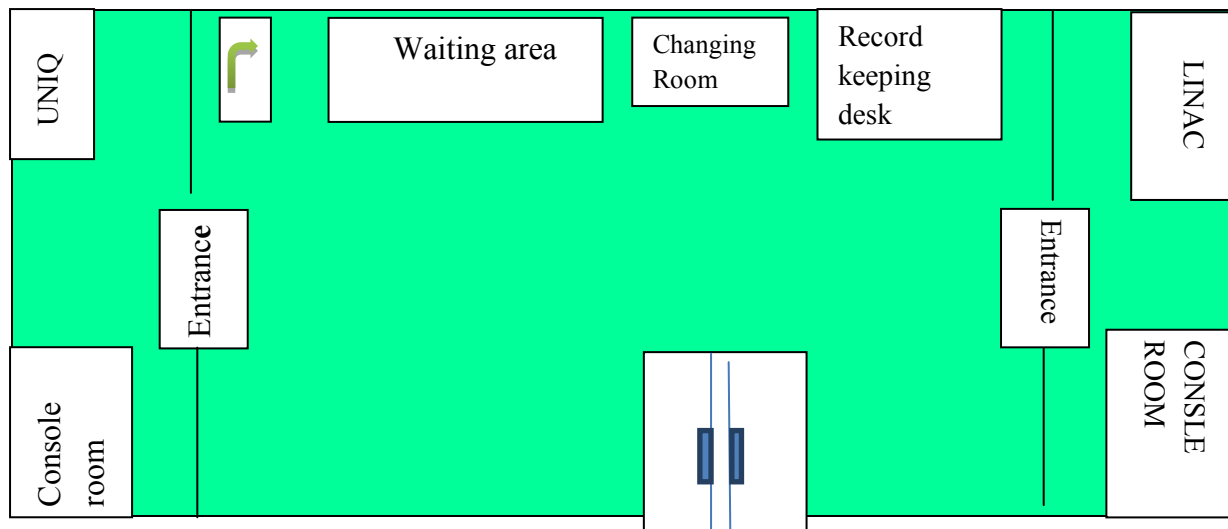
BED PANEL

Oxygen outlets	2
Suction inlets	1
Compressed air outlets	1
IV pole	1

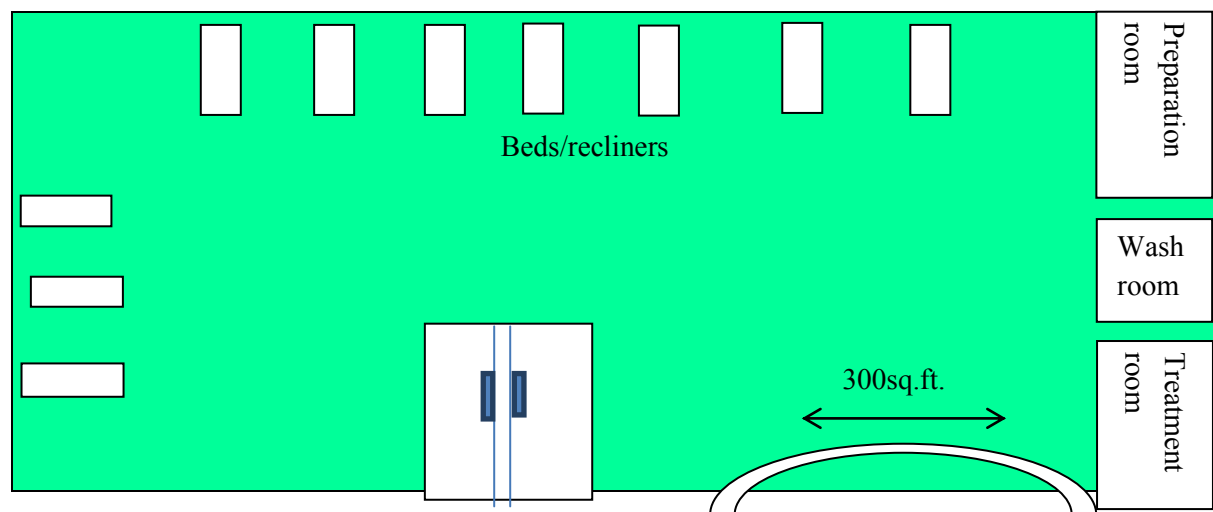
LIGHTING

- 400-450 lux light illumination for patient care
- 100 lux for corridors

Basement floor plan of oncology department (radiation therapy)



Floor plan of Day care oncology department



- **FLOORING** - The flooring for a Radiation Oncology Unit shall be adequate to meet the load requirements for equipment, patient, and personnel.
- Provision for cable ducts or conduits should be made in the floors and ceilings as required.
- **CEILING** - Ceiling mounted equipment should have properly designed rigid support structures located above the finished ceiling. The minimum recommended ceiling height is 3 metres. A lay-in type of ceiling should be considered for ease of installation, service, and remodelling.

RADIATION PROTECTION

- Cobalt and linear accelerator rooms require radiation protection that may include concrete walls, floors and ceiling to a specified thickness.
- Design of the bunker rooms may incorporate a maze entry to assist with radiation protection; a neutron door may also be required depending on the type of linear accelerator used.

LIST OF EQUIPMENTS OF ONCOLOGY ANNEXURE 2

LIST OF BED CHARGES ANNEXURE 3

❖ BIDDING, LICENSING AND COMMISSIONING

Once project construction is finished next step is go forward with bidding, obtaining all necessary licences from concerned governing bodies, conducting testing for the building and then finally commissioning of hospital building.

Some of the important **LICENCES** for super speciality hospital are provided by

- Building Permit (from Municipality)- Hospital Registration
- No objection certificate from the chief fire officer.
- License under Bio-medical Waste Management and handling rules,1998
- No objection certificate under pollution control Act.(AIR, WATER AND NOISE)
- Radiation protection certificate in respect of all X-ray and CT scanners AERB
- Income tax PAN
- Permit to operate lifts under the lifts and escalators Act.
- Narcotics and Psychotropic substances Act.

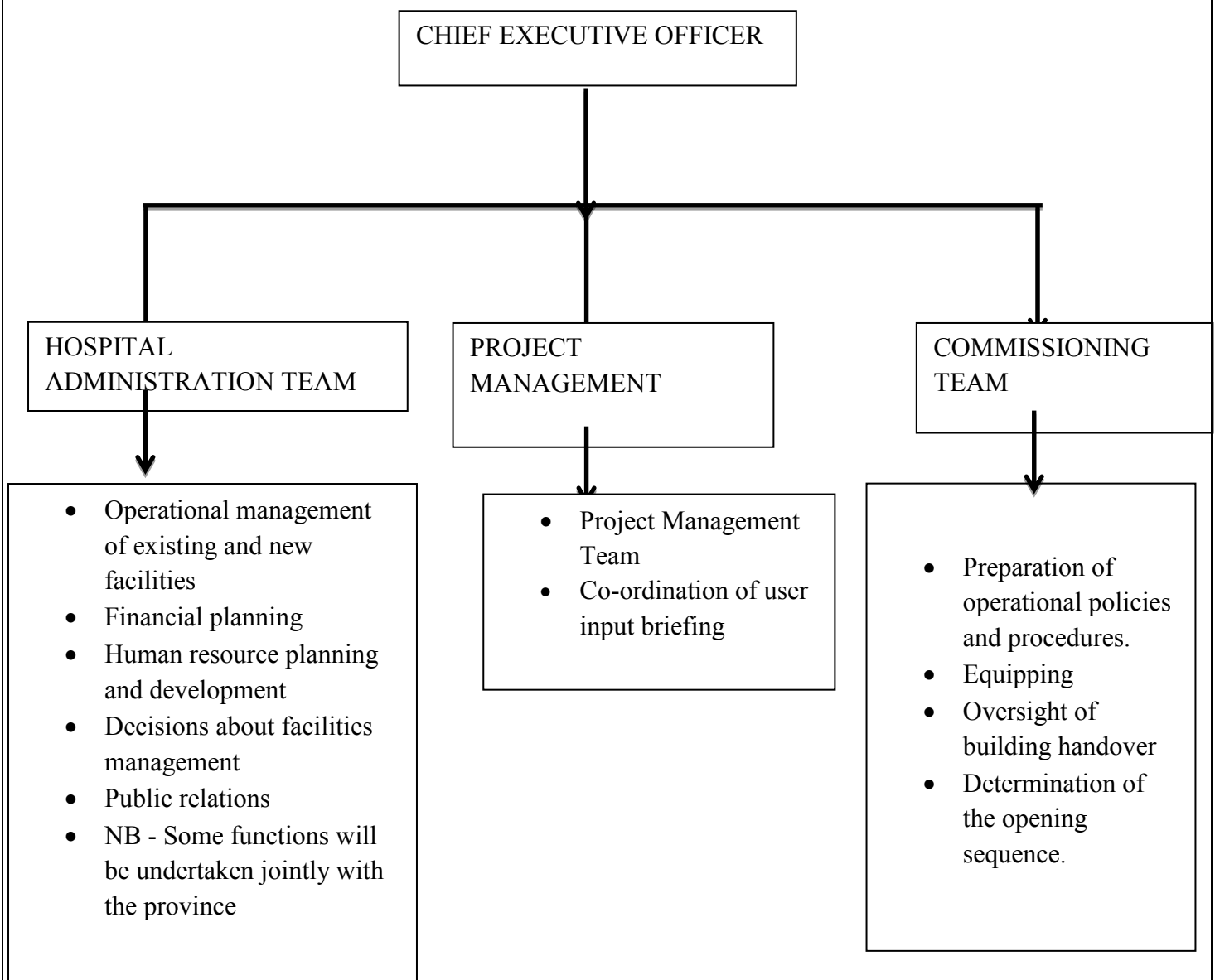
ONLY with their approval can hospital operate and eligible for Medicare and Medical reimbursement.

LIST OF ALL ESSENTIAL LICENCES ARE GIVEN IN ANNEXURE 4

BIDDING and construction of hospital project can take several forms. This is a traditional way to select a contractor and most publicly funded projects use it. However some hospitals select construction manager and engineer/architect.

The Project manager becomes the part of project delivery team and advises the hospital construction and techniques to be incorporated in the design. In addition the CEO must keep holding the Commissioning Team to account for performance and for maintaining timescales.

Division of responsibilities between the hospital management and the Commissioning Director



PROJECT MANAGEMENT

The quality of the professional project management team determines the quality and suitability of completed facilities of a hospital. The functions of project management team are as follows.

- To define the overall strategy and set achievable milestones for all.
- To make integrated plan for execution to involve various agencies/contracts to ensure coordination.
- To assign responsibilities and track the progress of work.
- To review management arrangements of the hospital
- To ensure staffing implications and plans to meet them

A complete team will consists of

- Hospital Consultant
- Architectural Engineer
- Mechanical, Electrical, Maintenance And Bio-Medical Engineer
- Fire Safety Officer

Project Cost

The most common method of estimating hospital construction cost has been the “per bed” method. If the total cost of a 200 bed super speciality hospital has been Rs.800 lakhs, the cost/bed is 8lk.

Break up of project cost-

- Acquisition of site
- Site survey, investigation
- Construction contract
- Supervision and inspection
- Equipping the hospital-diagnostic and therapeutic equipment
- Movable equipment, furniture
- Architect's fee
- Consultants fee
- Site Engineer's fee
- Landscaping
- Miscellaneous

COST PER BED (excluding cost of land)

General bed- -	- 5-10 lakhs
Speciality bed-	- 15-20 lacs
Super speciality bed –	- 40-50 lacks
Development of land includes topographical Survey to clearance, landscaping, horticulture, Campus wall and fencing	- 1%- 5% of total project cost
Cost of hospital construction	- 35%-45%of total project cost
Cost of hospital building utility-services	- 15%- 20% cost
Cost of hospital equipment	- 45%-55% of project cost
Consultancy charges	- 7%- 10% of total project cost

COMMISSIONING

Due to the critical nature of the functions that occur in a hospital, the commissioning of a new hospital or renovation of an existing facility should be warranted.

Over the past decade, as the commissioning of building systems has become a more common practice in the construction process, more and more hospital owners are starting to realize the advantages of having a formal commissioning process. Additionally, with the advent of LEED and GGHC commissioning has become more prevalent only if design is as per LEED requirement.

COMMISSIONING TEAM

The team must be headed by a Commissioning Director, who will report directly to the CEO, and who must be responsible for the day to day functioning of the team including the achievement of deadlines in the timetable.

Other areas of expertise required in the commissioning team are:

- Project management Team
- Clinical Team
- Biomedical Engineer
- Civil / Electrical/ Maintenance Engineer
- HR Manager

SYSTEMS TO CONSIDER FOR COMMISSIONING IN HOSPITALS

Below is an index of the major categories of systems to be commissioned.

1. Building envelope
2. Life safety systems
3. HVAC systems
4. Plumbing systems
5. Medical gas systems
6. Electrical systems
7. Fire alarm systems
8. Information technology
9. Fire protection system
10. Interior lighting
11. Exterior lighting
12. Refrigeration
13. Traction & storage
14. Material handling

Operational policies and procedures

A single policy and procedure statement is required for each department. This will incorporate two types of document, **firstly**, whole hospital policies - describing aspects of the hospital that are common to all departments and, **secondly**, departmental procedures which are concerned with the day to day management, organisation and function of each department. The policies and procedures should be written by those involved in running an existing department.

Someone from the Commissioning Team should oversee the process to ensure consistency. It is essential to have a small committee established to resolve any uncertainties, disagreements or inconsistencies.

Each policy and procedure must cover practical implementation and build in quality assurance, compliance with statutory standards and health and safety.

Equipping

Importance of equipping

Between 15% and 45% of the total cost of a project may be spent on purchase of equipment and furniture. This task is a significant part of the commissioning process and is directly linked to briefing, design.

.Building handover and building commissioning

A common problem with building contracts is the contractual completion date, which requires the whole contract to be completed at once. This is clearly an almost impossible task and inevitably contract completion dates are not met for one reason or another.

Commissioning Teams must consider the implications of any delay in providing clear, brief information to the design team, given that common reasons for delay are ‘client changes’ or ‘awaiting client instructions’.

The handover process is managed by the lead architect and involves a detailed inspection of all the civil, architectural, mechanical and electrical services within the building and grounds. The hospital’s professional design team, resident engineers and Clerk of Works are all involved in the preparation of **snag lists** in the weeks approaching the contract completion date. These snags should be rectified before the building is offered by the main contractor for ‘first delivery’.

The Commissioning Team should resist the temptation to become involved in **‘snagging’** in this very hectic and somewhat critical period as any suggestions of changes or problems will be picked up by the main contractor and could be used as the basis of a claim for ‘extension of time’.

The Commissioning Team and engineering advisors from the Department of Public Works or the Health Department's independent consultants will work with the lead architect to consider if the 'first delivery' of the building is acceptable. If the building is accepted, a **certificate of 'practical completion'** is issued and the Health Department is immediately liable for security, fire and insurance of the new facility. 50% of the contract retention sum is also released at this time.

The **inspection duties** of the Commissioning Team will include checking each and every user and clinical space. This would include appropriate finishes, sockets, type and quantity of gas outlets, special ventilation and vision panels.

Opening sequence

Certainly a whole new hospital will be brought into use gradually over a period of several weeks or even several months as new services are developed and specialist staff recruited.

Those moving in first will generally be the Commissioning Team, security personnel, hospital management, facilities management, engineering and clinical workshops, stores and logistics, cleaning and IT.

There are no firm guidelines as to which come first, although a nearly introduction of outpatient clinics would allow clinical support services to be tested and built up incrementally.

There is a phenomenon of soft launch as follows: Out-patient department, Laboratory, Radiology, Engineering, In-patient department, Operating room, and Intensive care unit, Stores , CSSD, Laundry Service, Food &Beverages ,Medical Gases, Bio-Medical Waste Handling

Only after these tasks completion it is possible to begin moving clinical services into the new building.

RESEARCH METHODOLOGY

It was a retrospective study .The data was collected from various departments namely

- I. Administration
- II. Planning & Strategy
- III. Clinical , Support and Utility department
 - a. Service Excellence
 - b. Engineering department
 - c. Oncology department

Study area- Max saket hospital

Duration of study – 1month 1st april to 31st march.

Data was collected by face to face interviewing – senior personnel of the department who had carried out various hospital planning projects.

s.

GANTT CHART HOSPITAL PROJECT: PLANNING TO COMMISSIONING

	1- 4 MON	5-8 MON	9-12 MON	13-16 MON	17-20 MON	21-24 MON
PROJECT DESIGN						
PROJECT APPROVAL						
SCHEMATICS						
LAND PROCUREMENT&APPROVAL						
WORKING DRAWINGS						
TENDERING&AWARDING						
CONSTRUCTION						
TESTING &COMMISSIONING						

CONCLUSION

At the turn of this century, health care industry has progressed from feeble position to a moderate one in last decade. The government sector has recognised somewhat early the long standing need for reform and thereby introduced in eleventh and twelfth five year plans. Private sector has also played a complementary role in extending access and guaranteeing quality healthcare. Yet there remains inequity in healthcare bi dimensionally across the states and demographic segments of the population.

Indian reform journey needs to gain momentum and implementation drive at sizeable scale. Infrastructure gap need to be closed along with addressing the workforce utilization and scarcity. To achieve this rather uneasy goal, government and private sector need to join forces, tunnelling efforts through Government sponsored schemes, private sector interventions and recent endeavours in form of PPP Projects.

The private sector must consider this as business opportunity to establish their faithful presence and expand their operations/ market share in the healthcare delivery market of tier 2 cities either by partnering with the different state governments or pursuing a pure private model.

Clear policies and guidelines will need to put in place for tier II cities in the healthcare industry which will enable them to attract large private investments in the health care industry

Hospital structure must also focus on the quality of the milieu for the consumers and healing team. All aspects of eugenics like space calculation, exteriors, landscaping and smallest of planning should be pondered upon in the events of planning and design of a hospital.

The hospital building must evoke juxtaposition from state of art technology and humane sentiments.

REFERENCES

- Healthcare executive vol2/issue 12/ Mumbai, January 2014.
- Hospital planning and financial management module
- **Commissioning new hospital facilities in South Africa: a manual of good practice**
Andrew Butcher, 2002
- **Modern Trends in Planning and Designing of Hospitals: Principles and Practice**
author KANT GUPTA
- <http://www.downtoearth.org.in/content/most-cancer-patients-india-die-without-medical-attention-study>
- www.perkinseastman.com/dynamic/document/week/asset/.../3411781.pdF
- <http://www.onicra.com/images/pdf/Healthcare-industry-report-Transparent.pdf>
 - http://www.healthdesign.com.au/haad.hfg/full_index/haad_b_radiation_oncology_unit.pdf
- <http://www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/S/PDF%20SB1953HospitalConstructionIB.pdf>
- [://www.google.co.in/](http://www.google.co.in/)
- <http://en.wikipedia.org/wiki/Oncology>

Annexure no.1 –LIST OF EQUIPMENTS IN CTVS ICU

NAME OF EQUIPMENTS	QUANTITY
Monitor	17
Defibrillator	1
ECG Machine	2
ACT Machine	1
BBR	1
Syringe pump	51
Infusion pump	4
Bair hugger	1
Blood Gas Analyser	1

Annexure no.2- LIST OF EQUIPMENTS IN ONCOLOGY SURGICAL ICU

NAME OF EQUIPMENTS	QUANTITY
Patient monitor	9
Syringe pump	19
Infusion pump	1
Bair hugger	1
ECG Machine	1
Defibrillator	1

Annexure no.3- ROOM CATEGORIES AND CHARGES

Type of rooms	Charges
Economy -3/4 bedded	3750
Double	5500
Deluxe(single)	10500
Suite	27500
ICU/CTVS HDU/ACC/CATH MAS Recovery	11000
Recliner (cancer centre) up to 8 hours	800
Day care (cancer centre) up to 8 hours	2000

Annexure no.4 - LIST OF ESSENTIAL LICENSES FOR SUPER SPECIALITY HOSPITAL

List of Statutory Obligations			
Sl.No.	Name Of Act/ Licences	Act.No.	Applicable
1	Air (prevention and control of pollution) Act, 1981		Applicable
3	Atomic Energy Act, 1962	Act -1	Applicable
4	Biomedical waste management hadling rules 1998	Act -2	Applicable
6	Cable television networks Act 1995	Act -3	Applicable
10	Child labour Act 1986	Act -4	Applicable
12	Companies Act, 1956	Act -5	Applicable
13	Constitution of India	Act -6	Applicable
14	Consumer protection Act, 1986	Act -7	Applicable
15	Contract Act, 1982	Act -8	Applicable
16	Copyright Act, 1982	Act -9	Applicable
17	Customs Act, 1962	Act -10	Applicable
18	Dentist regulation's 1976	Act -11	Applicable
19	Drugs & Cosmetics Act, 1940	Act -12	Applicable
20	Electricity Act,1998	Act -13	Applicable
21	Electricity rules, 1956	Act -14	Applicable
22	Employees provident fund Act, 1952	Act -15	Applicable
24	Environment protection Act, 1986	Act -16	Applicable
25	Equal remuneration Act 1976	Act -17	Applicable
26	ESI Act, 1948	Act -18	Applicable
27	Explosives Act 1884	Act -19	Applicable
31	Gujarat State Disaster Management Act,2003	Act -20	Applicable
33	Income tax Act, 1962	Act -21	Applicable
35	Indian Medical council Act and code of medical ethics ,1956	Act -22	Applicable

36	Indian nursing council Act 1947	Act -23	Applicable
37	Indian penal code 1860	Act -24	Applicable
39	Industrial disputes Act, 1947	Act -25	Applicable
40	Information Technology Act, 2000	Act -26	Applicable
41	Insecticides Act, 1968	Act -27	Applicable
42	Insurance Act 1938	Act -28	Applicable
44	Licences for the Blood Bank	Act -29	Applicable
45	Maternity benefits Act, 1961	Act -30	Applicable
46	Minimum wages Act, 1948	Act -31	Applicable
47	MTP Act, 1971	Act -32	Applicable
48	Narcotics and Psychotropic substances Act.	Act -33	Applicable
49	National Building code	Act -34	Applicable
50	National holidays under shops act	Act -35	Applicable
51	Negotiable instruments Act, 1881	Act -36	Applicable
52	Payment of bonus Act, 1965	Act -37	Applicable
53	Payment of Gratuity Act 1972	Act -38	Applicable
54	Payments of wages Act 1936	Act -39	Applicable
55	Permit to operate lifts under the lifts and escalators Act.	Act -40	Applicable
56	Persons with disability Act 1995	Act -41	Applicable
57	Pharmacy Act 1948	Act -42	Applicable
58	PNDT Act 1994	Act -43	Applicable
60	Prevention of food adulteration Act 1954	Act -44	Applicable
61	Protection of human rights act, 1993	Act -45	Applicable
62	Registration of births and deaths Act, 1969	Act -46	Applicable
63	Sale of goods Act, 1930	Act -47	Applicable
67	Tax deducted at source Act		Applicable
68	Transplantation of human organs Act 1994		Applicable
69	Urban Land Act, 1976		Applicable
71	Workers Compensation Act 1923	Act -48	Applicable

PROJECT –II

FORMULATION OF MARKETING STRATEGIES TO PROMOTE HEALTHCARE SERVICES FOR ONCOLOGY DEPARTMENT IN MAX HOSPITAL –SHALIMAR BAGH

INTRODUCTION:

Max Shalimar Bagh - one of the branches of max healthcare, consolidated its position in north-west Delhi & NCR ever since its start of 300 bedded facility in November 2011. Covering over 2 lakh 98 sq. ft. area and standing 12 floors tall is a leading multi-super Speciality Hospital providing the high level of professional expertise with an underutilized oncology facility. (www.maxhealthcare.in)

Today, it is an essential part of oncological care to provide patient's psychosocial dimension of health in addition to mainstream cancer care.

Cancer care today often provides state-of-the-science biomedical treatment, but somehow falls short to address the psychological and social problems, part and parcel of illness. This failure can compromise the effectiveness of health care and thereby adversely affect the health of cancer patients. Hereby we need to work upon and extend the variety of services to help patients and their families manage the psychosocial aspects of cancer in a better way.

Health care institutions have started promoting themselves more aggressively in the recent past as compared to a few years back. It seems like several health care institutions have adopted a more social marketing approach. Health care marketers use advertising in its many forms to sell their products and services. Various pamphlets, leaflets, flash cards, brochures, and other advertising literature can be powerful sales tools for a health care company when provided to customers and potential customers

Marketing strategy includes all basic and long-term activities in the field of marketing that deal with the analysis of the strategic initial situation of a hospital and the formulation, evaluation and selection of market-oriented strategies and therefore contributes to the goals of a hospital and its marketing objectives.

It involves careful and precise scanning of the internal and external environments. Internal environmental factors include the marketing mix and performance analysis and strategic constraints. External environmental factors include customer analysis, competitor

analysis, target market analysis, as well as evaluation of any elements of the technological, economic, cultural or political/legal environment likely to impact success.

A key component of marketing strategy is often to keep marketing in line with a hospitals overarching mission statement.

(http://www.healthleadersmedia.com/supplemental/7297_browse.pdf)

RATIONALE:

MAX Shalimar bagh hospital a leading branch of Max health care has underutilized oncology facilities with minimal number of patient footfall in oncology department. Subsequently to increase the daily average number of patients it is necessary to develop marketing strategies to promote and inflate oncology department.

OBJECTIVES:

1. To analyze the requirement of marketing strategies in oncology department of hospital
2. To build awareness for cancer treatment and recognition of oncology dept.
3. To design marketing materials for oncology department of hospital as per their requirement.

MARKETING STRATEGIES

1. To analyse the requirement of marketing strategies in oncology department of hospital

- ✓ In India, 0.95 million new cancer cases (948 thousand cases, Males -430 thousand cases, Females -518 thousand cases) and 0.63 million cancer deaths (633 thousand cases, Males-321 thousand, Females-312 thousand) occurred (Globocan, 2008; IARC, 2010).
- ✓ The latest figures published in the British medical journal The Lancet show that around one million new cancer cases are being diagnosed in India each year, projected to nearly double to 1.7 million new cases in 2035, around 700,000 people are dying from cancer in India annually, projected to rise to around 1.2 million deaths in 2035. (<http://www.apocpcontrol.org/>)

- ✓ In Delhi nearly 29,580 more cases of cancer were reported in 2013, an increase of 2.79 per cent from previous year, with the killer disease claiming around 4.78 lakh lives in the same year.. (www.indiancancersocietydelhi.in)

Cancer incidence will continue to grow in the country in the future as a result of increase in life expectancy , increase in the proportion of elderly population, size of population and due to absence of any mass screening programmes in the country Max Shalimar Bagh hospital situated in North West Delhi has well-established ICU, Emergency and trauma room, cardiac centre, neurology and orthopaedic centre with tertiary care facilities can be an immense resourceful help in bringing down these new cancer cases in Delhi along with full laid cancer centre in other parts of Delhi like in South Delhi max Saket, East Delhi Max Patparganj.

- ✓ Max Shalimar bagh is surrounded by well-established 164 bedded Rajiv Gandhi cancer institute within a range of 6.4 km AND IS THE BIGGEST DIRECT COMPETITOR. Cancer patients usually go to different hospitals for 2nd opinion as it's a chronic frightful condition, Thus Max Shalimar bagh offers a help of second opinion for cancer patients which is highly needed.

2. To build awareness for cancer treatment and recognition of oncology department

- ❖ **OUTSTATION OPD CENTRES-** A health care facility usually operated under the auspices of a large institution but situated in a location some distance from the larger health centre is an outstation OPD centre.
Max Healthcare introduces clinic concept to better serve the needs of individuals and families of cancer patients in Sonipat, Panipat and Karnal dist. Of Haryana (WITHIN 100 KM of max Shalimar bagh) state by bringing the most frequently used services of the Cancer Centre closer to the communities where they live. And in case of referral, patients can be brought back to Max Shalimar bagh HOSPITAL.
- ❖ **TALKS** can be arranged IN Colleges REGARDING risk factors and early diagnosis of Head & Neck cancer.
- ❖ **TALKS** can be arranged in **fitness centres and in malls** regarding techniques of self-examining Breast cancer.
- ❖ As per our findings in max saket cancer (out- patient department) centre nearby
 - 25%OF PATIENTS were diagnosed by breast cancer
 - 12%-15% of patients were diagnosed by Head& Neck cancer

So targeting these segments, **Screening camps** for these two highly prevalent cancers are planned.

- Statistics show that the - the Head and Neck cancers and breast cancer – can be easily detected at an early stage. Like Oral cancers show up in the form of white patches (leucoplakia), red patches (erythroplakia), Submucous fibrosis and difficulty in fully opening the mouth. These can be easily detected during an oral examination.

- A firm lump, small changes or discharge from the nipples are early signs of breast tumour.

The screening consists of examination by our panel of doctors **including a surgeon, a physician, and a gynaecologist**. We will be offering consultation with minimum diagnostic services. Initially, the camps will be organized at factory premises, the idea being to reach out to people with a perceived high risk. THEN they will be held in **nearby banks, grade 1 employees of mills and factories and industrial areas, residential colonies and colleges**.

- ❖ Max Shalimar bagh in northwest Delhi and in vicinity (100 Km) lies well laid cities like Panipat and Sonipat with total population of 442,277 and 292,339 respectively with estimated Cancer Incidence 276 per lakh population. The absence of any major cancer centre and high incidence opens window for opportunity to create awareness and recognition by skilful management of our max Oncology unit. A dedicated oncology team comprising of 3 surgical oncologist +1 medical oncologist+1 radiation oncologist visits Max Shalimar bagh twice a week.
- ❖ Max Shalimar Bagh hospital with upcoming cancer department is situated in North West Delhi has well-established ICU, Emergency and trauma room, cardiac centre, neurology and orthopaedic centre with tertiary care facilities can be an immense resourceful help in bringing down these new cancer cases in Delhi along with full laid cancer centre in other parts of Delhi like in South Delhi -Max Saket, East Delhi -Max Patparganj.

MAX CANCER CARE APP

According to IDC (International Data Corporation) , the India Smartphone market grew by 229% year-on-year to 12.8 million smart phones in Q3 of 2013, compared to 3.8 million units in year-ago period. Smartphone sales grew 28% in Q3 of 2013 compared to April-June 2013 (10.02 million)

India witnessed the highest rate of growth — over 186 per cent — in Smartphone sales in Asia Pacific region during January-March 2014, outshining countries like China.

Ten years from now everyone from teens to the elderly will be carrying a Smartphone, and these mobile devices will be exponentially smarter than they are today. In addition to being location aware, the Smartphone of the future will be situationally and contextually aware.

This will allow it to present information directly to you when you need it, revolutionizing the way patients are engaged by the healthcare system.

These new capabilities coupled with the explosive growth in digital health apps – the market for mobile health apps is expected to quadruple to \$400 million by 2016, according to ABI Research – promise to radically change the way health care is delivered and accessed.

Here are three ways digital Max cancer care app will transform healthcare delivery:

- **Improved access to care:**

In a digital age, the requirement for patients and doctors to be in the same location is eliminated. Patients suffering from chronic diseases like cancer that live in tier II cities or otherwise have limited access to doctors will be able to “visit” with primary care physicians or specialists located in the next major city or a half a world away.

- **Improved patient engagement:**

Many aspects of healthcare discourage patient engagement – long lines, complexity, lack of transparency of cost and quality. Much of this is unnecessary. One could easily be notified via text that your physician is running late. Apps can also eliminate complexity

- **Improved Patient Safety:**

Digital apps will make health care safer by giving patients tools to manage their own health. Today, patients leave the hospital with a stack of papers and very little memory of what they’re supposed to do when they arrive home. If all the information needed for a safe and healthy recovery were handed on an app, ONE could tend to the most urgent tasks and the one or two items most important to remember – and the app would take care of the rest. Apps can remind the patients to take medicines, monitor side effects and transfer the knowledge to their provider. This would be a huge advance for patient safety.

In the future, everything that can be done digitally will be done digitally. Digital health apps will schedule appointments, tell you the doctor is running late, help monitor medications’ side effects, and help you follow your care plan accurately. These changes will engage patients with their health and healthcare in new ways. It will also radically reform healthcare delivery. www.nap.edu

PROJECT DESCRIPTION

Max cancer care app strives to provide its patients with the highest quality and most compassionate care. This useful cancer care app is one fetching piece of the comprehensive care, Max health care group offers at their Cancer Centres in Shalimar bagh, Saket and Patparganj, New Delhi. The app gives patients the ease of tracking their treatment, managing their care team, and keeping connected and entertained throughout their journey.

Cancer patients diagnosed usually have long treatment duration. Most of the patients are treated in 3 modalities-

- I. Medical /palliative cancer care – involves chemotherapy
- II. Surgical cancer care – involves biopsy.
- III. Radiation cancer care –using high energy x-rays.

These modalities have different cycles which patients have to keep follow up with their consultants in their long span of life. From now on it's essential to develop a cancer care app to provide immense need to the desired patients.

Key functionality of Max cancer app-

- **Track your treatment** – user-friendly pain tracker and treatment tracker to analyze progress
- **My care team** – select and save a custom profile of your care team
- **Patient network** – connect with other cancer patients and patient support groups; share stories, ask questions and offer support
- **Lab results** – securely enter your information to receive lab results
- **Virtual wig gallery** – upload your photo and try on wigs; resize to fit your face
- And much more!

3. To design marketing materials for oncology department of hospital as per their requirement

Designing of marketing material:

Marketing materials designed are-

- Radiation oncology department Standee
- Chemotherapy information leaflet
- Preventive oncology information Leaflet
- Head & Neck cancer information Leaflet
- Breast cancer information Leaflet

OPERATIONAL DEFINITIONS

Marketing strategy

Is defined a process that can allow an organization to concentrate its resources on the optimal opportunities with the goals of increasing sales and achieving a sustainable competitive advantage(http://en.wikipedia.org/wiki/Marketing_strategy)

Standee:

It's a large self-standing display promoting a product or event. Standees have previously been available only in large quantities; recent advances in digital photography and print on demand technology have made them available to the public (<http://en.wikipedia.org/wiki/Standee>)

Patient information leaflets (PILs)

These leaflets contain specific information about medical conditions, side effects and precautionary measures to give the user information about the disease.
(http://en.wikipedia.org/wiki/Patient_information_leaflet)

RESEARCH METHODOLOGY:

Study design: Cross- sectional qualitative descriptive study

Study area : Oncology Department (GROUND Floor, South Block) in MAX Hospital, Saket and (GROUND Floor) in max Shalimar bagh hospital.

Duration of study: 2 Weeks (19.05.14 to 31.06.14)

Mode of data collection: Primary data was collected by interviewing senior personnel of the department for designing patient information leaflets and radiation oncology standee. Secondary data was collected from records of oncology department and retailed internet sources.

CONCLUSION

One word that is even more daunting than the death itself and eats up a person from the inside is cancer. Every year, about 1 million new cancer patients get registered with the National Cancer Registry Programme in India. This shows that cancer is one of the major health

problems in India at present. Cancer is not just one disease but many diseases. There are more than 100 different types of cancer.

Even though heredity plays its role in causing cancer, it accounts for just five per cent of cancer cases. This means that the rest of the percentage is caused by non-heredity factors such as lifestyle, food we eat, level of physical activity, personal hygiene, etc.

Also from epidemiological studies, it is clear that 70-90% reasons of developing cancer are environmental and related to the lifestyle of a person and so, to a great extent, it is preventable. (<http://www.ncbi.nlm.nih.gov/books/NBK4015/>)

The cancer incidence results show an urgent need for strengthening and augmenting the existing diagnostic/treatment facilities, which are inadequate even to tackle the present load. So here by in Max Shalimar bagh our single watchword of developing marketing strategies is to incorporate mass scale screening, diagnosing and treating the cancer patients both humanely and scientifically

Marketing in a hospital environment has unique challenges that are not found in most other organizations. The product is variable, the customer is not usually a willing buyer, and there is not a true price–value exchange.

If you are not meeting regularly with the people who have day-to-day contact with your patients and consumers, you cannot possibly know how effective your services are.

REFERENCE

- <http://www.mapsofindia.com/my-india/india/rising-cases-of-cancer-in-india>
- <http://www.ncbi.nlm.nih.gov/books/NBK4015/>
- http://www.healthleadersmedia.com/supplemental/7297_browse.pdf
- www.maxhealthcare.in
- wwwws.nap.edu
- www.indiancancersocietydelhi.in
- www.indianmedicalcaretimes.in
- (<http://en.wikipedia.org/wiki/Standee>)
- (http://en.wikipedia.org/wiki/Marketing_strategy)

